



## Enbridge Historical Release Technical Memorandum Addendum

**To:** Alex Smith, Enbridge Energy  
**From:** Laura Novitzki and Ryan Erickson  
**Subject:** Superior Terminal Historical Contamination: Office Excavation Historical Impacts  
**Date:** December 28, 2016  
**Barr Project #:** 49161092

<b>Historical Release Site Info: Enbridge Energy – Office Excavation</b>		
<b>Release Name and Description</b>	In 2012, soil and groundwater with hydrocarbon contamination was encountered in facility maintenance and electrical rack installation excavations adjacent to the southwest side of the Terminal office building. Terminal personnel indicated that the impacts were likely associated with historical contaminants from abandoned infrastructure in the area behind the office building. No active releases were identified in this location at the time of the release discovery.	
	<b>WDNR SERTS Spill ID #</b>	NA
	<b>WDNR BRRTS #</b>	0216558988
	<b>Release Date</b>	6/4/2012
	<b>WDNR Closure Date</b>	9/4/2012
<b>Previous Report / Memorandum Names, Consultant, Date</b>	Superior Terminal Office Electrical Rack Excavation - Historical Crude Oil Impacts, Barr Engineering, January 2014.	
<b>GIS Registry Update included?</b>	Not Applicable	

*Historical Release Documentation provided in Attachment A.*



	<p>Additional remedial excavation was not conducted based on the presence of above and below ground pipeline infrastructure in this area. The excavations were backfilled with clean fill material upon completion of the project work.</p> <p>While the Manifold 211 and 223 excavations were approximately 70 feet south of the southernmost contaminated <i>2012 Office Excavation</i>, the observed impacts were similar in nature and the areas were connected by abandoned infrastructure that was previously tied to historical contamination, as observed in the Manifold 211 excavation. No new release sources have been identified in this area. Based on this information, Enbridge concluded that the observed impacts were likely associated with the known historical impacts.</p>
<p><b>Waste Management Summary</b></p>	<p>A total of 657.22 tons of hydrocarbon-contaminated soil removed from the excavations was managed at the VONCO V Landfill in Duluth, Minnesota under waste profile #16-131-I. Waste disposal documentation is provided in Attachment D.</p> <p>Approximately 16,500 gallons of water from the excavations was managed at the Western Lake Superior Sanitary District (WLSSD) water treatment plant in Duluth, MN. Waste disposal documentation is provided in Attachment D.</p>
<p><b>Discussion / Conclusion</b></p>	<p>The Manifold 211 and 223 excavations were located within an area of known historical contamination associated with abandoned Terminal infrastructure on the southwest side of the office terminal building. No active releases were identified in these locations. Identified residual contamination is below the direct contact zone and residual contaminant concentrations are below WDNR Industrial RCL's.</p> <p>Risk of direct contact exposure is low based on contaminant depth, contractor training, and the use of personal protective equipment during excavation work. Risk to surface water receptors is low based on the contaminant depth. Groundwater conditions are also monitored via a Superior Terminal facility-wide groundwater monitoring program. Risk of vapor accumulation is low because nearby buildings are built at grade and do not have basements and facility personnel are required to wear atmospheric monitors that would detect hazardous conditions.</p> <p>Based on these conditions, Barr does not believe that additional assessment or remediation activities will be required and recommends that the original <i>Office Excavation</i> BRRS site should remain closed. This technical memorandum provides the required updated documentation and is considered an addendum to the closed <i>Office Excavation</i> Report.</p>



## Site Photos

### Manifold 211 Excavation



Photo 1



Photo 2

**Photo 1:** Manifold 211 excavation in foreground and Manifold 223 excavation in background. Photo taken facing west on November 4, 2016.

