

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

Historical Release Site Info: <i>Enbridge Energy – Office Excavation</i>		
Release Name and Description	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.	
	WDNR SERTS Spill ID #	NA
	WDNR BRRTS #	0216558988
	Release Date	6/4/2012
	WDNR Closure Date	9/4/2012
Previous Report / Memorandum Names, Consultant, Date	Superior Terminal Office Electrical Rack Excavation - Historical Crude Oil Impacts, Barr Engineering, January 2014.	
GIS Registry Update included?	Not Applicable	

Historical Release Documentation provided in Attachment A.

Updated Project Info: Manifold 211/223 Excavation Area			
Project Name and Description	<p>In the fall of 2016, additional infrastructure maintenance work was completed on Manifold 211 and 223 infrastructure; which, is approximately 70 feet to the southeast of the 2012 Terminal office building electrical rack excavations (Figures 1 and 2; Attachment A). Evidence of hydrocarbon contamination (rainbow sheen, trace product) was identified within the Manifold excavations. Enbridge assessed the pipeline infrastructure and did not identify an active release; therefore it was inferred to be historical contamination.</p> <p>This Technical Memorandum Addendum provides documentation of the Manifold 211 and 223 excavation response activities and is being submitted as an update to the <i>Office Excavation</i> BRRTS site.</p>		
	<p>SERTS / BRRTS # (if applicable)</p> <p>No new number has been issued for the site.</p>		
Date Historical Contamination was Encountered	September 1, 2016	Date Work Completed	November, 2016
WTM Coordinates of Current Activity	X: 362518.6950	Y: 692599.8000	
Description of Remedial Actions, Site Assessment, and Historical Site Correlation	<p>Hydrocarbon-contaminated soil and groundwater were encountered within the Manifold 211 and 223 infrastructure excavations (Photos 1 through 6; Figure 2; Attachment B). Contamination was initially identified by contractors when a hydrocarbon sheen was observed on water within the excavations. Based on the observed impacts, all soil and water removed from the excavations was characterized and disposed of at approved offsite facilities, as described below.</p> <p>The final combined excavations were approximately 50 feet wide by 75 feet long by 8 feet deep. Soil in the final excavation sidewalls and bottoms was field-screened, where accessible. Organic vapor headspace detections and other evidence of hydrocarbon contamination were documented on field sampling and screening logs (Attachment B). Soil with evidence of hydrocarbon contamination (headspace detections above 10 ppm, petroleum odor, rainbow sheen, trace amount of product) was only identified in the western sidewall of the Manifold 211 excavation at 5.5 feet below ground surface near an abandoned and cut, historical small diameter pipe that was encountered in the excavation. Analytical sample <i>Manifold 223-S-1</i> was collected from the Manifold 211 excavation from near impacted soil and was submitted to ALS Environmental Laboratory for analysis of petroleum volatile organic compounds plus naphthalene. All analyte concentrations were below laboratory detection limits (Attachment C) and did not exceed WDNR Industrial Residual Contaminant Levels (RCLs).</p>		

	<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>Waste Management Summary</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>Discussion / Conclusion</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> BRRTS 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>

To: Alex Smith, Enbridge Energy
Subject: Superior Terminal Historical Contamination: Terminal Office Historical Impacts
Date: December 28, 2016
Page: 4

Attachments:

