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BARR

Technical Memorandum

To: Nick Larabel, Enbridge Energy
From: Ryan Erickson
Subject: Superior Terminal Line 6A Valve Excavation
WDNR BRRTS#: 02-16-558991 (Line 6); 02-16-560657 (Facility-wide)
Date: November 23, 2020
Project: 49161092

This memorandum summarizes the environmental response activities performed by Barr Engineering (Barr) at the request of Enbridge Energy (Enbridge) following the discovery of historical hydrocarbon impacts encountered in a Line 6A Check Valve site at the Enbridge Superior Terminal (Terminal) in Superior, Wisconsin (Figure 1).

Background

In September 2020, Enbridge contractors excavating soil for an infrastructure upgrade project encountered historical crude oil contaminated soil and water near a Line 6A valve (Photos 1 and 2; Figure 2). Enbridge personnel evaluated the site and no active release was identified. Further, based on the lack of an active release and the valve's location within an established area of potential historical contamination, as described below, Enbridge determined that the impacts were historical and associated with a 2012 response. Soil and water removed from the excavation that had evidence of hydrocarbon impacts were segregated and transported to the Terminal Soil Management Area (SMA) until offsite management was approved, as described in the *Material Management* section of this memo.

Enbridge requested Barr's assistance with the following activities:

- review the historical release information at this site,
- assess and document soil conditions in the final excavation,
- assist with the offsite management coordination of the contaminated material, and
- prepare a memorandum summarizing the response actions and the excavation conditions upon the completion of remedial activities.

The Line 6A valve and associated contamination was located within the Wisconsin Department of Natural Resources (WDNR) Bureau for Remediation and Redevelopment Tracking System (BRRTS) area of potential residual impacts for the historical *Line 6* crude oil release site (BRRTS: 02-16-558991) that was discovered in 2012. In 2019, the *Line 6* site was added to the Enbridge Superior Terminal Facility-wide Continuing Obligation Package (BRRTS#: 02-16-560657) (Barr, 2019).

Per the *Site Investigation and Response Action Plan* (SI/RAP, 2014) guidance and the conditions observed in the field, the WDNR was notified of the historical contamination and this memorandum will be submitted to the WDNR to provide a documentation about the conditions encountered. Based on the

site's location, the 2020 response actions will be referenced in the next *Line 6* Geographic Information Systems (GIS) Package Update, anticipated to be submitted in early 2021.

Field Activities

Evidence of historical crude oil contamination (e.g., stained soil, sheen, historical crude oil) was encountered near the L6A valve on September 3, 2020 (Photos 1 and 2). Enbridge removed the contaminated material, segregated it for disposal, and prevented the migration of contaminated material into the larger project excavation that did not have identified contamination.

Barr was on site on September 14, 2020 to document site conditions and collect waste characterization samples. Barr returned to the site on October 1, 2020 when the excavation was completed to document soil conditions in the excavation in the area where contamination had been encountered.

Barr documented soil conditions through field screening methods that included testing soil for the presence of organic vapors using a 10.6eV photoionization detector (PID) and inspecting soil for the presence of other potential indicators of petroleum impacts such as odor, discoloration and sheen. The PID readings and physical observations were documented on the site investigation field sampling and screening log (Attachment A). Soil with headspace readings greater than 10 parts per million (ppm) or other evidence of hydrocarbon contamination (e.g., hydrocarbon odor, sheen, the presence of residual crude oil) is considered impacted. Based on field observations and field screening results, no impacted material was present in the final excavation sidewalls and analytical samples were not collected.

Barr collected analytical waste characterization sample *Line 6A Valve Stockpile-1* from the contaminated soil stockpile on September 14, 2020 and submitted it to the ALS Environmental Laboratory in Holland, Michigan for analysis of benzene, toluene, ethyl benzene and xylene (BTEX) and diesel range organics (DRO), as described in the *Material Management* section below. Waste management documents are provided in Attachment B.

Results

On September 14, 2020, Barr visually observed conditions in the excavation but did not collect soil samples for field screening or laboratory analysis from the excavation due to ongoing project work (Photos 3 and 4). No evidence of residual crude oil contamination was observed by Barr. The project inspector reported that evidence of contamination had only been identified near the removed Line 6A valve and that no evidence of contaminated soil or water was observed after the initial discovery and remediation in the larger excavation that extended to the south, southwest, and southeast.