**Photo 2:** Manifold 211 excavation. Photo taken facing southwest on November 1, 2016.



Photo 3

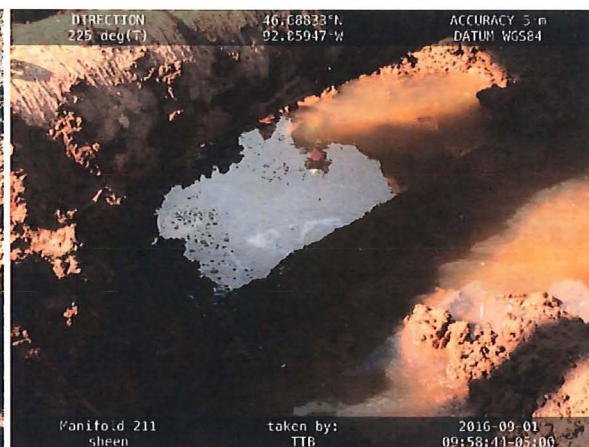


Photo 4

**Photo 3:** Manifold 211 excavation. Photo taken facing northwest on November 4, 2016.

**Photo 4:** Manifold 211 excavation with hydrocarbon sheen visible on water. Photo taken on November 1, 2016.

Manifold 223 Excavation



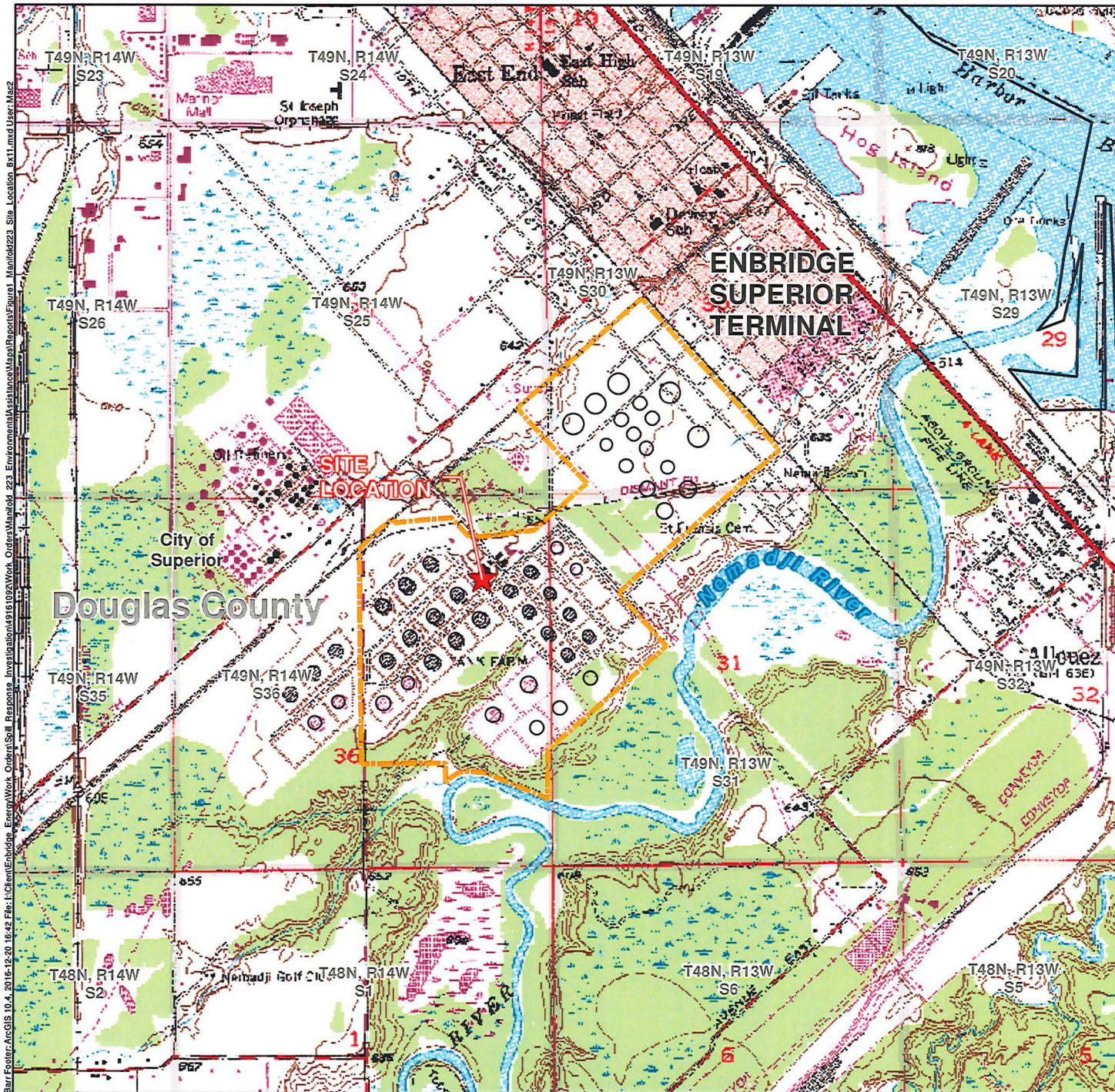
Photo 5



Photo 6

**Photo 5:** Manifold 223 excavation. Photo taken facing northwest on November 11, 2016.

**Photo 6:** Manifold 223 excavation with hydrocarbon sheen visible on water. Photo taken on November 11, 2016.



- ★ Site Location
- Terminal Property Boundary



Feet  
1 Inch = 2,000 Feet

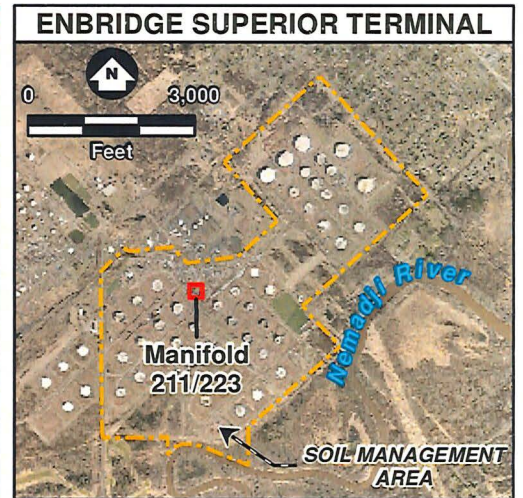
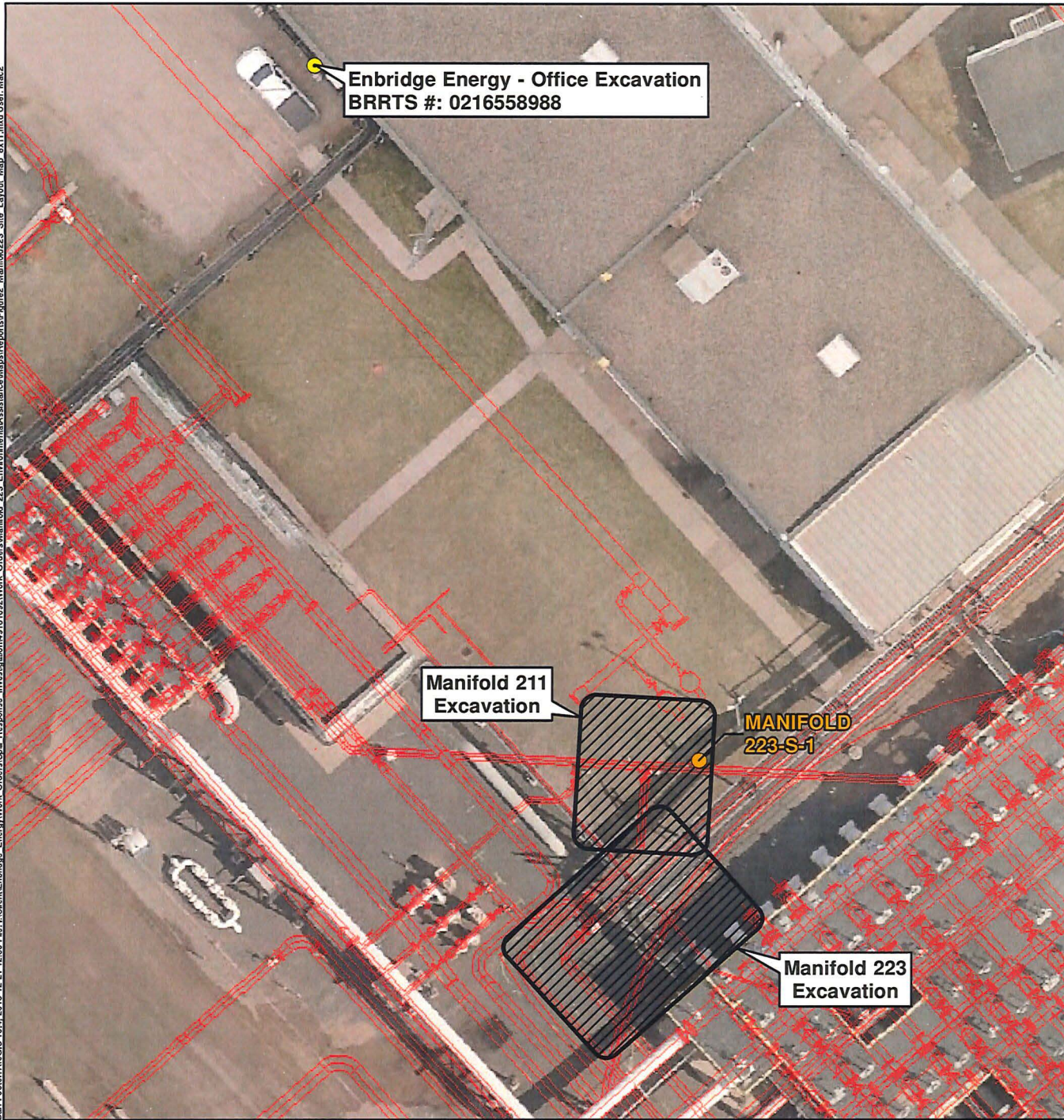
Figure 1

**SITE LOCATION**  
**MANIFOLD 211/223 EXCAVATION**  
**SUPERIOR TERMINAL**  
 Enbridge Energy, L.P.  
 Superior, Wisconsin



Bar Footer: ArcGIS 10.4, 2016-12-20 16:42 File: I:\Client\Enbridge\_Energy\Work\_Order\211\223\_EnvironmentalAssistance\Map\Reports\Figure1\_Manifold23\_Site\_Location\_Bx1.mxd User: Mac2

Bar Footer: ArcGIS 10.4, 2016-12-21 12:50 File: I:\Client\Enbridge\_Energy\Work Orders\Soil Response\_Investigation\0416192\Work Orders\Manifold\_223\_EnvironmentalAssistance\Map\Reports\Figure2\_Manifold223\_Site\_Layout\_Map\_8x11.mxd User: Mac2



- Analytical Sample Locations
- Historical Release Location
- ▨ Excavation Extents
- ══ Pipeline Infrastructure

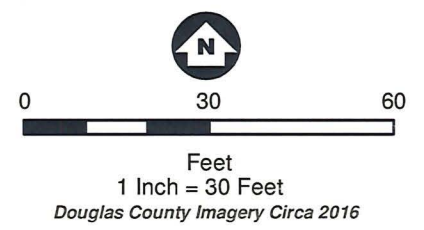


Figure 2  
**SITE LAYOUT  
MANIFOLD 211/223 EXCAVATION  
SUPERIOR TERMINAL**  
Enbridge Energy, L.P.  
Superior, Wisconsin





**Table 1  
Soil Analytical Data Summary  
Terminal Office Electrical Rack Upgrade  
Enbridge Energy Terminal - Superior, Wisconsin  
Units, mg/kg (unless otherwise noted)**

Parameter	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	WDNR RCL Determinations*					
									Exceedance Count	Hazard Quotient	Cumulative Cancer Risk	Pass or Fail		
<b>Groundwater RCL</b>	<b>0.0725</b>		44.4089	7.4074		0.3294		27.2362						
<b>Industrial Direct Contact RCL</b>	<b>211</b>	<u>0.211</u>	22000	22000	2.11	26	115	16500	<u>0</u>	1.0	<u>1E-05</u>	<u>Pass</u>		
<b>Effective Date</b>	<b>Exceedance Key</b>													
<b>Location</b>	<b>Date</b>	<b>Depth (ft)</b>												
Office-S-1	7/25/2012	1	--	--	--	--	--	--	0	0.0003	9.6E-09	Pass		
Office-S-2	7/25/2012	4.9	--	--	--	--	--	--	0	0.0003	9.1E-09	Pass		
Office-SB-1-1	7/25/2012	1 - 1.5	--	--	--	--	--	--	--	--	--	--		
Office-SB-1-2	7/25/2012	4.5 - 5	<b>2.94</b>	<u>0.257</u>	7.01	0.599	0.787	0.0803	4.58	5.52	<u>4</u>	0.0012	<u>1.4E-05</u>	<u>Fail</u>

\*WDNR RCL Determinations based on guidance criteria described in WDNR document PUB-RR-890. Hazard index is based a cumulative direct contact standard.

TR - Based on 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene combined.

XYL - Based on Xylenes (m-, o-, p- combined).

**Table 1**  
**Soil Analytical Data Summary**  
**Terminal Office Electrical Rack Upgrade**  
**Enbridge Energy Terminal - Superior, Wisconsin**  
**Units, mg/kg (unless otherwise noted)**

Parameter			Moisture	1,2,4-Trimethyl benzene	1,3,5-Trimethyl benzene	Benzene	Ethyl benzene	Toluene	Xylene, total	Diesel Range Organics	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene
	Effective Date	Exceedance Key																
<b>Groundwater RCL</b>		<b>Bold</b>		1.3793 TR	1.3793 TR	0.0051	0.785	0.5536	1.97 XYL				196.7442		<b>0.47</b>	<b>0.48</b>		
<b>Industrial Direct Contact RCL</b>	05/01/2012	<u>Underline</u>		219	182	7.41	37	818	258		33000	487	100000	<u>2.11</u>	<u>0.211</u>	<u>2.11</u>		21.1
<b>Location</b>	<b>Date</b>	<b>Depth (ft)</b>																
Office-S-1	7/25/2012	1	5.8 %	< 0.059	< 0.059	< 0.059	< 0.059	< 0.059	< 0.18	< 11.5	--	--	--	--	--	--	--	--
Office-S-2	7/25/2012	4.9	13.8 %	< 0.056	< 0.056	< 0.056	< 0.056	< 0.056	< 0.17	< 10.7	--	--	--	--	--	--	--	--
Office-SB-1-1	7/25/2012	1 - 1.5	12.9 %	--	--	--	--	--	--	31.9	--	--	--	--	--	--	--	--
Office-SB-1-2	7/25/2012	4.5 - 5	22.0 %	0.092	< 0.067	< 0.067	< 0.067	< 0.067	< 0.20	149	0.579	< 0.0127	1.43	<u>3.04</u>	<u>1.97</u>	<u>2.66</u>	0.895	1.17

\*WDNR RCL Determinations based on guidance criteria described in WDNR document PUB-RR-890. Hazard index is based a cumulative direct contact standard.

TR - Based on 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene combined.

XYL - Based on Xylenes (m-, o-, p- combined).

**Attachment A**

**Historical Release Documentation**

Enbridge Pipelines (Lakehead) L.L.C.  
Environment Department  
1320 Grand Avenue  
Superior, WI 54880  
Tel 715 394 1400  
Fax 715 394 1500

Shane Yokom  
Joseph Peterson  
Cheryl Urie  
Jim Snider  
Rhonda O'Leary  
James Anklam  
Karl Beaster  
Stacey Frerich  
Derek Senn  
Kelli Nelson  
Bryan Sederberg  
Alex Smith  
Greg St. Onge  
Julie O'Brien

Manager, Environment Operations  
Supervisor, Region Operations  
Supervisor, Programs  
Environmental Specialist  
Sr. Air Compliance Specialist  
Sr. Environmental Analyst  
Environmental Analyst II  
Environmental Analyst II  
Environmental Analyst II  
Environmental Analyst II  
Environmental Analyst II  
Environmental Analyst II  
Environmental Analyst  
ER Preparedness Coordinator  
Environmental Assistant



[www.enbridgepartners.com](http://www.enbridgepartners.com)

January 27, 2014

Erin Endsley  
Wisconsin Department of Natural Resources - Northern Region  
Remediation and Redevelopment  
1701 N 4th St  
Superior, WI 54880

Re: Office Building Historical Crude Oil Impacts  
Electrical Rack Excavation  
Enbridge Energy Superior Terminal  
Superior, Wisconsin

Dear Ms. Endsley:

Please find attached report regarding the clean-up of historical crude oil impacts discovered during the Office Building Electrical Rack excavation. Based on the findings presented in this report, we are requesting no further action in regards to this historical release.

Please contact me if you have any questions or comments regarding this project.