Site Photos

Figure 1

Site Location

Figure 2

Site Layout

Attachment A

Historical Release Documentation

Attachment B

Field Sampling and Screening Logs

Attachment C

Excavation Sample Laboratory Report

Attachment D

Waste Disposal Documentation

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

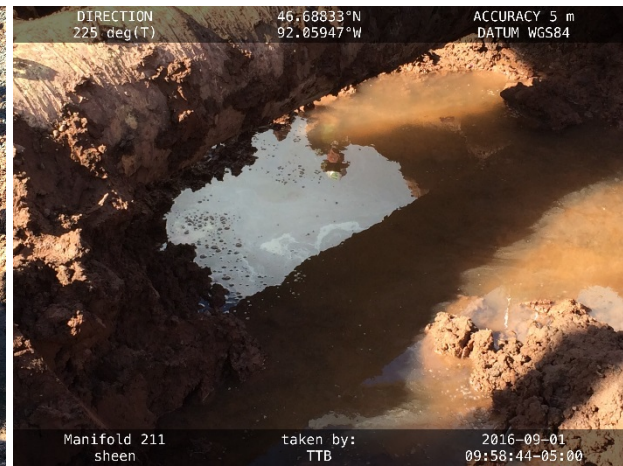


Photo 4

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



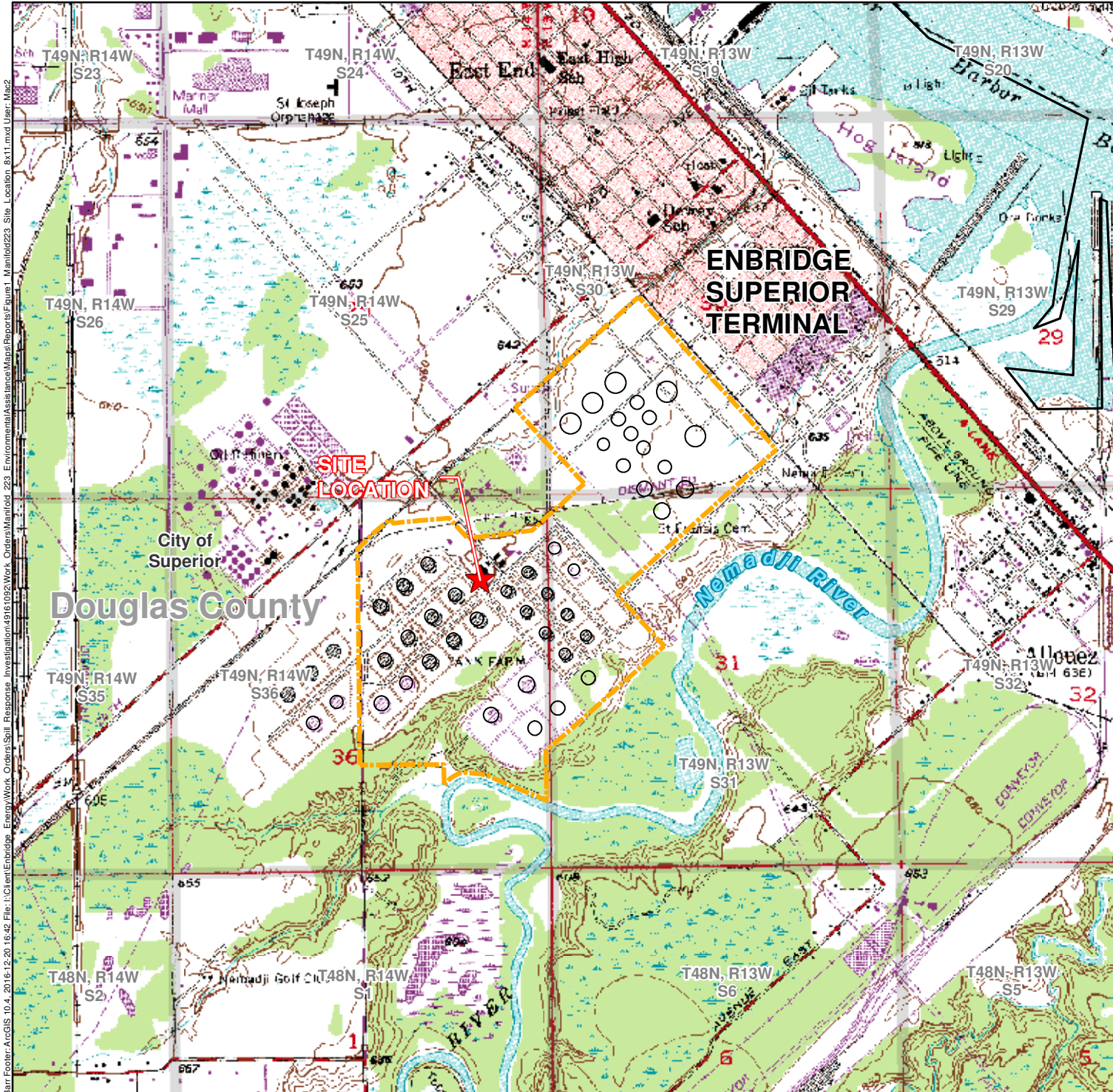
Photo 5



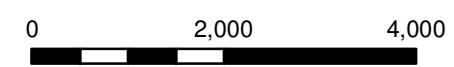
Photo 6

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



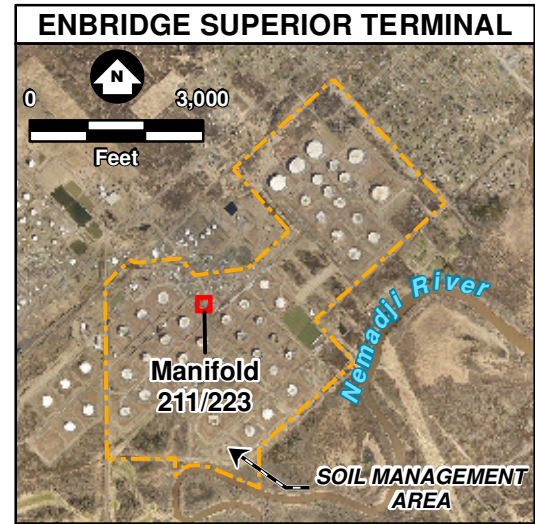
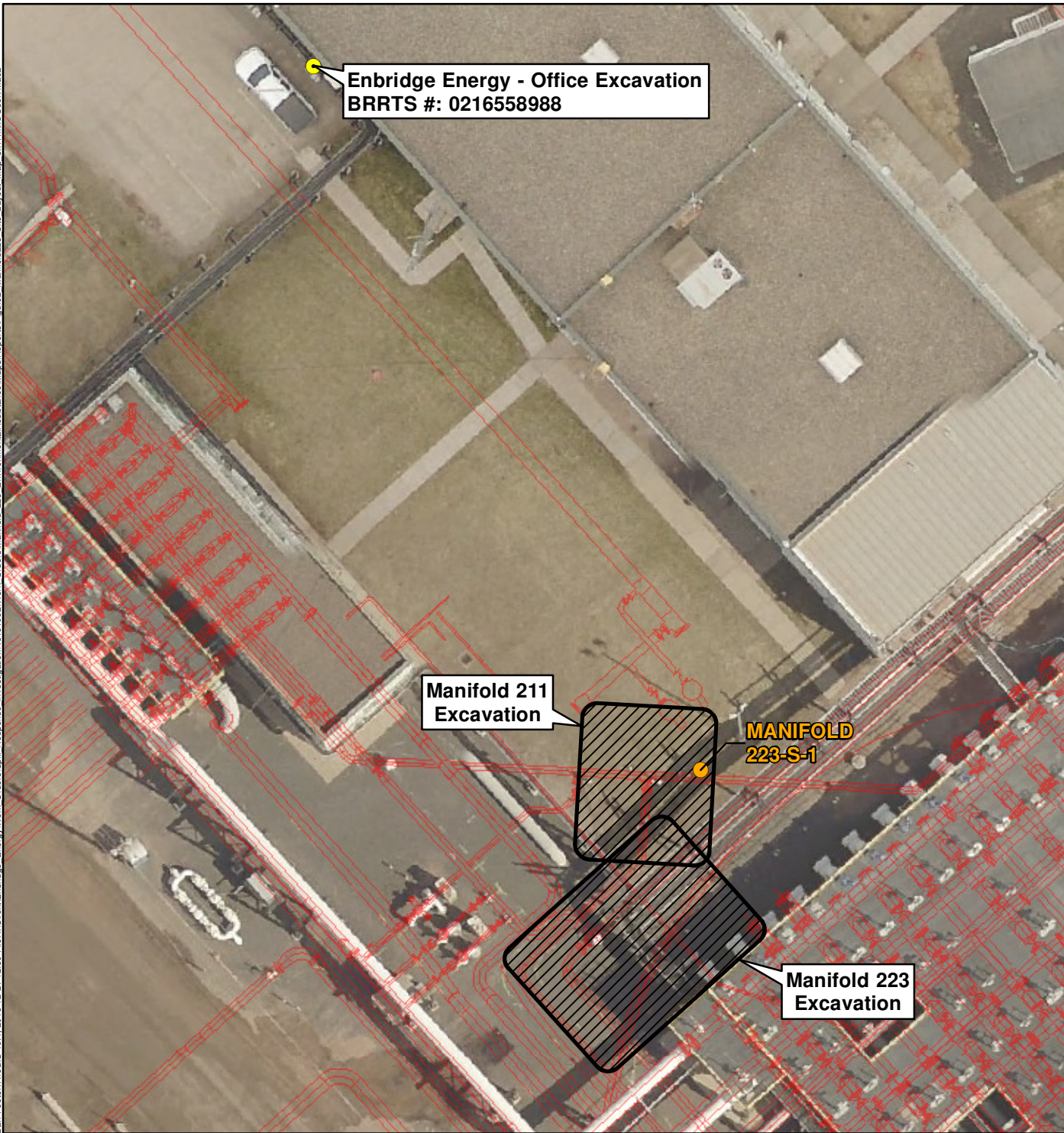
Feet
1 Inch = 2,000 Feet

Figure 1

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



Barr Footer: ArcGIS 10.4, 2016-12-20 16:42 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161092\Work_Orders\Manifold_223_EnvironmentalAssistance\Map\Reports\Figure1_Manifold223_Site_Location_8x11.mxd User: Mac2



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

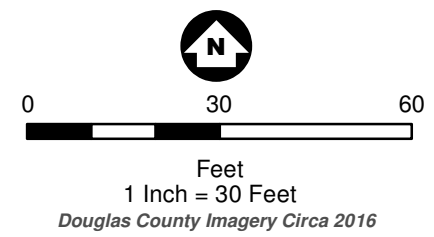


Figure 2
SITE LAYOUT
MANIFOLD 211/223 EXCAVATION
SUPERIOR TERMINAL
 Enbridge Energy, L.P.
 Superior, Wisconsin



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
ER Preparedness Coordinator
Environmental Assistant



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.