On October 1, 2020, Barr documented soil conditions in the final excavation sidewalls and bottom (Photos 5 and 6; Figure 2; Attachment A). The excavation was approximately 50 feet long (north to south) by 40 feet wide (east to west) and up to 14 feet deep. Soil observed in this location consisted of reddish-brown clay and sand and gravel construction fill.

Barr collected ten field screening soil samples from the accessible excavation sidewalls and bottom near where the historical contamination had been observed (Attachment A). Five shallow sidewall samples were collected from a depth of 3 feet below ground surface (bgs) and five deep sidewall samples were collected at 14 feet bgs. Soil headspace readings were between 2.1 and 4.5 ppm, and no other evidence of residual hydrocarbon impacts (odor, discoloration) were identified. No analytical confirmation samples

were collected based on field observations and screening results. Water was not observed in the excavation on October 1, 2020.

Receptor Survey

No risk to direct contact receptors was identified based on field screening results and field observations and the site's location within the Enbridge Terminal. No risk to surface water receptors was identified based on the site location and the conditions identified in the excavation. The groundwater pathway at the Superior Terminal is addressed on a facility-wide basis through the established hydrogeologic performance standard approved by the WDNR that includes regular sampling of the Terminal groundwater monitoring network. The monitoring well network was last sampled in October of 2020 and will be sampled again in 2021. The nearest downgradient monitoring well is MW-24 (Figure 1), which is located approximately 1,100 feet to the east. MW-24 was last sampled on October 19, 2020 and the concentrations of benzene, toluene, ethyl benzene, and xylene (BTEX); naphthalene; and trimethylbenzene (1,2,4 and 1,3,5) were below the laboratory reporting limits (*WDNR report pending*). The nearest potential vapor receptor is the Line 6 Pumphouse which is a slab-on-grade structure approximately 80 feet northwest of the Line 6A valve. The risk of hazardous vapor accumulation is low because the building does not have a basement and has minimal human occupancy. Terminal employees are also required to wear four-gas detectors that would alert them to a potentially hazardous atmosphere.

Material Management

On September 14 ,2020, Barr collected analytical waste characterization sample *Line 6A Valve Stockpile-1* from the contaminated soil stockpile. The sample was analyzed for DRO and BTEX. The laboratory report and a waste profile application were submitted to the VONCO V landfill in Duluth, Minnesota and the soil was accepted and assigned waste profile # 20-075-I. A total of 33.98 tons of contaminated soil were hauled to the landfill on November 17, 2020. The waste profile documents, the waste characterization laboratory report, and the landfill summary report are included in Attachment B.

Conclusions

The historical crude impacts that were encountered near the Line 6A valve were within the *Line 6* crude oil release site (BRRTS: 02-16-558991) area of potential contamination and no residual impacts were identified in the final excavation. Based on this information, Barr believes that no additional investigation or remediation will be required for this project. Barr recommends that this report be added to the *Line 6* crude oil release site BRRTS file and that the project and results be noted in the next Superior Terminal Facility-Wide Continuing Obligation Package Update for BRRTS# 02-16-560657.

References

Barr, 2019. *Enbridge Superior Terminal, Facility-Wide Continuing Obligation Package, Response Activity Update, BRRTS#: 02-16-560657, ENBRIDGE ENERGY – LINE 6, BRRTS#: 02-16-558991*. Continuing Obligation package update submitted to Enbridge on July 24, 2019.

Attachments:

Figure 1	Site Location
Figure 2	Site Layout
Site Photos	1 through 6
Attachment A	Site Investigation Field Sampling and Screening Log
Attachment B	Material Management Documentation

FIGURES:

Figure 1, Site Location: The north-central side of the Enbridge Superior Terminal, the Line 6A Valve excavation (yellow pin; top left corner), and Terminal monitoring well MW-24 (blue pin; top right corner). Image from Google Earth.