Sincerely,  
Enbridge Energy

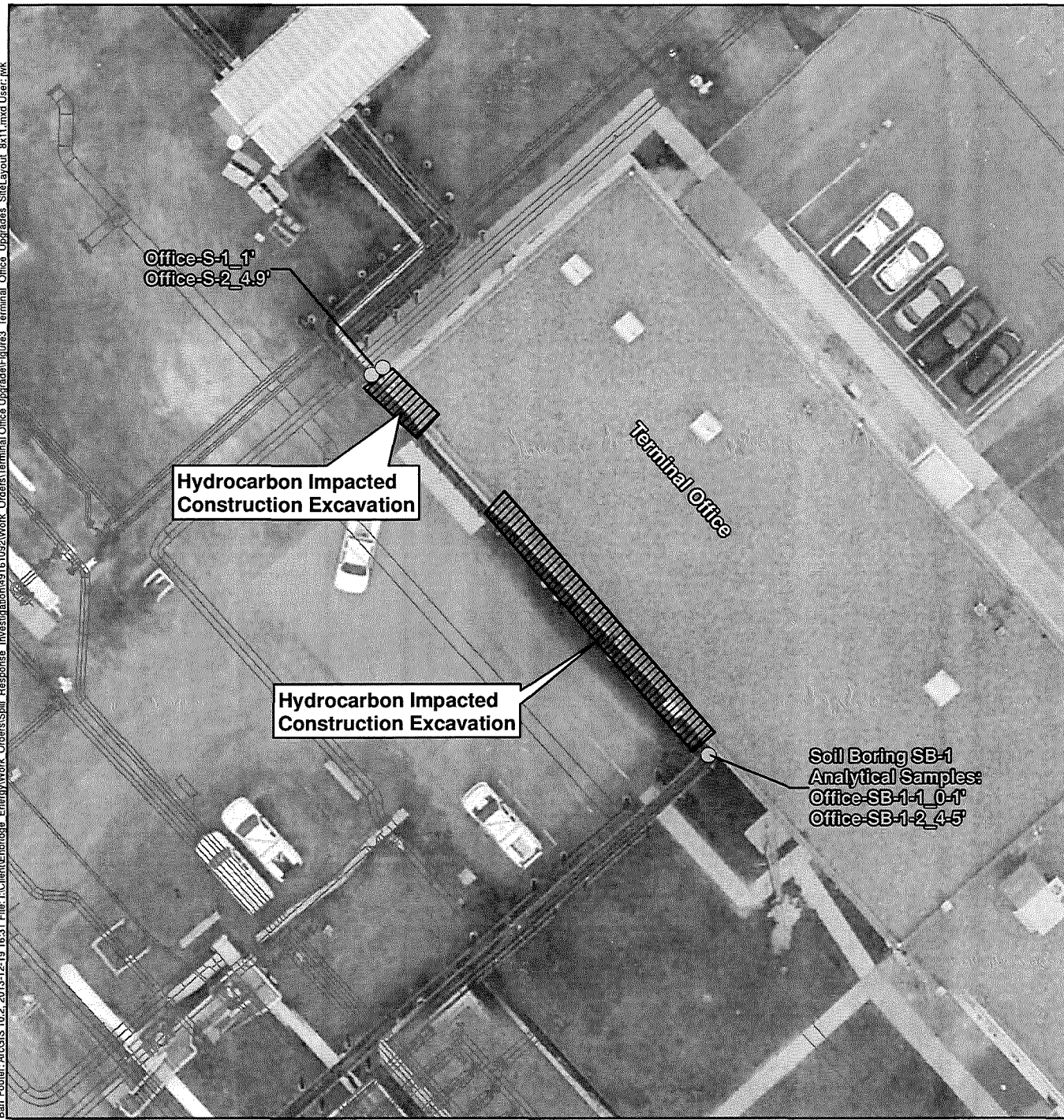
A handwritten signature in black ink, appearing to read 'Karl F. Beaster', written in a cursive style.

Karl F. Beaster, P.G.  
Environmental Analyst

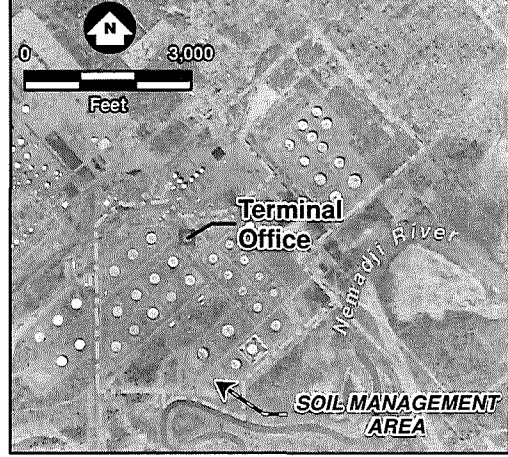
Enclosure

cc: Ryan Erickson, Barr Engineering

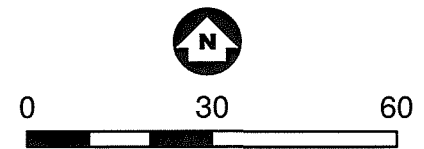
Bar Footer: ArcGIS 10.2, 2013-12-19 16:31 File: I:\Client\Enbridge\_Energy\Work\_Orders\Spill\_Response\_Investigation\4916\_092\Work\_Orders\Terminal Office Upgrade\Figures\Terminal Office Upgrades\_SiteLayout\_8x11.mxd User: jvk



### ENBRIDGE SUPERIOR TERMINAL



- Sample Locations
- ▨ Excavation Extent
- ══ Pipeline Infrastructure
- - - - Terminal Property Boundary



Feet  
 1 Inch = 30 Feet  
 Douglas County Imagery Circa May, 2013  
 Figure 3

**SITE LAYOUT MAP**  
**TERMINAL OFFICE UPGRADE**  
**SUPERIOR TERMINAL**  
 Enbridge Energy, L.P.  
 Superior, Wisconsin



**Attachment B**

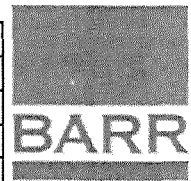
**Field Sampling and Screening Logs**

**SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG**

Client: Enbridge Energy Date: 9.1.2016  
 Location: Manifold 211 (223) Sampler: TJS  
 Sample Nomenclature (Location - sample type - #):  
 R = Removed S = Sidewall B = Bottom Stockpile = Stockpile

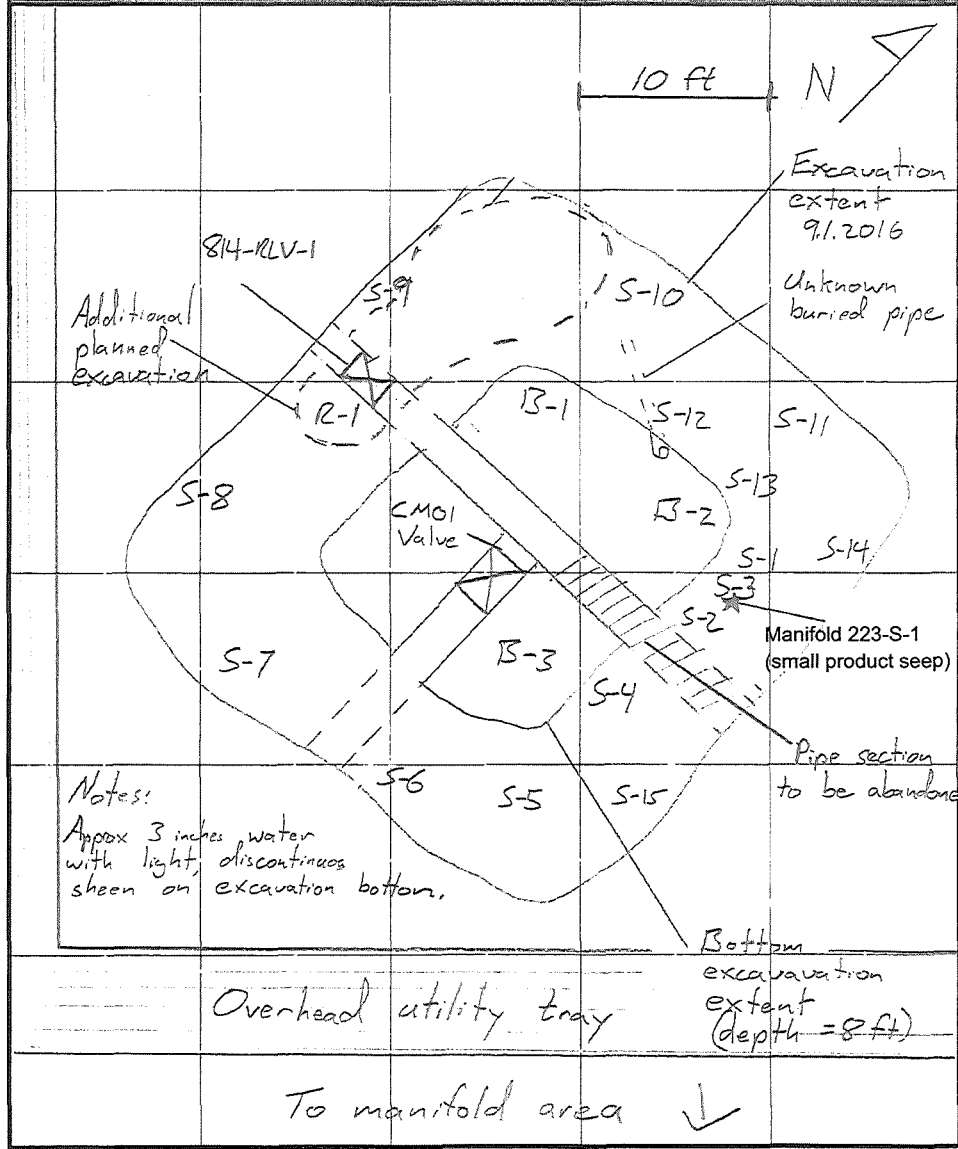
Equipment: Photoionization detector with 11.7 eV bulb

	Calibration	Bump Test 1	Bump Test 2
Time	1040	1215	NA
Zero reading (ppm)	0.0	0.2	↓
Span reading (ppm)	100.0	88.3	↓
Background (ppm)	0.0	0.1	↓



Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/Discolor	Odor/Sheen	Headspace Reading (ppm)
Example: Stockpile-1	4	16:30	CL	Reddish brown	Petroleum/Rainbow	275
S-1	5.5	1050	CH	Reddish brn	N/N	1.1
S-2	↓	↓	↓	↓	N/N	0.3
S-3	↓	↓	↓	Dk brn	Petro rainbow	58.5
S-4	3	↓	SP	↓	N/N	0.2
S-5	2.5	✓	CH	↓	↓	0.4
S-6	1.5	1055	↓	↓	↓	0.2
S-7	1.0	↓	↓	↓	↓	0.2
S-8	0.5	↓	↓	↓	↓	0.1
S-9	0.5	✓	↓	↓	↓	0.2
R-1	1.0	✓	SP	↓	↓	0.2
S-10	1.0	1105	CH	↓	↓	0.1
S-11	1.5	↓	CH	↓	↓	0.2
S-12	5	↓	SP/CH	↓	↓	0.8
S-13	6	↓	CH/GP	↓	↓	0.6
S-14	1.0	↓	CH	↓	↓	0.2
S-15	1.0	↓	CH	↓	↓	0.2
B-1	8	1200	CH	↓	✓	0.9
B-2	8	↓	SP	Gray	Petro Rainbow	49.2
B-3	8	✓	CH	↓	↓	0.8
Manifold 223-S-1	5.5	1145	CH/SP	Dk brn	Petro Rainbow	38.4

Site Sketch: north arrow, scale, excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...



**SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG**

Location: Milepost or Facility Mamifold 223 - West Excavation

Equipment used: DiD -ionization detector with 10.6 eV lamp

Sample Nomenclature (Location - sample type - #): M 223 - W

Soil Sample Types: R = Removed Sample ; S = Sidewall Sample ; B = Bottom Sample ; Stockpile = Stockpile Sample

100ppm Calibration Check = 99.4 ppm

100ppm field Check = 97.1 ppm

Page 1 of 1

Background Headspace: 0 ppm

Date: 9/26/10

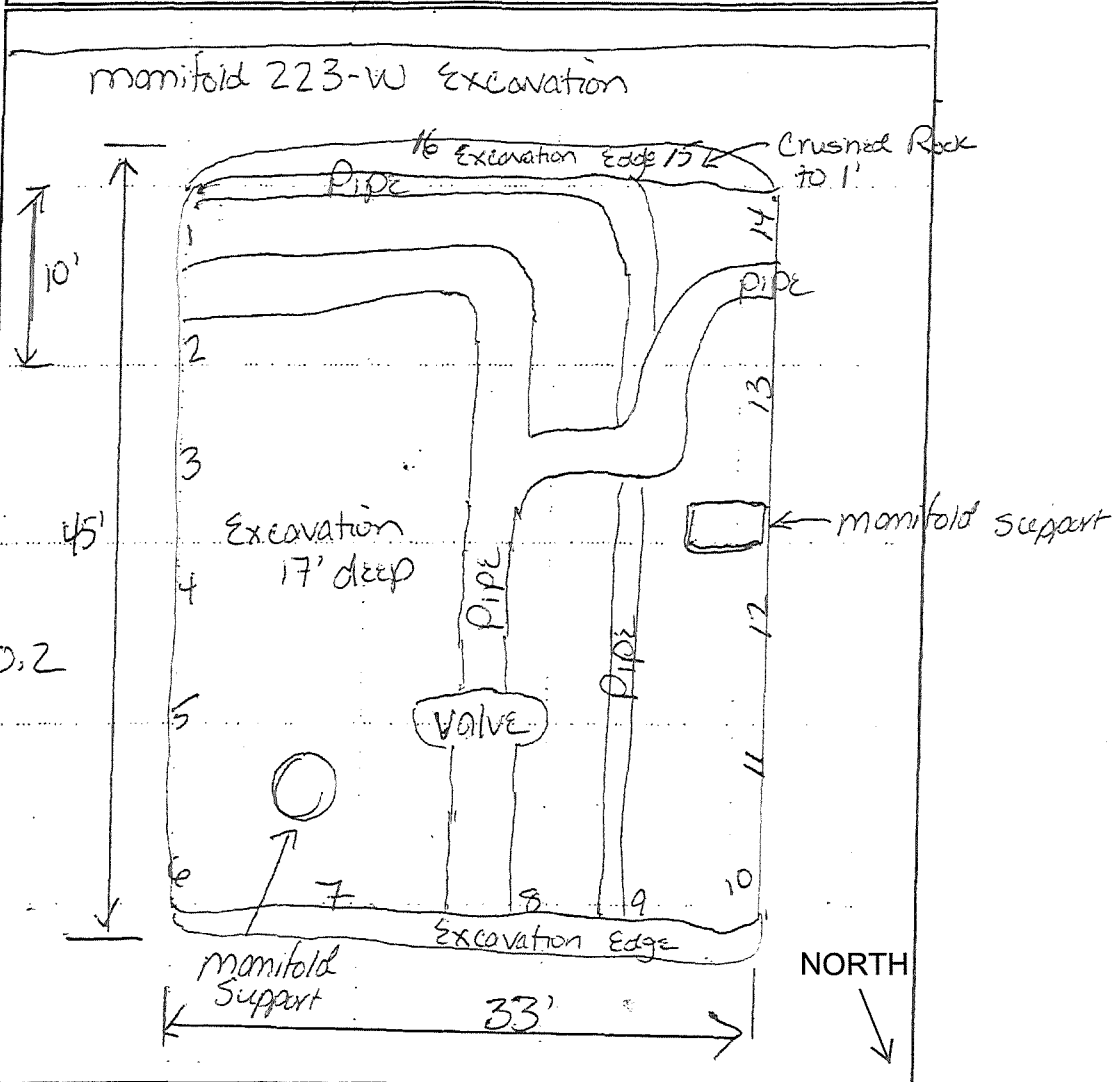
Sampler: JET

Calibration Time: 11:45

**BARR**

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/Discolor	Odor/Sheen	Headspace Reading (ppm)
Example: TK99-S-1	4	16:30	CL	Reddish brown	Petroleum/Rainbow	275
M-223-W B-17	1.7'	14:20	CL	Red/Brown	None	6.3
M 223-W S-1	1.5'	14:30			None	0.2
M 223-W S-2						0.2
M 223-W S-3						0.2
M 223-W S-4						0.2
M 223-W S-5						0.2
M 223-W S-6						0.2
M 223-W S-7						0.2
M 223-W S-8						0.2
M 223-W S-9						0.2
M 223-W S-10		14:45				0.2
M 223-W S-11						0.2
M 223-W S-12						0.2
M 223-W S-13					JET	0.2
M 223-W S-14						0.3
M 223-W S-15						0.3
M 223-W S-16						0.2
n/a JET						

SITE SKETCH: north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features... 1 inch/grid = FEET





**Attachment C**

**Excavation Sample Laboratory Report**



09-Sep-2016

Ryan Erickson  
Barr Engineering Company  
4300 Market Pointe Drive  
Suite 200  
Minneapolis, MN 55435

ALS Group USA, Corp

Date: 09-Sep-16

Client: Barr Engineering Company  
Project: Enbridge Manifold 223 (49161092 003 004)  
Work Order: 1609091

**Work Order Sample Summary**

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1609091-01	Manifold 223-S-1_5.5-6.0	Soil		09/01/16 11:45	09/02/16 09:00	<input type="checkbox"/>
1609091-02	Trip Blank	Soil		09/01/16	09/02/16 09:00	<input type="checkbox"/>

Re: Enbridge Manifold 223 (49161092 003 004)

Work Order: 1609091

Dear Ryan,

ALS Environmental received 2 samples on 02-Sep-2016 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 12.

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

Sincerely,

Electronically approved by Tom Beamish

Tom Beamish  
Client Services Coordinator



Certificate No: WI: 399084510

**Report of Laboratory Analysis**

ADDRESS: 3950 12TH AVENUE, MINNEAPOLIS, MN 55412 TEL: 612-576-2224 FAX: 612-576-2225  
7450 EAST 15TH AVENUE, DENVER, CO 80231 TEL: 303-733-1100 FAX: 303-733-1101  
ALS ENVIRONMENTAL CORPORATION, 10000 W. BEAVER CREEK, DENVER, CO 80231

www.alsglobal.com

Sample Summary Page 1 of 1

ALS Group USA, Corp

Date: 09-Sep-16

Client: Barr Engineering Company  
Project: Enbridge Manifold 223 (49161092 003 004)  
Work Order: 1609091

**QUALIFIERS,  
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RFD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCS-D	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RFD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg Kg-dry	Micrograms per Kilogram Dry Weight

ALS Group USA, Corp

Date: 09-Sep-16

Client: Barr Engineering Company  
Project: Enbridge Manifold 223 (49161092 003 004)  
Work Order: 1609091

**Case Narrative**

Samples for the above noted Work Order were received on 09/02/16. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

**Volatile Organics:**  
No deviations or anomalies were noted.

**Wet Chemistry:**  
No deviations or anomalies were noted.

ALS Group USA, Corp

Date: 09-Sep-16

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092 003 004)  
 Sample ID: Manifold 223-S-1\_5.5-6.0  
 Collection Date: 09/01/16 11:45 AM

Work Order: 1609091  
 Lab ID: 1609091-01  
 Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: SW8260B	Prep: SW5035 / 9/2/16		Analyst: LSY	
1,2,4-Trimethylbenzene	U		10	50	µg/Kg-dry	1	09/03/16 03:53
1,3,5-Trimethylbenzene	U		22	50	µg/Kg-dry	1	09/03/16 03:53
Benzene	U		11	50	µg/Kg-dry	1	09/03/16 03:53
Ethylbenzene	U		12	50	µg/Kg-dry	1	09/03/16 03:53
m,p-Xylene	U		22	100	µg/Kg-dry	1	09/03/16 03:53
Naphthalene	U		8.5	170	µg/Kg-dry	1	09/03/16 03:53
o-Xylene	U		16	50	µg/Kg-dry	1	09/03/16 03:53
Toluene	U		17	50	µg/Kg-dry	1	09/03/16 03:53
Xylenes, Total	U		39	150	µg/Kg-dry	1	09/03/16 03:53
Surr: 1,2-Dichloroethane-d4	92.4			70-130	%REC	1	09/03/16 03:53
Surr: 4-Bromofluorobenzene	108			70-130	%REC	1	09/03/16 03:53
Surr: Dibromofluoromethane	90.4			70-130	%REC	1	09/03/16 03:53
Surr: Toluene-d8	99.2			70-130	%REC	1	09/03/16 03:53
<b>MOISTURE</b>							
			Method: SW3550C			Analyst: EDL	
Moisture	25		0.025	0.050	% of sample	1	09/08/16 17:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 09-Sep-16

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092 003 004)  
 Sample ID: Trip Blank  
 Collection Date: 09/01/16

Work Order: 1609091  
 Lab ID: 1609091-02  
 Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: SW8260B	Prep: SW5035 / 9/2/16		Analyst: LSY	
1,2,4-Trimethylbenzene	U		6.0	30	µg/Kg-dry	1	09/03/16 04:16
1,3,5-Trimethylbenzene	U		13	30	µg/Kg-dry	1	09/03/16 04:16
Benzene	U		6.8	30	µg/Kg-dry	1	09/03/16 04:16
Ethylbenzene	U		7.0	30	µg/Kg-dry	1	09/03/16 04:16
m,p-Xylene	U		13	60	µg/Kg-dry	1	09/03/16 04:16
Naphthalene	U		5.1	100	µg/Kg-dry	1	09/03/16 04:16
o-Xylene	U		9.7	30	µg/Kg-dry	1	09/03/16 04:16
Toluene	U		9.9	30	µg/Kg-dry	1	09/03/16 04:16
Xylenes, Total	U		23	90	µg/Kg-dry	1	09/03/16 04:16
Surr: 1,2-Dichloroethane-d4	98.8			70-130	%REC	1	09/03/16 04:16
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	09/03/16 04:16
Surr: Dibromofluoromethane	87.5			70-130	%REC	1	09/03/16 04:16
Surr: Toluene-d8	98.4			70-130	%REC	1	09/03/16 04:16

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 09-Sep-16

Client: Barr Engineering Company  
 Work Order: 1609091  
 Project: Enbridge Manifold 223 (49161092 003 004)