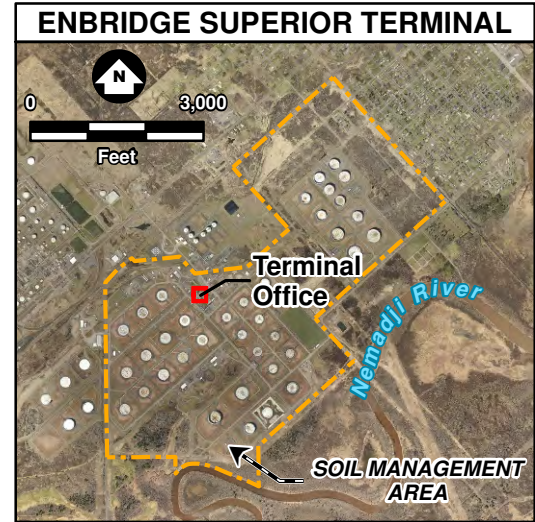
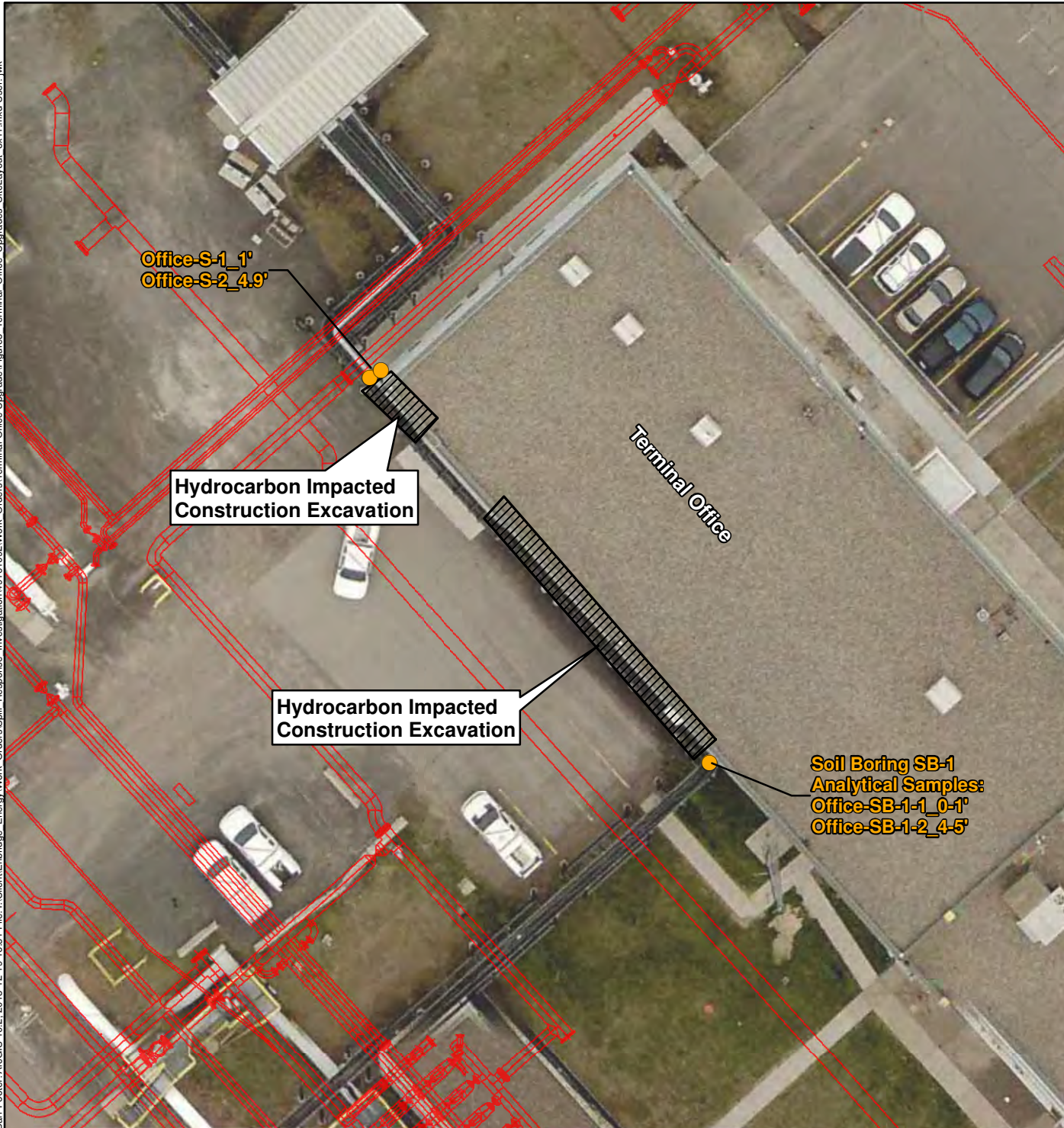
Sincerely,
Enbridge Energy

A handwritten signature in blue ink that reads 'Karl F. Beaster'.

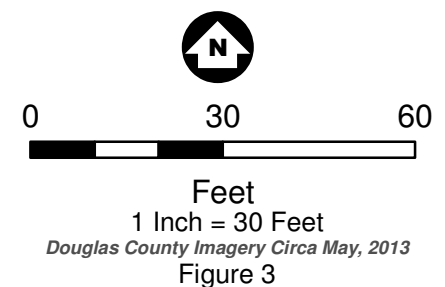
Karl F. Beaster, P.G.
Environmental Analyst

Enclosure

cc: Ryan Erickson, Barr Engineering



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



SITE LAYOUT MAP
TERMINAL OFFICE UPGRADE
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			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																	
Groundwater RCL		Bold		1.3793 TR	1.3793 TR	0.0051	0.785	0.5536	1.97 XYL				196.7442		0.47	0.48		
Industrial Direct Contact RCL	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
Location	Date	Depth (ft)																
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).

**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
Groundwater RCL	0.0725		44.4089	7.4074		0.3294		27.2362				
Industrial Direct Contact RCL	<u>211</u>	<u>0.211</u>	22000	22000	2.11	26	115	16500	<u>0</u>	1.0	<u>1E-05</u>	<u>Pass</u>
Location	Date	Depth (ft)										
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	2.94	<u>0.257</u>	7.01	0.599	0.787	0.0803	4	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).