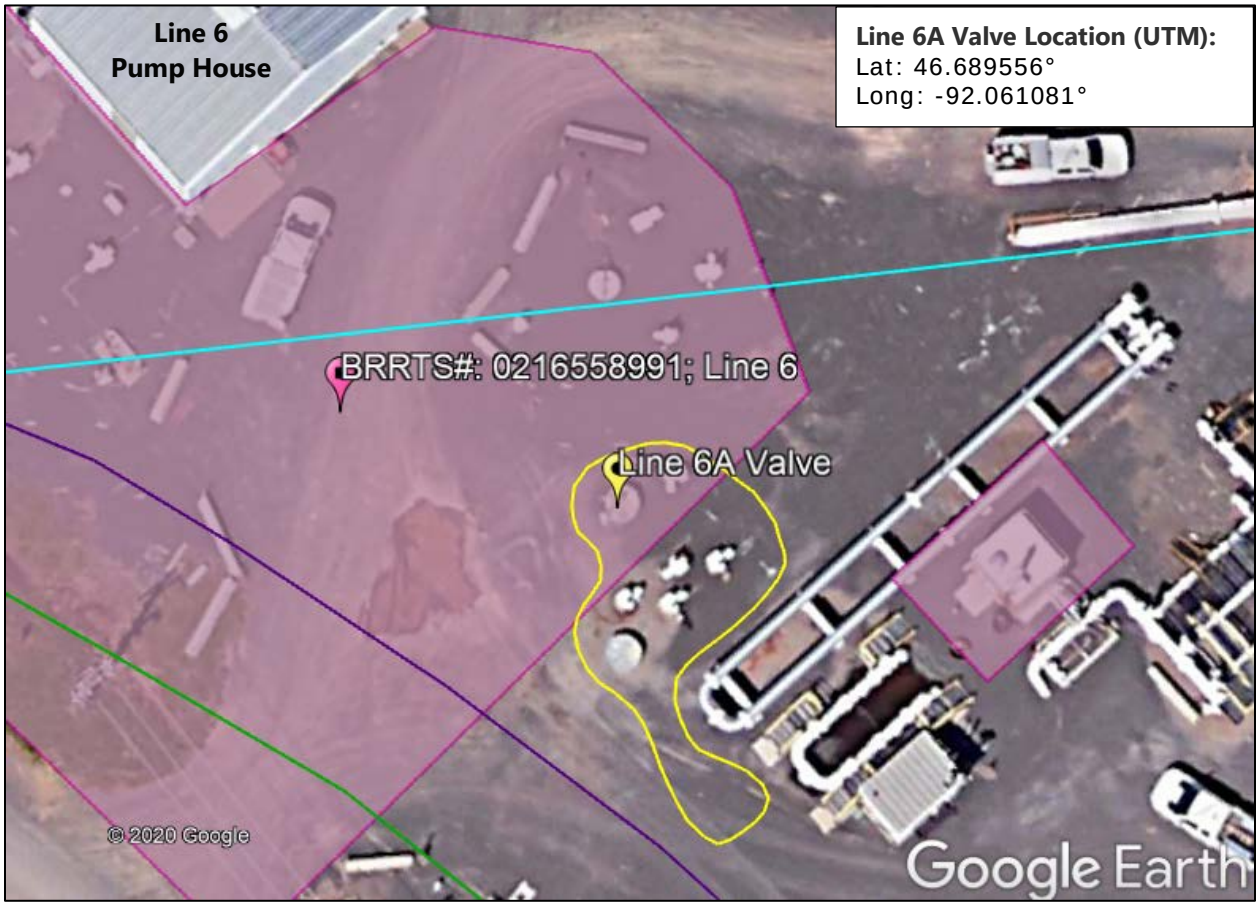


Figure 2, Site Layout: The Line 6 infrastructure improvement excavation (yellow line) and the Line 6A Valve location (yellow pin) where historical impacts were encountered. The historical impacts were located within the Line 6 area of potential residual impacts (BRRTS#: 02-16-558991), at pink polygon on left. The Line 6 site is included in the Superior Terminal Facility-wide Continuing Obligation Package (BRRTS#: 02-16-560657). The Line 6 pumphouse building is in the top left corner. Image from Google Earth.

Site Photos

Photo 1

Photo 2

Photo 1: The Terminal infrastructure excavation near the Line 6A valve. Historical crude oil was observed on the surface of the excavation water. Photo taken by the site inspector on September 3, 2020.
Photo 2: The Terminal infrastructure excavation near the removed Line 6A valve (red arrow). Historical crude oil was observed on the surface of the excavation water. Photo taken by the site inspector on September 3, 2020.

Photo 3

Photo 4

Photo 3: The former Line 6A Valve location. Contamination was not observed. Photo taken facing east on September 14, 2020.
Photo 4: The southern end of the infrastructure improvement excavation. The red arrow points to the approximate location of the removed Line 6A valve on the far end side of the excavation. The Line 6 Pumphouse is in the top right corner. Photo taken facing north on September 14, 2020.