QC BATCH REPORT

MBLK	Sample ID: MBLK-90921-90921	Units: µg/Kg-dry	Analysis Date: 09/08/16 01:31 PM								
Client ID:	Run ID: VM55_160906A	SeqNo: 4014077	Prep Date: 09/02/16 DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	U	6	30								
1,3,5-Trimethylbenzene	U	13	30								
Benzene	U	6.8	30								
Ethylbenzene	U	7	30								
m,p-Xylene	U	13	60								
Naphthalene	U	5.1	100								
o-Xylene	U	9.7	30								
Toluene	U	9.9	30								
Xylenes, Total	U	23	90								
Surr: 1,2-Dichloroethane-d4	92.5	0	0	1000	0	92.6	70-130	0			
Surr: 4-Bromofluorobenzene	95.5	0	0	1000	0	95.5	70-130	0			
Surr: Dibromofluoromethane	98.8	0	0	1000	0	98.8	70-130	0			
Surr: Toluene-d8	99.1	0	0	1000	0	99.1	70-130	0			

LCS	Sample ID: LCS-90921-90921	Units: µg/Kg-dry	Analysis Date: 09/08/16 11:39 AM								
Client ID:	Run ID: VM55_160906A	SeqNo: 4014076	Prep Date: 09/02/16 DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1026	6	30	1000	0	103	65-135	0			
1,3,5-Trimethylbenzene	1131	13	30	1000	0	113	65-135	0			
Benzene	1056	6.8	30	1000	0	106	75-125	0			
Ethylbenzene	1088	7	30	1000	0	109	75-125	0			
m,p-Xylene	2214	13	60	2000	0	111	80-125	0			
Naphthalene	1040	5.1	100	1000	0	104	40-140	0			
o-Xylene	1102	9.7	30	1000	0	110	75-125	0			
Toluene	1056	9.9	30	1000	0	106	70-125	0			
Xylenes, Total	3318	23	90	3000	0	111	75-125	0			
Surr: 1,2-Dichloroethane-d4	918.5	0	0	1000	0	91.8	70-130	0			
Surr: 4-Bromofluorobenzene	959	0	0	1000	0	95.9	70-130	0			
Surr: Dibromofluoromethane	952	0	0	1000	0	95.2	70-130	0			
Surr: Toluene-d8	983	0	0	1000	0	98.3	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Client: Barr Engineering Company  
 Work Order: 1609091  
 Project: Enbridge Manifold 223 (49161092 003 004)

MS	Sample ID: 1609036-06A MS	Units: µg/Kg-dry	Analysis Date: 09/03/16 10:16 AM								
Client ID:	Run ID: VM58_160902B	SeqNo: 4010645	Prep Date: 09/02/16 DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1716	9.8	49	1632	0	105	65-135	0			
1,3,5-Trimethylbenzene	1781	21	49	1632	0	109	65-135	0			
Benzene	1783	11	49	1632	0	109	75-125	0			
Ethylbenzene	1714	11	49	1632	0	105	75-125	0			
m,p-Xylene	3438	22	98	3263	0	105	80-125	0			
Naphthalene	1423	8.4	180	1632	119.7	79.9	40-140	0			
o-Xylene	1690	16	49	1632	0	104	75-125	0			
Toluene	1654	16	49	1632	61	94.3	70-125	0			
Xylenes, Total	5128	38	150	4995	0	105	75-125	0			
Surr: 1,2-Dichloroethane-d4	1564	0	0	1632	0	95.8	70-130	0			
Surr: 4-Bromofluorobenzene	1680	0	0	1632	0	103	70-130	0			
Surr: Dibromofluoromethane	1539	0	0	1632	0	94.3	70-130	0			
Surr: Toluene-d8	1543	0	0	1632	0	94.6	70-130	0			

MSD	Sample ID: 1609036-06A MSD	Units: µg/Kg-dry	Analysis Date: 09/03/16 10:42 AM								
Client ID:	Run ID: VM58_160902B	SeqNo: 4010646	Prep Date: 09/02/16 DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1676	9.8	49	1632	0	103	65-135	1716	2.36	30	
1,3,5-Trimethylbenzene	1718	21	49	1632	0	105	65-135	1781	3.89	30	
Benzene	1716	11	49	1632	0	105	75-125	1783	3.82	30	
Ethylbenzene	1649	11	49	1632	0	101	75-125	1714	3.88	30	
m,p-Xylene	3311	22	98	3263	0	101	80-125	3438	3.75	30	
Naphthalene	1429	8.4	180	1632	119.7	80.3	40-140	1423	0.458	30	
o-Xylene	1648	16	49	1632	0	101	75-125	1690	2.64	30	
Toluene	1599	16	49	1632	61	94.3	70-125	1654	3.36	30	
Xylenes, Total	4958	38	150	4995	0	101	75-125	5128	3.38	30	
Surr: 1,2-Dichloroethane-d4	1543	0	0	1632	0	94.6	70-130	1564	1.31	30	
Surr: 4-Bromofluorobenzene	1684	0	0	1632	0	103	70-130	1686	0.145	30	
Surr: Dibromofluoromethane	1543	0	0	1632	0	94.6	70-130	1539	0.285	30	
Surr: Toluene-d8	1583	0	0	1632	0	95.8	70-130	1543	1.26	30	

The following samples were analyzed in this batch: 1609091-01A 1609091-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Attachment D**

**Waste Disposal Documentation**

October 3, 2016

Barr Engineering  
Ryan Erickson  
325 S Lake Ave  
Duluth, MN 55802

RE: Profile # 16-131-I/Enbridge Superior Terminal Manifold 223

Ryan,

Please be advised that the above described waste material is acceptable for 2,000 yards disposal at the Vonco V Waste Management Campus Facility in Duluth, MN. The waste material is acceptable per the Vonco V (SW-560) Minnesota Pollution Control Agency Industrial Solid Waste Management Plan.

The referenced waste must maintain consistency with what was originally submitted on the waste profile. Vonco V Waste Management Campus must be contacted immediately for any changes in material composition or process generation as further testing and analysis may apply.

Additionally, acceptance is subject to the following conditions:

- The material will be absent of free liquids and must meet the paint filter test.
- A signed waste manifest with the correct profile number shall accompany each load delivered to The Vonco V Waste Management Campus.
- All hauling will be in compliance with the Federal and State D.O.T regulations.

Thank you for choosing Vonco V Waste Management Campus. We appreciate your business. If you have any questions or concerns please feel free to contact me at: 612-221-0785.

We look forward to working with you,

*Chris Hillenmuth*

VONCO V, LLC  
Vice President

16-131-I SUP Terminal Manifold 223

Date	Ticket	Customer	Truck	Material	Tons
10/04/2016	280557	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	16.18
10/04/2016	280558	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	16.16
10/04/2016	280556	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	16.65
10/04/2016	280567	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	17.76
10/04/2016	280589	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	20.45
10/04/2016	280590	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	18.98
10/04/2016	280609	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	22.20
10/04/2016	280621	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	20.12
10/05/2016	280646	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	20.73
10/05/2016	280651	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	24.54
10/05/2016	280669	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	22.58
10/05/2016	280681	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	22.24
10/05/2016	280697	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	21.56
10/05/2016	280719	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	22.52
10/05/2016	280733	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	22.44
10/05/2016	280754	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	21.22
10/05/2016	280772	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	22.16
10/06/2016	280807	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	18.70
10/06/2016	280808	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	19.35
10/06/2016	280819	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	22.80
10/06/2016	280820	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	24.56
10/06/2016	280829	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	16.20
10/06/2016	280831	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	21.10
10/06/2016	280839	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	18.09
10/06/2016	280840	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	19.24
10/06/2016	280967	001342 - Enbridge Pipelines LLC	TS3690W	Contaminated Soil	21.19
10/06/2016	280968	001342 - Enbridge Pipelines LLC	TS3691W	Contaminated Soil	17.63
10/11/2016	280976	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	13.31
10/11/2016	280985	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	17.73
10/11/2016	280990	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	13.77
10/11/2016	281001	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	12.68
10/11/2016	281011	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	16.74
10/12/2016	281051	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	14.03
10/12/2016	281067	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	12.26
10/12/2016	281076	001342 - Enbridge Pipelines LLC	PR22130	Contaminated Soil	9.15
<b>Total Tons</b>					<b>657.22</b>
<b>Total Loads</b>					<b>35</b>

**VONCO V, LLC. Industrial Waste Profile Sheet** PROFILE# \_\_\_\_\_

Designated Facility: Vonco V, LLC. Permit #536

<b>A. Generator, Waste Site Location</b>		<b>B. Billing</b>	
Name	Enbridge Energy Superior Terminal	Name	Enbridge Energy
Site Address	2800 E 21st St	Site Address	1100 Louisiana Ave, Ste 3300
City, State, Zip	Superior, WI, 54880	City, State, Zip	Houston, TX, 77002
Contact	Alex Smith	Contact	Alex Smith
Phone	715-368-4705	Phone	715-993-4795
Fax	832-325-5511	Fax	832-325-5511
County	Douglas		

**C. Description of Waste**

Name of Waste	Contaminated Soil - Manifold 223	Process Generating Waste	Excavation of soil with historical hydrocarbon contamination.
Estimated Volume	250 CY		
Frequency	Once time		
Physical State	Solid (soil)	Color	Reddish brown
Flash Point (°F) IWA		Free Liquids	no
		pH	
		Total Solids	

**D. Other Comments**

This profile will be used to manage soil that has evidence of hydrocarbon contamination that is excavated during a Superior Terminal Manifold 223 project.

**E. Sample Information**

Check all that apply:

Laboratory Analysis submitted  Material Safety Data Sheet submitted

Laboratory Name: ALS Environmental Sample Date: 02/12/2016 Sample I.D.: Manifold 223 Rockpile 1, 2, 3

**F. Generator Certifications**

- This waste is not a hazardous waste as defined in Minnesota Rules Chapter 7045 or 40 CFR 261.
- This waste does not contain regulated quantities of PCBs.
- This waste does not contain regulated quantities of herbicides or pesticides.
- This waste does not contain infectious wastes as defined in Minnesota Rules Chapter 7.
- All information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 Appendix 1 and was obtained by using this or an equivalent sampling method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

Generator's Signature: *Karl Beasler* Title: Environmental Analyst

Print Name: Karl Beasler Date: October 3, 2016

**G. Landfill Approval**

My approval is based upon the laboratory analysis of a representative sample and/or material safety data sheets submitted by the generator.

Landfill Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Recertification Date: \_\_\_\_\_



30-Sep-2016

Ryan Erickson  
Barr Engineering Company  
4300 Market Pointe Drive  
Suite 200  
Minneapolis, MN 55435

Re: Enbridge Manifold 223 (49161092.04)

Work Order: 16091363

Dear Ryan,

ALS Environmental received 3 samples on 29-Sep-2016 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 15.