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

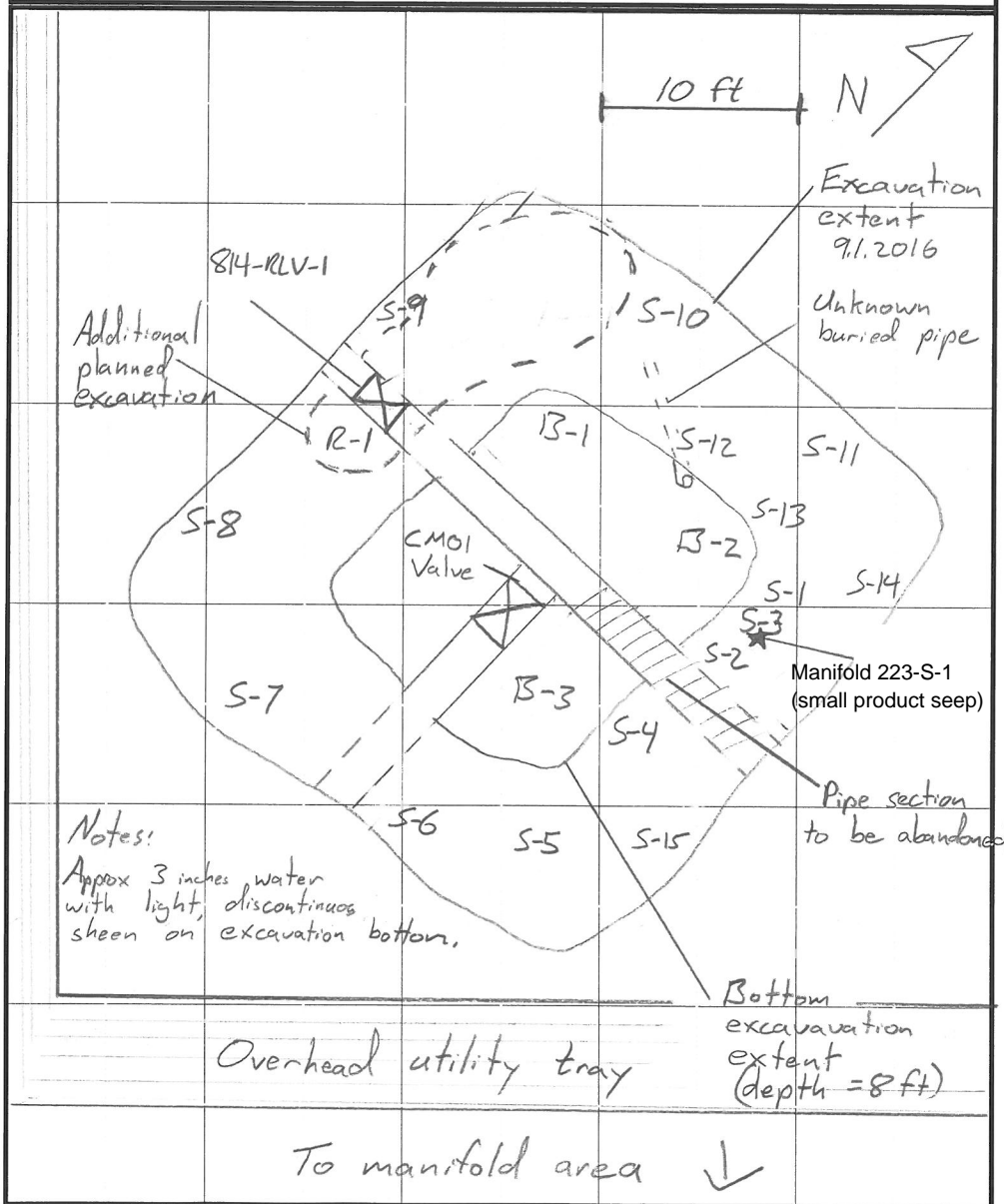
Equipment: Photoionization detector with 11.7 eV bulb

	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	



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

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



Attachment C

Excavation Sample Laboratory Report



09-Sep-2016

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

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,

A handwritten signature in black ink, appearing to read "Tom Beamish".

Electronically approved by: Tom Beamish

Tom Beamish
Client Services Coordinator



Certificate No: WI: 399084510

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

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

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
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"/>

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

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	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	RPD 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.

<u>Acronym</u>	<u>Description</u>
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
RPD	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

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

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
VOLATILE ORGANIC COMPOUNDS			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	99.4			70-130	%REC	1	09/03/16 03:53
Surr: 4-Bromofluorobenzene	106			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
MOISTURE			Method: SW3550C				Analyst: EDL
Moisture	25		0.025	0.050	% of sample	1	09/06/16 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
VOLATILE ORGANIC COMPOUNDS			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.

Client: Barr Engineering Company

QC BATCH REPORT

Work Order: 1609091

Project: Enbridge Manifold 223 (49161092 003 004)

Batch ID: 90921

Instrument ID VMS5

Method: SW8260B

MBLK		Sample ID: MBLK-90921-90921				Units: µg/Kg-dry			Analysis Date: 09/06/16 01:31 PM		
Client ID:		Run ID: VMS5_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								
<i>Surr: 1,2-Dichloroethane-d4</i>	928.5	0	0	1000	0	92.8	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	955	0	0	1000	0	95.5	70-130	0			
<i>Surr: Dibromofluoromethane</i>	988	0	0	1000	0	98.8	70-130	0			
<i>Surr: Toluene-d8</i>	961	0	0	1000	0	96.1	70-130	0			

LCS		Sample ID: LCS-90921-90921				Units: µg/Kg-dry			Analysis Date: 09/06/16 11:39 AM		
Client ID:		Run ID: VMS5_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	3316	23	90	3000	0	111	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	916.5	0	0	1000	0	91.6	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	989	0	0	1000	0	98.9	70-130	0			
<i>Surr: Dibromofluoromethane</i>	952	0	0	1000	0	95.2	70-130	0			
<i>Surr: Toluene-d8</i>	983	0	0	1000	0	98.3	70-130	0			

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

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

QC BATCH REPORT

Batch ID: **90921** Instrument ID **VMS5** Method: **SW8260B**

MS		Sample ID: 1609036-06A MS				Units: $\mu\text{g/Kg-dry}$		Analysis Date: 09/03/16 10:16 AM			
Client ID:		Run ID: VMS6_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	160	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	97.6	70-125	0			
Xylenes, Total	5128	38	150	4895	0	105	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	1564	0	0	1632	0	95.8	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	1686	0	0	1632	0	103	70-130	0			
<i>Surr: Dibromofluoromethane</i>	1539	0	0	1632	0	94.3	70-130	0			
<i>Surr: Toluene-d8</i>	1543	0	0	1632	0	94.6	70-130	0			

MSD		Sample ID: 1609036-06A MSD				Units: $\mu\text{g/Kg-dry}$		Analysis Date: 09/03/16 10:42 AM			
Client ID:		Run ID: VMS6_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	3.59	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	160	1632	119.7	80.3	40-140	1423	0.458	30	
o-Xylene	1646	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	4895	0	101	75-125	5128	3.38	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	1543	0	0	1632	0	94.6	70-130	1564	1.31	30	
<i>Surr: 4-Bromofluorobenzene</i>	1684	0	0	1632	0	103	70-130	1686	0.145	30	
<i>Surr: Dibromofluoromethane</i>	1543	0	0	1632	0	94.6	70-130	1539	0.265	30	
<i>Surr: Toluene-d8</i>	1563	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.