Photo 5

Photo 6

Photo 5: The final infrastructure improvement excavation. The red arrow points to the former location of the Line 6A valve. Photo taken facing west on October 1, 2020.
Photo 6: The final infrastructure improvement excavation. The red arrow points to the former location of the Line 6A valve. Photo taken facing west on October 1, 2020.

Attachment A

Site Investigation Field Sampling and Screening Log

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* L6A Valve Response

Equipment used: PID *-Ionization detector with* 10.6 *eV lamp*

Background Headspace: 0.0 ppm

Date: 10/1/20

Sampler: CJSS

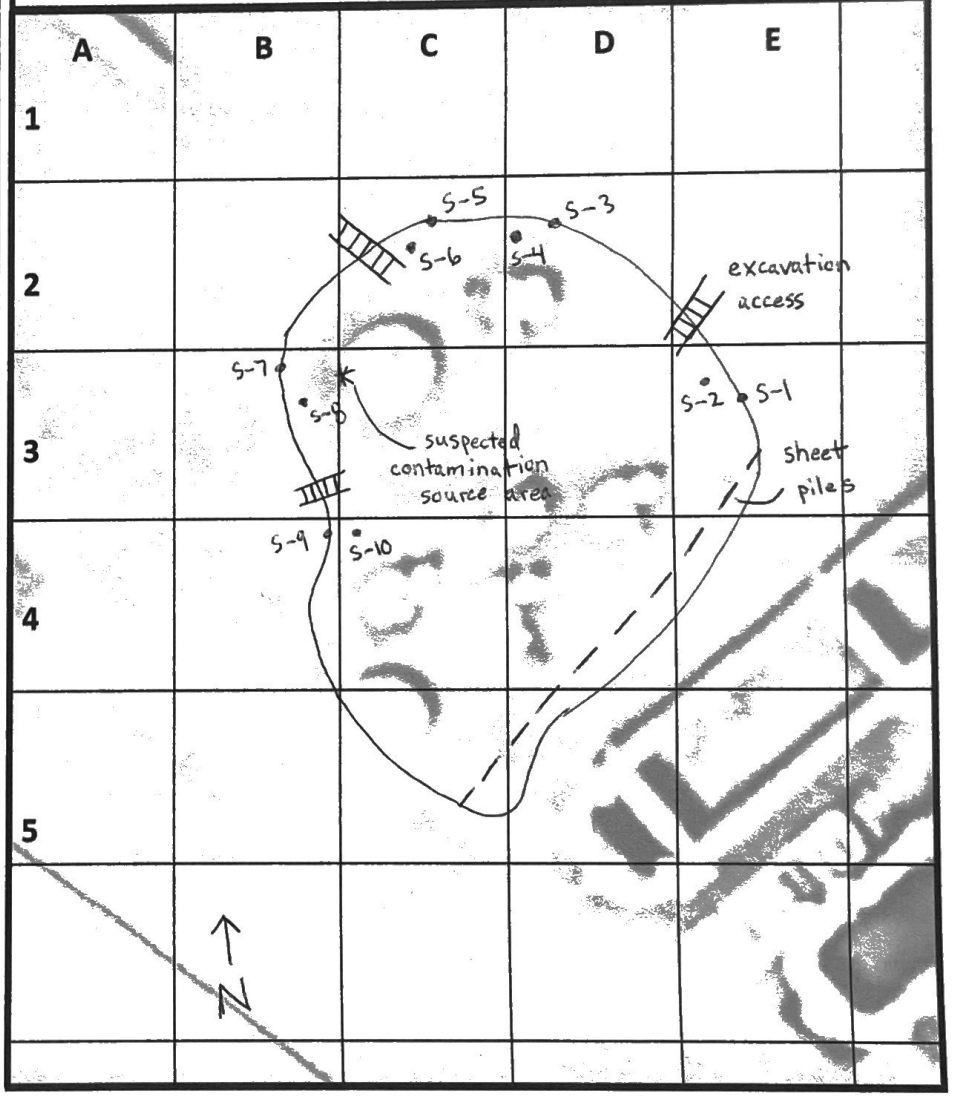
Calibration Time: 1115

Sample Nomenclature *(Location - sample type - #):* L6A Valve -

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

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: A3-NE	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
S-1	3	1200	CL	reddish brown	N / N	3.2
S-2	14	1202	CL			4.0
S-3	3	1204	CL			3.2
S-4	14	1206	CL			4.5
S-5	3	1208	CL			2.1
S-6	14	1210	CL			3.9
S-7	3	1212	CL			2.5
S-8	14	1214	CL			3.7
S-9	3	1216	CL			2.1
S-10	14	1218	CL			3.7
Samples S-2, 4, 6, 8, 10 for field screening were taken from the bottom of the excavation sidewalls ~14' deep.						
No visual evidence of residual impacts observed.						