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

Sincerely,

*Tom Beamish*

Tom Beamish  
Client Services Coordinator



Certificate No: WI: 399084510

Report of Laboratory Analysis

ADDRESS: 1372 12th Avenue SE, Lake Mills, MN 56049-9293 | PHONE: 656 501 0000 | FAX: 656 501 0000

www.alsglobal.com

REGULATORY COMPLIANCE

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092.04)  
 Work Order: 16091363

**Work Order Sample Summary**

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
16091363-01	Manifold 223 Stockpile- 1	Soil		09/21/16 10:50	09/23/16 09:30	<input type="checkbox"/>
16091363-02	Manifold 223 Stockpile- 2	Soil		09/21/16 10:55	09/23/16 09:30	<input type="checkbox"/>
16091363-03	Manifold 223 Stockpile- 3	Soil		09/21/16 11:00	09/23/16 09:30	<input type="checkbox"/>

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092.04)  
 Work Order: 16091363

**QUALIFIERS, ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RFD above laboratory control limit
S	Spike Recovery outside Laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RFD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg-Kg-dry	Micrograms per Kilogram Dry Weight
mg-Kg-dry	Milligrams per Kilogram Dry Weight

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092.04)  
 Work Order: 16091363

**Case Narrative**

Samples for the above noted Work Order were received on 09/23/16. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

**Volatile Organics:**  
 No deviations or anomalies were noted.

**Extractable Organics:**  
 No deviations or anomalies were noted.

**Wet Chemistry:**  
 No deviations or anomalies were noted.

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092.04)  
 Sample ID: Manifold 223 Stockpile- 1  
 Collection Date: 09/21/16 10:50 AM

Work Order: 16091363  
 Lab ID: 16091363-01  
 Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
DRO (C10-C28)	150		0.69	7.0	mg/Kg-dry	1	09/29/16 10:32
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Benzene	U		12	55	µg/Kg-dry	1	09/27/16 02:58
Ethylbenzene	U		13	55	µg/Kg-dry	1	09/27/16 02:58
m,p-Xylene	U		24	110	µg/Kg-dry	1	09/27/16 02:58
o-Xylene	U		18	55	µg/Kg-dry	1	09/27/16 02:58
Toluene	U		18	55	µg/Kg-dry	1	09/27/16 02:58
Xylenes, Total	U		42	160	µg/Kg-dry	1	09/27/16 02:58
Surr: 1,2-Dichloroethane-d4	95.3			70-130	%REC	1	09/27/16 02:58
Surr: 4-Bromofluorobenzene	93.4			70-130	%REC	1	09/27/16 02:58
Surr: Dibromofluoromethane	90.8			70-130	%REC	1	09/27/16 02:58
Surr: Toluene-d8	93.8			70-130	%REC	1	09/27/16 02:58
<b>MOISTURE</b>							
Moisture	29		0.025	0.050	% of sample	1	09/23/16 19:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Sep-16

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092.04)  
 Sample ID: Manifold 223 Stockpile- 2  
 Collection Date: 09/21/16 10:55 AM

Work Order: 16091363  
 Lab ID: 16091363-02  
 Matrix: SOIL

Analytes	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
DRO (C10-C28)	100		0.74	7.5	mg/Kg-dry	1	09/29/16 11:01
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Benzene	U		13	59	µg/Kg-dry	1	09/27/16 03:22
Ethylbenzene	U		14	59	µg/Kg-dry	1	09/27/16 03:22
m,p-Xylene	U		26	120	µg/Kg-dry	1	09/27/16 03:22
o-Xylene	U		19	59	µg/Kg-dry	1	09/27/16 03:22
Toluene	U		20	59	µg/Kg-dry	1	09/27/16 03:22
Xylenes, Total	U		46	180	µg/Kg-dry	1	09/27/16 03:22
Surr: 1,2-Dichloroethane-d4	93.2			70-130	%REC	1	09/27/16 03:22
Surr: 4-Bromofluorobenzene	92.4			70-130	%REC	1	09/27/16 03:22
Surr: Dibromofluoromethane	93.4			70-130	%REC	1	09/27/16 03:22
Surr: Toluene-d8	94.0			70-130	%REC	1	09/27/16 03:22
<b>MOISTURE</b>							
Moisture	32		0.025	0.050	% of sample	1	09/23/16 19:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Sep-16

Client: Barr Engineering Company  
 Project: Enbridge Manifold 223 (49161092.04)  
 Sample ID: Manifold 223 Stockpile- 3  
 Collection Date: 09/21/16 11:00 AM

Work Order: 16091363  
 Lab ID: 16091363-03  
 Matrix: SOIL

Analytes	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
DRO (C10-C28)	170		0.63	6.3	mg/Kg-dry	1	09/29/16 11:29
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Benzene	U		14	62	µg/Kg-dry	1	09/27/16 03:46
Ethylbenzene	U		15	62	µg/Kg-dry	1	09/27/16 03:46
m,p-Xylene	U		28	120	µg/Kg-dry	1	09/27/16 03:46
o-Xylene	U		20	62	µg/Kg-dry	1	09/27/16 03:46
Toluene	U		21	62	µg/Kg-dry	1	09/27/16 03:46
Xylenes, Total	U		48	190	µg/Kg-dry	1	09/27/16 03:46
Surr: 1,2-Dichloroethane-d4	93.6			70-130	%REC	1	09/27/16 03:46
Surr: 4-Bromofluorobenzene	92.1			70-130	%REC	1	09/27/16 03:46
Surr: Dibromofluoromethane	92.2			70-130	%REC	1	09/27/16 03:46
Surr: Toluene-d8	94.8			70-130	%REC	1	09/27/16 03:46
<b>MOISTURE</b>							
Moisture	35		0.025	0.050	% of sample	1	09/23/16 19:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Sep-16

Client: Barr Engineering Company  
 Work Order: 16091363  
 Project: Enbridge Manifold 223 (49161092.04)

QC BATCH REPORT

Batch ID: 92054	Instrument ID GC8	Method: PUBL-SW-141
<b>MBLK</b> Sample ID: DBLKS1-92054-92054 Units: mg/Kg Analysis Date: 09/29/16 10:03 AM		
Client ID:	Run ID: GC8_160929A	SeqNo: 4055512 Prep Date: 09/28/16 DF: 1
Analyte	Result	MDL PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual
DRO (C10-C28)	U	0.5 5.0 0 82.2 70-120 0
<b>LCS</b> Sample ID: DLCS81-92054-92054 Units: mg/Kg Analysis Date: 09/29/16 09:34 AM		
Client ID:	Run ID: GC8_160929A	SeqNo: 4055511 Prep Date: 09/28/16 DF: 1
Analyte	Result	MDL PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual
DRO (C10-C28)	8.22	0.5 5.0 10 0 82.2 70-120 0
<b>LCSB</b> Sample ID: DLCS891-92054-92054 Units: mg/Kg Analysis Date: 09/29/16 11:58 AM		
Client ID:	Run ID: GC8_160929A	SeqNo: 4055516 Prep Date: 09/28/16 DF: 1
Analyte	Result	MDL PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual
DRO (C10-C28)	9.156	0.5 5.0 10 0 91.6 70-120 8.22 10.8 20

The following samples were analyzed in this batch:

16091363-01B	16091363-02B	16091363-03B
--------------	--------------	--------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Client: Barr Engineering Company  
 Work Order: 16091363  
 Project: Enbridge Manifold 223 (49161092.04)

Batch ID: 91836	Instrument ID VM87	Method: SW8260B
<b>MBLK</b> Sample ID: MBLK-91836-91836 Units: µg/Kg-dry Analysis Date: 09/23/16 10:36 AM		
Client ID:	Run ID: VM87_160923A	SeqNo: 4043821 Prep Date: 09/23/16 DF: 1
Analyte	Result	MDL PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual
Benzene	U	6.8 30 0 106 70-130 0
Ethylbenzene	U	7 30 0 109 75-125 0
m,p-Xylene	U	13 60 0 109 80-125 0
o-Xylene	U	9.7 30 0 108 75-125 0
Toluene	U	9.9 30 0 108 70-125 0
Xylenes, Total	U	23 90 3000 0 108 75-125 0
Surr: 1,2-Dichloroethane-d4	1061	0 0 1000 0 106 70-130 0
Surr: 4-Bromofluorobenzene	1062	0 0 1000 0 100 70-130 0
Surr: Dibromofluoromethane	899.5	0 0 1000 0 90 70-130 0
Surr: Toluene-d8	995.5	0 0 1000 0 99.6 70-130 0
<b>LCS</b> Sample ID: LCS-91836-91836 Units: µg/Kg-dry Analysis Date: 09/23/16 09:27 AM		
Client ID:	Run ID: VM87_160923A	SeqNo: 4043820 Prep Date: 09/23/16 DF: 1
Analyte	Result	MDL PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual
Benzene	1061	6.8 30 1000 0 106 75-125 0
Ethylbenzene	1094	7 30 1000 0 109 75-125 0
m,p-Xylene	2172	13 60 2000 0 109 80-125 0
o-Xylene	1078	9.7 30 1000 0 108 75-125 0
Toluene	1078	9.9 30 1000 0 108 70-125 0
Xylenes, Total	3249	23 90 3000 0 108 75-125 0
Surr: 1,2-Dichloroethane-d4	1057	0 0 1000 0 106 70-130 0
Surr: 4-Bromofluorobenzene	1028	0 0 1000 0 103 70-130 0
Surr: Dibromofluoromethane	1022	0 0 1000 0 102 70-130 0
Surr: Toluene-d8	1011	0 0 1000 0 101 70-130 0
<b>MS</b> Sample ID: 16091245-06A MS Units: µg/Kg-dry Analysis Date: 09/23/16 06:54 PM		
Client ID:	Run ID: VM87_160923A	SeqNo: 4044233 Prep Date: 09/23/16 DF: 1
Analyte	Result	MDL PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual
Benzene	1194	8.8 39 1299 0 92 75-125 0
Ethylbenzene	1203	9.1 39 1299 0 92.6 75-125 0
m,p-Xylene	2376	18 78 2568 0 91.4 80-125 0
o-Xylene	1209	13 39 1299 0 93.1 75-125 0
Toluene	1193	13 39 1299 0 91.8 70-125 0
Xylenes, Total	3585	30 120 3897 0 92 75-125 0
Surr: 1,2-Dichloroethane-d4	1300	0 0 1299 0 107 70-130 0
Surr: 4-Bromofluorobenzene	1307	0 0 1299 0 101 70-130 0
Surr: Dibromofluoromethane	1224	0 0 1299 0 94.2 70-130 0
Surr: Toluene-d8	1300	0 0 1299 0 100 70-130 0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Client: Barr Engineering Company  
 Work Order: 16091363  
 Project: Enbridge Manifold 223 (49161092.04)