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

QC BATCH REPORT

Batch ID: **R195257** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R195257				Units: % of sample		Analysis Date: 09/06/16 05:34 PM			
Client ID:		Run ID: MOIST_160906B				SeqNo: 4014412		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.025	0.050								

LCS		Sample ID: LCS-R195257				Units: % of sample		Analysis Date: 09/06/16 05:34 PM			
Client ID:		Run ID: MOIST_160906B				SeqNo: 4014411		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.025	0.050	100	0	100	99.5-100.5	0			

DUP		Sample ID: 1609053-13A DUP				Units: % of sample		Analysis Date: 09/06/16 05:34 PM			
Client ID:		Run ID: MOIST_160906B				SeqNo: 4014388		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	14.33	0.025	0.050	0	0	0		15.06	4.97	20	

DUP		Sample ID: 1609091-01B DUP				Units: % of sample		Analysis Date: 09/06/16 05:34 PM			
Client ID: Manifold 223-S-1_5.5-6.0		Run ID: MOIST_160906B				SeqNo: 4014393		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	25.33	0.025	0.050	0	0	0		24.71	2.48	20	

The following samples were analyzed in this batch:

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

ORIGIN ID:DLHA (216) 788-6369
JENNA SUNNARBORG
BARR ENGINEERING
325 S LAKE AVE
SUITE 700
DULUTH, MN 55802
UNITED STATES US

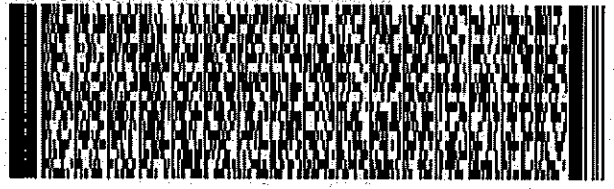
SHIP DATE: 01SEP16
ACTWGT: 11.20 LB
CAD: 82478167NET3700
BILL SENDER

TO: ALS ENVIRONMENTAL
ALS ENVIRONMENTAL
3352 128TH AVE

HOLLAND MI 49424

(616) 738-7319 REF:49161092003004
INV. DEPT:
PO:MS4

544.H1A06314EB



FRI - 02 SEP 10:30A
PRIORITY OVERNIGHT

TRK# 7771 3778 6884
0201

XX HLMA

49424 MI-US GRR



92 003004BARR
of 1 container #

After printing
1. Use the Print
2. Fold the print
3. Place label in

Warning: Use of
additional billing c
Use of this system
be responsible fo
unless you declar
Service Guide an
attorney's fees, c
authorized declar
precious metals,
FedEx Service G

ie to print your label to your laser or inkjet printer.
horizontal line.
d affix it to your shipment so that the barcode portion of the label can be read and scanned.

inal label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in
the cancellation of your FedEx account number.
in agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not
ess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation,
pay an additional charge, document your actual loss, and file a timely claim. Limitations found in the current FedEx
recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit,
rms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the
ny shipment exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry,
vents and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current

CUSTODY SEAL

Project Name: _____
Signature: *[Signature]*
Date: 9/1/2016 Initials: HTS

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,



VONCO V, LLC
Vice President



Vonco V Waste Management Campus
100 West Gary Street
Duluth, MN 55808
Permit: SW 536

16-131-I SUP Terminal Manifold 223

Date	Ticket	Customer	Truck	Material	Tons
10/04/2016	280557	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	16.18
10/04/2016	280558	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	16.16
10/04/2016	280566	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	16.65
10/04/2016	280567	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	17.76
10/04/2016	280589	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	20.45
10/04/2016	280590	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	18.98
10/04/2016	280609	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	22.20
10/04/2016	280621	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	20.12
10/05/2016	280646	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	20.73
10/05/2016	280651	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	24.54
10/05/2016	280669	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	22.58
10/05/2016	280681	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	22.24
10/05/2016	280697	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	21.56
10/05/2016	280719	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	22.52
10/05/2016	280733	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	22.44
10/05/2016	280754	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	21.22
10/05/2016	280772	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	22.16
10/06/2016	280807	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	18.70
10/06/2016	280808	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	19.35
10/06/2016	280819	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	22.80
10/06/2016	280820	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	24.56
10/06/2016	280829	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	16.20
10/06/2016	280831	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	21.10
10/06/2016	280839	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	18.09
10/06/2016	280840	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	19.24
10/06/2016	280967	001342 - Enbridge Pipelines LLC	T53690W	Contaminated Soil Tons	21.19
10/06/2016	280968	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	17.63
10/11/2016	280976	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	13.31
10/11/2016	280985	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	17.73
10/11/2016	280990	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	13.77
10/11/2016	281001	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	12.88
10/11/2016	281011	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	16.74
10/12/2016	281051	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	14.03
10/12/2016	281067	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	12.26
10/12/2016	281076	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	9.15
				Total Tons	657.22
				Total Loads	35

VONCO V, LLC.

Industrial Waste Profile Sheet

PROFILE# _____

Designated Facility: Vonco V, LLC.

Permit #536

A. Generator, Waste Site Location

Name Enbridge Energy Superior Terminal
Site Address 2800 E 21st St
City, State, Zip Superior, WI, 54880
Contact Alex Smith
Phone 715-398-4795
Fax 832-325-5511
County Douglas

B. Billing

Name Enbridge Energy
Site Address 1100 Louisiana Ave, Ste 3300
City, State, Zip Houston, TX, 77002
Contact Alex Smith
Phone 715-398-4795
Fax 832-325-5511

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 One time
Physical State Solid (soil) Color Reddish brown Free Liquids no
Flash Point (°F) N/A 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 9/21/2016 Sample I.D. Manifold 223 Stockpile-1, 2, 3

F. Generator Certifications

1. This waste is not a hazardous waste as defined in Minnesota Rules Chapter 7045 or 40 CFR 261.
2. This waste does not contain regulated quantities of PCBs.
3. This waste does not contain regulated quantities of herbicides or pesticides.
4. This waste does not contain infectious wastes as defined in Minnesota Rules Chapter.
5. 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  Title Environmental Analyst

Print Name Karl Beaster 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 23-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,

A handwritten signature in black ink, appearing to read "Tom Beamish".

Electronically approved by: Tom Beamish

Tom Beamish
Client Services Coordinator



Certificate No: WI: 399084510

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

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

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
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)
WorkOrder: 16091363

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	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	RPD 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.

<u>Acronym</u>	<u>Description</u>
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
RPD	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

<u>Units Reported</u>	<u>Description</u>
% 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.

ALS Group USA, Corp

Date: 30-Sep-16

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
DIESEL RANGE ORGANICS BY GC-FID			Method: PUBL-SW-141		Prep: PUBL-SW-141 / 9/28/16 Analyst: IT		
DRO (C10-C28)	150		0.69	7.0	mg/Kg-dry	1	09/29/16 10:32
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 9/23/16 Analyst: AK		
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
MOISTURE			Method: SW3550C		Analyst: LW		
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

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			Method: PUBL-SW-141		Prep: PUBL-SW-141 / 9/28/16 Analyst: IT		
DRO (C10-C28)	100		0.74	7.5	mg/Kg-dry	1	09/29/16 11:01
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Prep: SW5035 / 9/23/16 Analyst: AK		
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
MOISTURE			Method: SW3550C		Analyst: LW		
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

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
DRO (C10-C28)	170		0.63	6.3	mg/Kg-dry	1	09/29/16 11:29
							Method: PUBL-SW-141 Prep: PUBL-SW-141 / 9/28/16 Analyst: IT
VOLATILE ORGANIC COMPOUNDS							
							Method: SW8260B Prep: SW5035 / 9/23/16 Analyst: AK
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	93.8			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
MOISTURE							
							Method: SW3550C Analyst: LW
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.