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid = 20 FEET***



Attachment B

Material Management Documentation

VONCO V Duluth, LLC
1100 West Gary Street
Duluth, MN 55808

VONCOUSA.com
Office: 218.626.3830
Fax: 218.626.4874

September 18, 2020

Enbridge Energy
Attn: Nick Larabel
1100 Louisiana Ave, Ste 3300
Houston, TX 77002
(email only)

RE: Profile: 20-075-I: Enbridge Energy Superior Terminal – 2800 E. 21st Street, Superior, WI

Nick,

Please be advised that the above described waste material is acceptable for disposal of up to **500 cubic yards** at the Vonco V Waste Management Campus in Duluth, MN. The waste material is acceptable per the Vonco V (SW-536) Minnesota Pollution Control Agency approved 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. The term of the approval is 3 years and will expire on 9/18/2023.

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: 651-260-6107.

We look forward to working with you,

Aric Olsen
Environmental Manager

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	Nick Larabel
Phone	269-330-3872
Fax	
County	Douglas

B. Billing

Name	Enbridge Energy
Site Address	1100 Louisiana Ave, Ste 3300
City, State, Zip	Houston, TX 77002
Contact	Nick Larabel
Phone	269-330-3872
Fax	

C. Description of Waste

Name of Waste: Line 6A Valve

Process Generating Waste: Historical hydrocarbon impacted soil

Estimated Volume: 50 CY

Frequency: One time

Physical State: Solid (soil) Color: Reddish brown Free Liquids: No

Flash Point (°F): Not applicable pH: _____ Total Solids: _____

D. Other Comments

E. Sample Information

Check all that apply:

☒ Laboratory Analysis submitted ☐ Material Safety Data Sheet submitted

Laboratory Name: ALS Environmental Sample Date: 9/14/2020 Sample I.D.: Line 6A Valve Stockpile-1

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: Nick Larabel Digitally signed by Nick Larabel Date: 2020.09.18 12:50:22 -04'00' Title: Environmental Advisor

Print Name: Nick Larabel Date: 09/18/2020

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 _____

18-Sep-2020

Jim Taraldsen
Barr Engineering Company
4300 Market Pointe Drive
Suite 200
Minneapolis, MN 55435

Re: **Line 6A Valve (49161092.08 003 003)** Work Order: **20091181**

Dear Jim,

ALS Environmental received 1 sample on 15-Sep-2020 11:00 AM for the analyses presented in the following report.

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

Sample results are compliant with industry accepted practices and Quality Control 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 11.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Ehrland Bosworth

Electronically approved by: Ehrland Bosworth

Ehrland Bosworth
Project Manager

Report of Laboratory Analysis

Certificate No: WI: 399084510

ALS Group, USA

Date: 18-Sep-20

Client: Barr Engineering Company
Project: Line 6A Valve (49161092.08 003 003)
Work Order: **20091181**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
20091181-01	Line 6A Valve Stockpile-1	Soil		9/14/2020 10:35	9/15/2020 11:00	☐

Client: Barr Engineering Company
Project: Line 6A Valve (49161092.08 003 003)
WorkOrder: **20091181**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
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.

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
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

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:	Line 6A Valve (49161092.08 003 003)
Work Order:	20091181

Case Narrative

Samples for the above noted Work Order were received on 09/15/2020. 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. A copy of the laboratory's scope of accreditation is available upon request.