**QC BATCH REPORT**

Batch ID: 91836 Instrument ID: VM97 Method: SW8260B

MSD	Sample ID: 16091245-06A MSD	Units: µg/Kg-dry	Analysis Date: 09/23/16 07:17 PM								
Client ID:	Run ID: VM97_160923A	SeqNo: 4044234	Prep Date: 09/23/16 DF: 1								
Analyte	Result	MDL	POL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1253	8.8	39	1299	0	80.4	75-125	1194	4.78	30	
Ethylbenzene	1303	9.1	39	1299	0	100	75-125	1203	7.93	30	
m,p-Xylene	2552	18	78	2598	0	99.2	80-125	2376	7.14	30	
o-Xylene	1288	13	39	1299	0	99.2	75-125	1209	6.34	30	
Toluene	1304	13	39	1299	0	100	70-125	1193	8.89	30	
Xylenes, Total	3840	30	120	3697	0	98.6	75-125	3585	6.87	30	
Surr: 1,2-Dichloroethane-df	1359	0	0	1299	0	105	70-130	1390	2.22	30	
Surr: 4-Bromofluorobenzene	1305	0	0	1299	0	101	70-130	1307	0.647	30	
Surr: Dibromofluoromethane	1232	0	0	1299	0	118	70-130	1224	0.635	30	
Surr: Toluene-d8	1314	0	0	1299	0	101	70-130	1300	1.09	30	

The following samples were analyzed in this batch: 16091363-01A 16091363-02A 16091363-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company  
 Work Order: 16091363  
 Project: Enbridge Manifold 223 (49161092.04)

**QC BATCH REPORT**

Batch ID: R196465 Instrument ID: MOIST Method: SW3550C

MBLK	Sample ID: WBLK9-R196465	Units: % of sample	Analysis Date: 09/23/16 07:00 PM								
Client ID:	Run ID: MOIST_160923E	SeqNo: 4044522	Prep Date: DF: 1								
Analyte	Result	MDL	POL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.025	0.050								

Client ID: LCS Sample ID: LCS-R196465

Client ID:	Run ID: MOIST_160923E	SeqNo: 4044522	Prep Date: DF: 1								
Analyte	Result	MDL	POL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.025	0.050	100	0	100	89.5-100.5	0			

DUP Sample ID: 16091144-02A DUP

Client ID:	Run ID: MOIST_160923E	SeqNo: 4044509	Prep Date: DF: 1								
Analyte	Result	MDL	POL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	14.74	0.025	0.050	0	0	0		14.74	0	20	

DUP Sample ID: 1609985-04A DUP

Client ID:	Run ID: MOIST_160923E	SeqNo: 4044520	Prep Date: DF: 1								
Analyte	Result	MDL	POL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	19.49	0.025	0.050	0	0	0		19.53	0.205	20	

The following samples were analyzed in this batch: 16091363-01C 16091363-02C 16091363-03C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Barr Engineering Co. Chain of Custody**

Sample Disposition State:  OK  MD  EY   AW  H  M  O  P

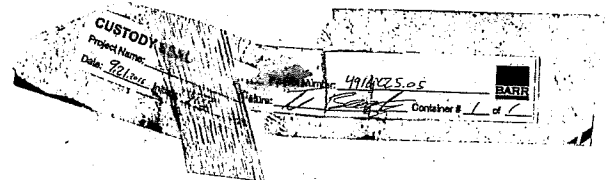
Analysis Requested:  Water  Soil

CCO Number: 52794

Matrix Code:  GWT = Groundwater  A = None  SW = Surface Water  B = H2O  WW = Waste Water  C = H2O2  DW = Drinking Water  D = H2SO4  S = Soil/Sediment  E = NaOH  SO = Sediment  F = NaOH  O = Other  G = H2SO4  H = Na2S2O8  I = Acetic Acid  J = HCl  K = 2% Acetone  L = Other

Location	Start	Stop	Sample Depth	Collection Date	Collection Time	Mark Code	SPK	MDL	POL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1. Manifold 223 Stackpile-1				09/23/16	1050	S	9										
2. Manifold 223 Stackpile-2					1055	S											
3. Manifold 223 Stackpile-3					1100	S											

Reported by: JEE Date: 9/23/16  
 Barr Proj. Manager: JEE Date: 9/23/16  
 Barr OQ Manager: JET Date: 9/23/16



ORIGIN: DLHA (218) 522-7187  
 TRISTAN REISTER  
 BARR ENGINEERING  
 625 SOUTH LAKE AVENUE  
 SUITE 200  
 DULUTH, MN 55802  
 UNITED STATES US

SHIP DATE: 21 SEP 16  
 ACTWGT: 17.30 LB  
 CAC: 2347 (16.83) 7790  
 DMS: 16 (12.1) N  
 BILL BENDER

TO HOLLAND LABORATORY ALS  
 HOLLAND LABORATORY ALS  
 3352 428TH AVE

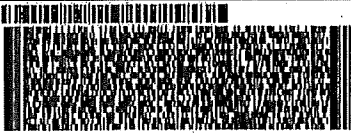
HOLLAND MI 49424

(616) 399-8070

REP: 49161226.05 100.002

PO:

DEPT: LEN

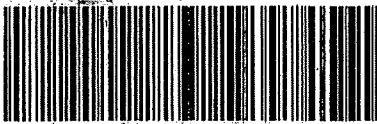


THU - 22 SEP 10:30A  
 PRIORITY OVERNIGHT

TRM 0201 7772 8411 9293

XX HLMA

49424  
 MR-US GRR



ALS Group USA, Corp

Sample Receipt Checklist

Client Name: BARRENG-MH  
 Work Order: 16091363

Date/Time Received: 23-Sep-16 09:30  
 Received by: MBB

Checklist completed by: *Megan Brantlett*  
 Signature

23-Sep-16 Date Reviewed by: *Tom Beamish*  
 Signature

23-Sep-16 Date

Matrices: <b>SL</b>			
Carrier name: <b>FedEx</b>			
Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottles?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp/Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	10.2/10.2		SRZ
Cooler(s)/IG(s):			
Date/Time sample(s) sent to storage:	9/23/2016 12:10:21 PM		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:			
Login Notes:			

Client Contacted: **yes** Date Contacted: **23-Sep-16** Person Contacted: **Ryan Erickson, Jim Taraldson**  
 Contacted By: **Tom Beamish** Regarding: **Sample/cooler receipt temperature**

Comments:

Corrective Action:



2626 Courtland Street  
 Duluth, MN 55806-1694  
 phone 218.722.3336  
 fax 218.727.7471  
 www.wlssd.com

Western Lake Superior Sanitary District

November 9, 2016

Alex Smith, Environmental Analyst II  
 Enbridge  
 1320 Grand Avenue  
 Superior, WI 54880

Re: WLSSD Discharge Approval (Enbridge Superior Terminal Manifold 211 (PROJECT))

Dear Mr. Smith:

Based on the analytical information provided on **11/8/2016**, the WLSSD approves the discharge of **approximately 2,000 gallons of water from Enbridge Superior Terminal Manifold 211 PROJECT** provided there is no visual sign of the petroleum oil, grease or other petroleum related products. This contaminated water is to be disposed of at the WLSSD's main treatment facility, which is located at 2626 Courtland in Duluth.

This is a one time only approval for the waste described. It does not release **Enbridge** from any conditions/regulations set forth by the MPCA and/or any other agency that regulates the waste being discharged. In addition, this approval does not release **Enbridge or any consultant/contractor** involved from any subsequent liabilities associated with conducting this discharge.

Disposal during a significant rainstorm may be denied because of high flows. A copy of this letter of approval is to accompany each load and is to be disposed of and given to the process control operator. Please attempt to discharge at our facility between 7:00 a.m. and 5:00 p.m. If you are unable to discharge at that time please call the process control operator (218) 722-3336 ext. 301 with your estimated time of arrival.

If there are any questions, please contact me at (218) 740-4814.

Sincerely,

*Julie Macor*

Julie Macor  
 Chemist



08-Nov-2016

Ryan Erickson  
 Barr Engineering Company  
 4300 Market Pointe Drive  
 Suite 200  
 Minneapolis, MN 55435

Re: **Manifold 211 (49161092.04)**

Work Order: **1611407**

Dear Ryan,

ALS Environmental received 2 samples on 05-Nov-2016 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 12.

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

Sincerely,

*Tom Beamish*

Electronically approved by: Tom Beamish

Tom Beamish  
 Client Services Coordinator



Certificate No: WI-399084510

Report of Laboratory Analysis

ADDRESS: 1320 GRAND AVE, SUPERIOR, WI 54880-1694 | PHONE: (218) 722-3336 | FAX: (218) 727-7471  
 ALS GROUP USA, BARR ENGINEERING COMPANY, 4300 MARKET POINTE DRIVE, SUITE 200, MINNEAPOLIS, MN 55435

www.alsglobal.com

Client: Barr Engineering Company  
 Project: Manifold 211 (49161092.04)  
 Work Order: 1611407

**Work Order Sample Summary**

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1611407-01	Man 211-GW-1	Water		11/04/16 13:30	11/05/16 09:30	<input type="checkbox"/>
1611407-02	Trip Blank	Water		11/04/16 13:30	11/05/16 09:30	<input type="checkbox"/>

Client: Barr Engineering Company  
 Project: Manifold 211 (49161092.04)  
 Work Order: 1611407

**QUALIFIERS,  
ACRONYMS, UNITS**

Qualifier	Description
A	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
a	Not offered for accumulation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RFD above laboratory control limit
S	Splice Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see FQL)
MDLX	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
FQL	Practical Quantitation Limit
RFD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

Client: Barr Engineering Company  
 Project: Manifold 211 (49161092.04)  
 Work Order: 1611407

**Case Narrative**

Samples for the above noted Work Order were received on 11/05/16. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

**Volatile Organics:**  
 No deviations or anomalies were noted.

**Extractable Organics:**  
 No deviations or anomalies were noted.

Client: Barr Engineering Company  
 Project: Manifold 211 (49161092.04)  
 Sample ID: Man 211-GW-1  
 Collection Date: 11/04/16 01:30 PM

Work Order: 1611407  
 Lab ID: 1611407-01  
 Matrix: WATER

Analytes	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
DRO (C10-C28)	0.38		0.018	0.11	mg/L	1	11/08/16 12:42
			Method: PUBL-SW-141			Prop: PUBL-SW-141 / 11/07/16	Analyst: IT
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Benzene	U		0.30	1.0	µg/L	1	11/08/16 02:37
Ethylbenzene	U		0.40	1.0	µg/L	1	11/08/16 02:37
m,p-Xylene	U		0.98	2.0	µg/L	1	11/08/16 02:37
o-Xylene	U		0.35	1.0	µg/L	1	11/08/16 02:37
Toluene	U		0.37	1.0	µg/L	1	11/08/16 02:37
Xylenes, Total	U		1.3	3.0	µg/L	1	11/08/16 02:37
Surr: 1,2-Dichloroethane-d4	107			75-120	%REC	1	11/08/16 02:37
Surr: 4-Bromofluorobenzene	98.7			80-110	%REC	1	11/08/16 02:37
Surr: Dibromofluoromethane	103			85-115	%REC	1	11/08/16 02:37
Surr: Toluene-d8	99.4			85-110	%REC	1	11/08/16 02:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 08-Nov-16

Client: Barr Engineering Company  
 Project: Manifold 211 (49161092.04)  
 Sample ID: Trip Blank  
 Collection Date: 11/04/16 01:30 PM