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**

MBLK		Sample ID: DBLKS1-92054-92054				Units: mg/Kg		Analysis Date: 09/29/16 10:03 AM			
Client ID:		Run ID: GC8_160929A		SeqNo: 4056512		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								

LCS		Sample ID: DLCSS1-92054-92054				Units: mg/Kg		Analysis Date: 09/29/16 09:34 AM			
Client ID:		Run ID: GC8_160929A		SeqNo: 4056511		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			

LCSD		Sample ID: DLCSDS1-92054-92054				Units: mg/Kg		Analysis Date: 09/29/16 11:58 AM			
Client ID:		Run ID: GC8_160929A		SeqNo: 4056516		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
--------------	--------------	--------------

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

QC BATCH REPORT

Batch ID: 91836 Instrument ID VMS7 Method: SW8260B

MBLK		Sample ID: MBLK-91836-91836				Units: µg/Kg-dry			Analysis Date: 09/23/16 10:36 AM		
Client ID:		Run ID: VMS7_160923A				SeqNo: 4043621		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								
Ethylbenzene	U	7	30								
m,p-Xylene	U	13	60								
o-Xylene	U	9.7	30								
Toluene	U	9.9	30								
Xylenes, Total	U	23	90								
Surr: 1,2-Dichloroethane-d4	1061	0	0	1000	0	106	70-130	0			
Surr: 4-Bromofluorobenzene	1002	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			

LCS		Sample ID: LCS-91836-91836				Units: µg/Kg-dry			Analysis Date: 09/23/16 09:27 AM		
Client ID:		Run ID: VMS7_160923A				SeqNo: 4043620		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	1026	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			

MS		Sample ID: 16091245-06A MS				Units: µg/Kg-dry			Analysis Date: 09/23/16 06:54 PM		
Client ID:		Run ID: VMS7_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	2598	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	1390	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 **VMS7** Method: **SW8260B**

MSD		Sample ID: 16091245-06A MSD				Units: µg/Kg-dry		Analysis Date: 09/23/16 07:17 PM			
Client ID:		Run ID: VMS7_160923A			SeqNo: 4044234		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	1253	8.8	39	1299	0	96.4	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	98.2	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	3897	0	98.6	75-125	3585	6.87	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	1359	0	0	1299	0	105	70-130	1390	2.22	30	
<i>Surr: 4-Bromofluorobenzene</i>	1306	0	0	1299	0	101	70-130	1307	0.0497	30	
<i>Surr: Dibromofluoromethane</i>	1232	0	0	1299	0	94.8	70-130	1224	0.635	30	
<i>Surr: Toluene-d8</i>	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
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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: WBLKS-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	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.025	0.050								

LCS		Sample ID: LCS-R196465				Units: % of sample		Analysis Date: 09/23/16 07:00 PM			
Client ID:		Run ID: MOIST_160923E				SeqNo: 4044521		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.025	0.050	100	0	100	99.5-100.5	0			

DUP		Sample ID: 16091144-02A DUP				Units: % of sample		Analysis Date: 09/23/16 07:00 PM			
Client ID:		Run ID: MOIST_160923E				SeqNo: 4044509		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	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				Units: % of sample		Analysis Date: 09/23/16 07:00 PM			
Client ID:		Run ID: MOIST_160923E				SeqNo: 4044520		Prep Date:		DF: 1	
Analyte	Result	MDL	PQL	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
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Barr Engineering Co. Chain of Custody

10091303

BARR Ann Arbor Duluth Jefferson City KS MO WI MI ND Other: MN SD Bismarck Hibbing Minneapolis

Sample Origination State:
 KS MO WI
 MI ND Other:
 MN SD

REPORT TO	INVOICE TO
Company: <u>Barr Engineering</u>	Company:
Address: <u>325 S Lake Ave</u>	Address:
Name: <u>Ryan Erickson</u>	Name:
email: <u>ree@barr.com</u>	email:
Copy to: <u>datamgt@barr.com</u>	P.O.:
Project Name: <u>Manifold 223</u>	Barr Project No: <u>49161092.04 003 009</u>

Perform MS/MSD Y/N	Total Number Of Containers	Analysis Requested		% Solids
		Water	Soil	
			BTEX DRO	

COC Number: **52794**
 COC 1 of 1

Matrix Code:
 GW = Groundwater
 SW = Surface Water
 WW = Waste Water
 DW = Drinking Water
 S = Soil/Solid
 SD = Sediment
 O = Other

Preservative Code:
 A = None
 B = HCl
 C = HNO₃
 D = H₂SO₄
 E = NaOH
 F = MeOH
 G = NaHSO₄
 H = Na₂S₂O₃
 I = Ascorbic Acid
 J = NH₄Cl
 K = Zn Acetate
 O = Other

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y/N	Total Number Of Containers	Analysis Requested	% Solids	Preservative Code	Field Filtered Y/N
	Start	Stop	Unit (m./ft. or in.)									
1. <u>Manifold 223 Stockpile - 1</u>				<u>09/21/2016</u>	<u>1050</u>	<u>S</u>		<u>4</u>				<u>BTEX, DRO, % solids</u>
2. <u>Manifold 223 Stockpile - 2</u>				↓	<u>1055</u>	<u>S</u>		<u>1</u>				
3. <u>Manifold 223 Stockpile - 3</u>				↓	<u>1100</u>	<u>S</u>		<u>1</u>				
4.												
5.												
6.												
7.												
8.												
9.												
10.												

BARR USE ONLY		Relinquished by: <u>T. Beck</u>	On Ice? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Date: <u>9.21.2016</u>	Time: <u>1430</u>	Received by:	Date:	Time:
Sampled by: <u>TTR</u>	Relinquished by: <u>REE</u>	On Ice? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N	Date:	Time:	Received by: <u>MB</u>	Date: <u>9/23/16</u>	Time: <u>930</u>	
Barr Proj. Manager: <u>REE</u>	Samples Shipped VIA: <input type="checkbox"/> Courier <input type="checkbox"/> Federal Express <input type="checkbox"/> Sampler <input type="checkbox"/> Other: _____	Air Bill Number:		Requested Due Date: <input type="checkbox"/> Standard Turn Around Time <input type="checkbox"/> Rush _____ (mm/dd/yyyy)				
Barr DQ Manager: <u>JET</u>	Lab WO:	Temperature on Receipt (°C):		Custody Seal Intact? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> None				
Lab Name: <u>ALS</u>								
Lab Location: <u>Holland</u>								

HPLGSTDFORMS Chain of Custody Form 2015 RLG Rev. 06/16/15

CUSTODY

Project Name:

Date: 9/21/2016

Initials: [Signature]

Project Number:

4916/CCS.05



Signature:

[Signature]

Container #

1 of

of

1

ORIGIN ID:DLHA (218) 529-7187
TRISTAN BEASTER
BARR ENGINEERING
325 SOUTH LAKE AVENUE
SUITE 700
DULUTH, MN 55802
UNITED STATES US

SHIP DATE: 21SEP16
ACTWGT: 17.30 LB
CAD: 8247816/NET3790
DIMS: 16x12x12 IN
BILL SENDER

TO HOLLAND LABORATORY ALS
HOLLAND LABORATORY ALS
3352 128TH AVE

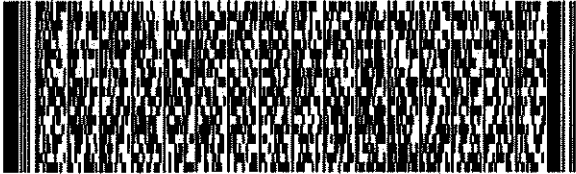
54411AC6314EB

HOLLAND MI 49424

(616) 399-0070
INV:
PO:

REF: 49161225.05 100 002

DEPT: LEN



FedEx
Express



POSTNET

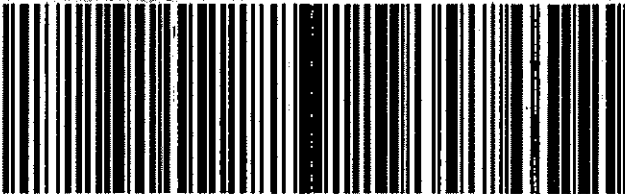
THU - 22 SEP 10:30A
PRIORITY OVERNIGHT

TRK#
0201

7772 8411 9293

XX HLMA

49424
MI-US GRR





2626 Courtland Street
Duluth, MN 55806-1894
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 to 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 you estimated time of arrival.**

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

Sincerely,

A handwritten signature in cursive script that reads "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,

A handwritten signature in black ink, appearing to read "Tom Beamish".

Electronically approved by: Tom Beamish

Tom Beamish
Client Services Coordinator



Certificate No: WI: 399084510

Report of Laboratory Analysis

ADDRESS 3352 128th Ave, Holland, MI 49424 Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental ALS Environmental logo icon.

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

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

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
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)
WorkOrder: 1611407

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	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	RPD 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.

<u>Acronym</u>	<u>Description</u>
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
RPD	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

<u>Units Reported</u>	<u>Description</u>
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.

ALS Group, USA

Date: 08-Nov-16

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

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			Method: PUBL-SW-141		Prep: PUBL-SW-141 / 11/7/16 Analyst: IT		
DRO (C10-C28)	0.38		0.018	0.11	mg/L	1	11/08/16 12:42
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B		Analyst: EMR		
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
VOLATILE ORGANIC COMPOUNDS			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		96.8		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.

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								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)	0.093	0.017	0.10	0.1	0	93	75-115	0			J

LCSD		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:

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								
<i>Surr: 1,2-Dichloroethane-d4</i>	21.14	0	0	20	0	106	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	19.96	0	0	20	0	99.8	80-110	0			
<i>Surr: Dibromofluoromethane</i>	20.34	0	0	20	0	102	85-115	0			
<i>Surr: Toluene-d8</i>	20.12	0	0	20	0	101	85-110	0			

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			
<i>Surr: 1,2-Dichloroethane-d4</i>	21.06	0	0	20	0	105	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	20.65	0	0	20	0	103	80-110	0			
<i>Surr: Dibromofluoromethane</i>	21.03	0	0	20	0	105	85-115	0			
<i>Surr: Toluene-d8</i>	19.9	0	0	20	0	99.5	85-110	0			

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			
<i>Surr: 1,2-Dichloroethane-d4</i>	107.4	0	0	100	0	107	75-120	0			
<i>Surr: 4-Bromofluorobenzene</i>	102	0	0	100	0	102	80-110	0			
<i>Surr: Dibromofluoromethane</i>	106.6	0	0	100	0	107	85-115	0			
<i>Surr: Toluene-d8</i>	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	
<i>Surr: 1,2-Dichloroethane-d4</i>	106	0	0	100	0	106	75-120	107.4	1.36	30	
<i>Surr: 4-Bromofluorobenzene</i>	103.3	0	0	100	0	103	80-110	102	1.27	30	
<i>Surr: Dibromofluoromethane</i>	104.6	0	0	100	0	105	85-115	106.6	1.89	30	
<i>Surr: Toluene-d8</i>	98.35	0	0	100	0	98.4	85-110	100.6	2.26	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.

Barr Engineering Co. Chain of Custody

1011407



- Ann Arbor
 Duluth
 Bismarck
 Hibbing
 Jefferson City
 Minneapolis

Sample Origination State:

- KS MO WI
 MI ND Other:
 MN SD

Perform MS/MSD Y/N		Total Number of Containers		Analysis Requested												% Solids							
				Water						Soil													
1	1	1	1																				
1	1	1	1																				

COC Number: **52818**
 COC 1 of 1
Matrix Code:
 GW = Groundwater
 SW = Surface Water
 WW = Waste Water
 DW = Drinking Water
 S = Soil/Solid
 SD = Sediment
 O = Other
Preservative Code:
 A = None
 B = HCl
 C = HNO₃
 D = H₂SO₄
 E = NaOH
 F = MeOH
 G = NaHSO₄
 H = Na₂S₂O₃
 I = Ascorbic Acid
 J = NH₄Cl
 K = Zn Acetate
 O = Other

REPORT TO	INVOICE TO
Company: <u>Barr Engineering</u>	Company: <u>Some</u>
Address: <u>325 S. Lake Ave, Duluth</u>	Address:
Name: <u>Ryan Erickson</u>	Name:
email: <u>erickson@barr.com</u>	email:
Copy to: <u>datamgt@barr.com / Haraldsen@barr.com</u>	Barr Project No: <u>79161092.01 003 006</u>
Project Name: <u>Momifold 211</u>	

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y/N	Total Number of Containers	Analysis Requested												% Solids		
	Start	Stop	Unit (m./ft. or in.)																				
1. <u>Mom 211-GW-1</u>				<u>11/4/16</u>	<u>13:30</u>	<u>GW</u>	<u>N</u>	<u>5</u>	<u>23</u>														
2. <u>Trip Blank</u>				<u>11/4/16</u>	<u>13:30</u>	<u>Q/C</u>		<u>-1</u>	<u>-1</u>														
3. <u>Temp Blank</u>						<u>Q/C</u>																	
4.																							
5.																							
6.																							
7.																							
8.																							
9.																							
10.																							

Preservative Code
 Field Filtered Y/N
DRO, BTEX
BTEX
ASAP TAT

BARR USE ONLY		Relinquished by: <u>[Signature]</u>	On Ice? <u>Y</u>	Date: <u>11/4/16</u>	Time: <u>16:30</u>	Received by: <u>[Signature]</u>	Date: <u>11/5/16</u>	Time: <u>930</u>
Sampled by: <u>J. Haraldsen</u>	Relinquished by: <u>[Signature]</u>	On Ice? <u>Y</u>	Date: <u>11/4/16</u>	Time: <u>16:30</u>	Received by: <u>[Signature]</u>	Date: <u>11/5/16</u>	Time: <u>930</u>	
Barr Proj. Manager: <u>R. Erickson</u>	Samples Shipped VIA: <input type="checkbox"/> Courier <input checked="" type="checkbox"/> Federal Express <input type="checkbox"/> Sampler <input type="checkbox"/> Other:	Air Bill Number: <u>48-C</u>		Requested Due Date: <input type="checkbox"/> Standard Turn Around Time <input checked="" type="checkbox"/> Rush <u>ASAP</u> (mm/dd/yyyy)				
Barr DQ Manager: <u>J. Haraldsen</u>	Lab Name: <u>BIS Environmental</u>	Lab WO: <u>Holland, MI</u>		Temperature on Receipt (°C):		Custody Seal Intact? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> None		

TBS

Ex Package
Express US Airbill

FedEx
Tracking
Number

8102 7171 8311

Form
ID No.