Work Order: 1611407  
 Lab ID: 1611407-02  
 Matrix: WATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: SW8260B			Analyst: EMR	
Benzene	U		0.30	1.0	µg/L	1	11/07/16 23:51
Ethylbenzene	U		0.40	1.0	µg/L	1	11/07/16 23:51
m,p-Xylene	U		0.98	2.0	µg/L	1	11/07/16 23:51
o-Xylene	U		0.35	1.0	µg/L	1	11/07/16 23:51
Toluene	U		0.37	1.0	µg/L	1	11/07/16 23:51
Xylenes, Total	U		1.3	3.0	µg/L	1	11/07/16 23:51
Surr: 1,2-Dichloroethane-d4	105		75-120	%REC		1	11/07/16 23:51
Surr: 4-Bromofluorobenzene	98.8		80-110	%REC		1	11/07/16 23:51
Surr: Dibromofluoromethane	103		85-115	%REC		1	11/07/16 23:51
Surr: Toluene-d8	98.4		85-110	%REC		1	11/07/16 23:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 08-Nov-16

Client: Barr Engineering Company  
 Work Order: 1611407  
 Project: Manifold 211 (49161092.04)

QC BATCH REPORT

Batch ID: 94126	Instrument ID GC8	Method: PUBL-SW-141									
MBLK	Sample ID: DBLKW1-94126-94126	Units: mg/L	Analysis Date: 11/08/16 12:12 PM								
Client ID:	Run ID: GC8_161108A	SeqNo: 4140359	Prep Date: 11/07/16 DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	0.03458	0.017	0.10	0.10	0	93	75-115	0			J
LCS	Sample ID: DLCSW1-94126-94126	Units: mg/L	Analysis Date: 11/08/16 11:43 AM								
Client ID:	Run ID: GC8_161108A	SeqNo: 4140358	Prep Date: 11/07/16 DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	0.092	0.017	0.10	0.1	0	93	75-115	0			J
LCS	Sample ID: DLCSW1-94126-94126	Units: mg/L	Analysis Date: 11/08/16 01:11 PM								
Client ID:	Run ID: GC8_161108A	SeqNo: 4140361	Prep Date: 11/07/16 DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	0.101	0.017	0.10	0.1	0	101	75-115	0.093	8.28	20	

The following samples were analyzed in this batch: 1611407-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company  
 Work Order: 1611407  
 Project: Manifold 211 (49161092.04)

QC BATCH REPORT

Batch ID: R200065A	Instrument ID VMS7	Method: SW8260B									
MBLK	Sample ID: VBLKW2-161107-R200065A	Units: µg/L	Analysis Date: 11/07/16 11:30 PM								
Client ID:	Run ID: VMS7_161107B	SeqNo: 4139611	Prep Date: DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U		0.3	1.0							
Ethylbenzene	U		0.4	1.0							
m,p-Xylene	U		0.98	2.0							
o-Xylene	U		0.35	1.0							
Toluene	U		0.37	1.0							
Xylenes, Total	U		1.3	3.0							
Surr: 1,2-Dichloroethane-d4	21.14	0	0	20	0	104	75-120	0			
Surr: 4-Bromofluorobenzene	19.05	0	0	20	0	99.8	80-110	0			
Surr: Dibromofluoromethane	20.34	0	0	20	0	102	85-115	0			
Surr: Toluene-d8	20.12	0	0	20	0	101	85-110	0			

Batch ID: R200065A	Instrument ID VMS7	Method: SW8260B									
LCS	Sample ID: VLCSW2-161107-R200065A	Units: µg/L	Analysis Date: 11/07/16 10:48 PM								
Client ID:	Run ID: VMS7_161107B	SeqNo: 4139610	Prep Date: DF: 1								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.52	0.3	1.0	20	0	108	85-125	0			
Ethylbenzene	21.58	0.4	1.0	20	0	108	85-125	0			
m,p-Xylene	43.96	0.98	2.0	40	0	110	75-130	0			
o-Xylene	21.38	0.35	1.0	20	0	107	80-125	0			
Toluene	21.16	0.37	1.0	20	0	106	85-125	0			
Xylenes, Total	65.34	1.3	3.0	60	0	109	80-126	0			
Surr: 1,2-Dichloroethane-d4	21.05	0	0	20	0	105	75-120	0			
Surr: 4-Bromofluorobenzene	20.65	0	0	20	0	103	80-110	0			
Surr: Dibromofluoromethane	21.03	0	0	20	0	105	85-115	0			
Surr: Toluene-d8	19.9	0	0	20	0	99.5	85-110	0			

Batch ID: R200065A	Instrument ID VMS7	Method: SW8260B									
MS	Sample ID: 1611181-02A MS	Units: µg/L	Analysis Date: 11/08/16 06:46 AM								
Client ID:	Run ID: VMS7_161107B	SeqNo: 4139627	Prep Date: DF: 5								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	103	1.5	5.0	100	0	103	85-125	0			
Ethylbenzene	101.4	2	5.0	100	0	101	85-125	0			
m,p-Xylene	205.8	4.9	10	200	0	103	75-130	0			
o-Xylene	99.85	1.8	5.0	100	0	99.8	80-125	0			
Toluene	101.9	1.8	5.0	100	0	102	85-125	0			
Xylenes, Total	305.7	6.6	15	300	0	102	80-126	0			
Surr: 1,2-Dichloroethane-d4	107.4	0	0	100	0	107	75-120	0			
Surr: 4-Bromofluorobenzene	102	0	0	100	0	102	80-110	0			
Surr: Dibromofluoromethane	106.6	0	0	100	0	107	85-115	0			
Surr: Toluene-d8	100.6	0	0	100	0	101	85-110	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company  
 Work Order: 1611407  
 Project: Manifold 211 (49161092.04)

QC BATCH REPORT

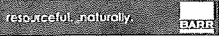
Batch ID: R200065A	Instrument ID VMS7	Method: SW8260B									
MSD	Sample ID: 1611181-02A MSD	Units: µg/L	Analysis Date: 11/08/16 07:07 AM								
Client ID:	Run ID: VMS7_161107B	SeqNo: 4139628	Prep Date: DF: 5								
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	96.85	1.5	5.0	100	0	96.8	85-125	103	6.2	30	
Ethylbenzene	95.9	2	5.0	100	0	95.9	85-125	101.4	5.58	30	
m,p-Xylene	192	4.9	10	200	0	96	75-130	205.8	6.96	30	
o-Xylene	93.45	1.8	5.0	100	0	93.4	80-125	99.85	6.62	30	
Toluene	94.25	1.8	5.0	100	0	94.2	85-125	101.9	7.8	30	
Xylenes, Total	285.4	6.6	15	300	0	95.2	80-126	305.7	6.85	30	
Surr: 1,2-Dichloroethane-d4	106	0	0	100	0	104	75-120	107.4	1.36	30	
Surr: 4-Bromofluorobenzene	102.3	0	0	100	0	103	80-110	102	1.27	30	
Surr: Dibromofluoromethane	104.6	0	0	100	0	105	85-115	106.6	1.89	30	
Surr: Toluene-d8	98.35	0	0	100	0	98.4	85-110	100.6	2.29	30	

The following samples were analyzed in this batch: 1611407-01B 1611407-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Ryan E. Erickson, PG  
Geologist  
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cell: 612.418.0166  
[re Erickson@barr.com](mailto:re Erickson@barr.com)  
[www.barr.com](http://www.barr.com)



**From:** Ryan E. Erickson  
**Sent:** Wednesday, November 16, 2016 1:14 PM  
**To:** 'Julie Macor' <[Julie.Macor@wlssd.com](mailto:Julie.Macor@wlssd.com)>  
**Cc:** Alex Smith <[alex.smith@enbridge.com](mailto:alex.smith@enbridge.com)>  
**Subject:** RE: FW: Superior Terminal Manifold 211

Julie,  
There will likely be one more small load. The 30,000 gallon estimate was a rough number given the challenges of estimating the volume of excavations and surrounding fill.

Thanks for checking in and we will send the volume of the final load to you when we get it.

Ryan E. Erickson, PG  
Geologist  
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fax: 218.529.8202  
cell: 612.418.0166  
[re Erickson@barr.com](mailto:re Erickson@barr.com)  
[www.barr.com](http://www.barr.com)



**From:** Julie Macor [<mailto:Julie.Macor@wlssd.com>]  
**Sent:** Wednesday, November 16, 2016 1:06 PM  
**To:** Ryan E. Erickson <[RErickson@barr.com](mailto:RErickson@barr.com)>  
**Subject:** RE: FW: Superior Terminal Manifold 211

Thank You – I'm assuming, more to come based on your last estimate of additional volumes beyond the original 2,000 gallons approved? If so, kindly provide volume data with each load.  
Julie

**From:** Ryan E. Erickson [<mailto:RErickson@barr.com>]  
**Sent:** Wednesday, November 16, 2016 12:29 PM  
**To:** Julie Macor <[Julie.Macor@wlssd.com](mailto:Julie.Macor@wlssd.com)>  
**Cc:** Alex Smith <[alex.smith@enbridge.com](mailto:alex.smith@enbridge.com)>  
**Subject:** FW: FW: Superior Terminal Manifold 211

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Julie Macor  
WLSSD

--  
Ross Soukkala  
Four Star Construction Inc.  
Terminal Supervisor  
Ph: 218-393-8965  
[ross@fourstarconstruction.us](mailto:ross@fourstarconstruction.us)  
[www.fourstarconstruction.us](http://www.fourstarconstruction.us)

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Julie,

The disposal volumes are below. Please let me know if you have any questions.

Load 1: 6,000 gal.

Load 2: 6,000 gal.

Load 3: 4,500 gal.

Ryan E. Erickson, PG  
Geologist  
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[www.barr.com](http://www.barr.com)



On 11/16/2016 10:50 AM, Ryan E. Erickson wrote:

Ross,  
The water disposal volumes were not listed on the WLSSD Bill of Ladings. They need this information. Can you send that to me and make sure it is documented on the form in the future?

Thanks,

Ryan E. Erickson, PG  
Geologist  
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cell: 612.418.0166  
[re Erickson@barr.com](mailto:re Erickson@barr.com)  
[www.barr.com](http://www.barr.com)



**From:** Julie Macor [<mailto:Julie.Macor@wlssd.com>]  
**Sent:** Wednesday, November 16, 2016 10:48 AM  
**To:** Ryan E. Erickson <[RErickson@barr.com](mailto:RErickson@barr.com)>  
**Cc:** Alex Smith [[alex.smith@enbridge.com](mailto:alex.smith@enbridge.com)] <[alex.smith@enbridge.com](mailto:alex.smith@enbridge.com)>  
**Subject:** Superior Terminal Manifold 211

Ryan and Alex;  
I just picked up the first couple manifests from the hauled wastewater noted in the Subject line. Jeff Foster Trucking is transporting the waste, and no volume is noted. I do need the volume with each load.

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