0200

Recipient's Copy

11/11/16

Shipper's Name: Jim Taraldsen Phone: 718-481-3020

Company: Barr Engineering

Address: 325 S. Lake Ave. Suite 700
Duluth, MN ZIP: 55802-7323

Internal Billing Reference: 49161097.04 003 006

Shipper's Name: Tom Beamish Phone: 616 399-6070

Company: ALS Environmental

Address: 3352 178th Ave.
Holland, ME ZIP: 49424

Hold Saturday
FedEx location address
REQUIRED. NOT available for
FedEx First Overnight.

Hold Saturday
FedEx location address
REQUIRED. Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.



81027171 8311

4 Express Package Service * To most locations.

Packages up to 150 lbs.
For packages over 50 lbs., see the
FedEx Express Priority 3D A.M.M.

Next Business Day

FedEx First Overnight
Earliest next business morning delivery to select
locations. Friday shipments will be delivered on
Monday unless Saturday Delivery is selected.

FedEx Priority Overnight
Next business morning. Friday shipments will be
delivered on Monday unless Saturday Delivery
is selected.

FedEx Standard Overnight
Next business afternoon. Saturday Delivery NOT available.

2 to 3 Business Days

FedEx 2Day A.M.
Second business morning. Saturday Delivery NOT available.

FedEx 2Day
Second business afternoon. Thursday shipments
will be delivered on Monday unless Saturday
Delivery is selected.

FedEx Express Saver
Third business day. Saturday Delivery NOT available.

5 Packaging * Designed to meet best price.

FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Packages may be left without
obtaining a signature for delivery.

Direct Signature
Someone at recipient's address
may sign for delivery.

Indirect Signature
If no one is available at recipient's
address, someone at a neighboring
address may sign for delivery. For
residential deliveries only.

Does this shipment contain dangerous goods?

No Yes (see attached
Shipper's Declaration) Yes (Shipper's Declaration
not required) Dry Ice
Dry Ice, 5 UN 1845

Restrictions apply for dangerous goods — see the current FedEx Service Guide. Cargo Aircraft Only

7 Payment Bill to:

Sender's Acct. No. in Section 1 will be billed. Recipient Third Party Credit Card Cash/Check

Total Packages: 1 Total Weight: 26 lbs. Credit Card Auth.

Your liability is limited to USD\$100 unless you declare a higher value and file the current FedEx Service Guide for details.

Rate Date 3/15 • Part 717/702 • ©2013-2016 FedEx • PRINTED IN U.S.A. MSDA 0008

FED-EXP-1901-483-2328

644

11/11/16

Sample Receipt Checklist

Client Name: **BARRENG-MN**

Date/Time Received: **05-Nov-16 09:30**

Work Order: **1611407**

Received by: **MBB**

Checklist completed by Meghan Broadbent 05-Nov-16
eSignature Date

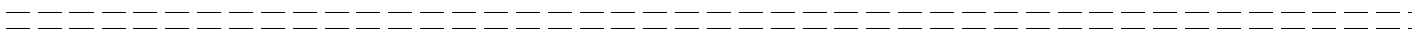
Reviewed by: Tom Bramish 07-Nov-16
eSignature Date

Matrices: water

Carrier name: FedEx

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 type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" 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/bottle?	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):	<input type="text" value="4.8/4.8"/>	<input type="text" value="SR2"/>	
Cooler(s)/Kit(s):	<input type="text"/>		
Date/Time sample(s) sent to storage:	<input type="text" value="11/5/2016 11:10:51 AM"/>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<input type="text"/>		

Login Notes:



Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

Ryan E. Erickson

From: Ryan E. Erickson
Sent: Thursday, November 17, 2016 1:21 PM
To: 'Julie Macor'
Subject: RE: FW: Superior Terminal Manifold 211

I believe that 16500 gallons/3 loads is correct. Thanks for checking.

Ryan E. Erickson, PG

Geologist
Duluth, MN office: 218.529.7112
fax: 218.529.8202
cell: 612.418.0166
rerickson@barr.com
www.barr.com

resourceful. naturally.



From: Julie Macor [mailto:Julie.Macor@wlssd.com]
Sent: Thursday, November 17, 2016 1:14 PM
To: Ryan E. Erickson <RErickson@barr.com>
Subject: RE: FW: Superior Terminal Manifold 211

Ryan;

Very Good. Just to confirm, the final volume delivered to WLSSD was 16,500 gallons (3 loads), correct? Or, were additional manifests/loads delivered after our email exchange 11/16/2016? If additional volumes were delivered and are not noted on manifests, I will need that information.

Julie

From: Ryan E. Erickson [mailto:RErickson@barr.com]
Sent: Thursday, November 17, 2016 12:55 PM
To: Julie Macor <Julie.Macor@wlssd.com>
Cc: 'Alex.Smith@enbridge.com' <Alex.Smith@enbridge.com>; 'karl.beaster@enbridge.com' <karl.beaster@enbridge.com>
Subject: RE: FW: Superior Terminal Manifold 211

Julie,

I just heard from the Manifold 211 project contractor and no additional water from that excavation will need to be managed at WLSSD this year.

However, Enbridge will be digging in a similar location next year and will likely need to manage more water with a sheen at that time. Enbridge will contact you then to discuss sampling and disposal requirements.

Thanks for your help and have a great day.

Ryan E. Erickson, PG

Geologist

Duluth, MN office: 218.529.7112

fax: 218.529.8202

cell: 612.418.0166

rerickson@barr.com

www.barr.com

resourceful. naturally.



From: Ryan E. Erickson
Sent: Wednesday, November 16, 2016 1:14 PM
To: 'Julie Macor' <Julie.Macor@wlssd.com>
Cc: 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

Duluth, MN office: 218.529.7112

fax: 218.529.8202

cell: 612.418.0166

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resourceful. naturally.



From: Julie Macor [<mailto:Julie.Macor@wlssd.com>]
Sent: Wednesday, November 16, 2016 1:06 PM
To: Ryan E. Erickson <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>
Cc: Alex.Smith@enbridge.com
Subject: FW: FW: Superior Terminal Manifold 211

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

Duluth, MN office: 218.529.7112

fax: 218.529.8202

cell: 612.418.0166

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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

Duluth, MN office: 218.529.7112

fax: 218.529.8202

cell: 612.418.0166

rerickson@barr.com

www.barr.com

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From: Julie Macor [<mailto:Julie.Macor@wlssd.com>]

Sent: Wednesday, November 16, 2016 10:48 AM

To: Ryan E. Erickson <RErickson@barr.com>

Cc: Alex Smith (alex.smith@enbridge.com) <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.

Julie Macor
WLSSD

--

Ross Soukkala
Four Star Construction Inc.
Terminal Supervisor
Ph: 218-393-8965
ross@fourstarconstruction.us
www.fourstarconstruction.us