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

Date: *18-Sep-20*

Client: Barr Engineering Company
Project: Line 6A Valve (49161092.08 003 003)
Sample ID: Line 6A Valve Stockpile-1
Collection Date: 9/14/2020 10:35 AM

Work Order: 20091181
Lab ID: 20091181-01
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 / 9/16/20		Analyst: **JZB**
DRO (C10-C28)	**380**		**7.4**	**74**	**mg/Kg-dry**	10	9/17/2020 10:34
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **JNS**
Benzene	U		8.3	28	µg/Kg-dry	1	9/17/2020 14:59
Ethylbenzene	U		10	34	µg/Kg-dry	1	9/17/2020 14:59
m,p-Xylene	U		65	220	µg/Kg-dry	1	9/17/2020 14:59
o-Xylene	U		19	63	µg/Kg-dry	1	9/17/2020 14:59
Toluene	U		13	44	µg/Kg-dry	1	9/17/2020 14:59
Xylenes, Total	U		65	220	µg/Kg-dry	1	9/17/2020 14:59
Surr: 1,2-Dichloroethane-d4	*100*			*70-130*	*%REC*	1	9/17/2020 14:59
Surr: 4-Bromofluorobenzene	*102*			*70-130*	*%REC*	1	9/17/2020 14:59
Surr: Dibromofluoromethane	*98.0*			*70-130*	*%REC*	1	9/17/2020 14:59
Surr: Toluene-d8	*95.6*			*70-130*	*%REC*	1	9/17/2020 14:59
MOISTURE		Method: **SW3550C**					Analyst: **KTP**
Moisture	**34**		**0.10**	**0.10**	**% of sample**	1	9/17/2020 09:54

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

ALS Group, USA

Date: 18-Sep-20

Client: Barr Engineering Company

Work Order: 20091181

Project: Line 6A Valve (49161092.08 003 003)

QC BATCH REPORT

Batch ID: **164291** Instrument ID **GC8** Method: **PUBL-SW-141**

MBLK Sample ID: **DBLKS1-164291-164291** Units: **mg/Kg** Analysis Date: **9/16/2020 04:42 PM**

Client ID: Run ID: **GC8_200916C** SeqNo: **6713048** Prep Date: **9/16/2020** 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: **DLCSS1-164291-164291** Units: **mg/Kg** Analysis Date: **9/17/2020 11:13 AM**

Client ID: Run ID: **GC8_200917A** SeqNo: **6714140** Prep Date: **9/16/2020** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	7.361	0.5	5.0	10	0	73.6	70-120	0			

LCSD Sample ID: **DLCSDS1-164291-164291** Units: **mg/Kg** Analysis Date: **9/16/2020 06:01 PM**

Client ID: Run ID: **GC8_200916C** SeqNo: **6713050** Prep Date: **9/16/2020** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	8.169	0.5	5.0	10	0	81.7	70-120	7.361	10.4	20	

The following samples were analyzed in this batch: 20091181-01B

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

Client: Barr Engineering Company
Work Order: 20091181
Project: Line 6A Valve (49161092.08 003 003)

QC BATCH REPORT

Batch ID: **164335w** Instrument ID **VMS11** Method: **SW8260C**

MBLK Sample ID: **MBLK-164335-164335w** Units: **µg/Kg-dry** Analysis Date: **9/17/2020 01:30 PM**
Client ID: Run ID: **VMS11_200917A** SeqNo: **6715447** Prep Date: **9/16/2020** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.1	17								
Ethylbenzene	U	6.3	21								
m,p-Xylene	U	40	130								
o-Xylene	U	12	39								
Toluene	U	8.2	27								
Xylenes, Total	U	40	130								
Surr: 1,2-Dichloroethane-d4	*974.5*	0	0	*1000*	0	*97.4*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1024*	0	0	*1000*	0	*102*	*70-130*	0			
Surr: Dibromofluoromethane	*980.5*	0	0	*1000*	0	*98*	*70-130*	0			
Surr: Toluene-d8	*957*	0	0	*1000*	0	*95.7*	*70-130*	0			

LCS Sample ID: **LCS-164335-164335w** Units: **µg/Kg-dry** Analysis Date: **9/17/2020 12:24 PM**
Client ID: Run ID: **VMS11_200917A** SeqNo: **6715445** Prep Date: **9/16/2020** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	971	5.1	17	1000	0	97.1	75-125	0			
Ethylbenzene	957	6.3	21	1000	0	95.7	75-125	0			
m,p-Xylene	1936	40	130	2000	0	96.8	80-125	0			
o-Xylene	958	12	39	1000	0	95.8	75-125	0			
Toluene	956.5	8.2	27	1000	0	95.6	70-125	0			
Xylenes, Total	2894	40	130	3000	0	96.5	75-125	0			
Surr: 1,2-Dichloroethane-d4	*974.5*	0	0	*1000*	0	*97.4*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1028*	0	0	*1000*	0	*103*	*70-130*	0			
Surr: Dibromofluoromethane	*985.5*	0	0	*1000*	0	*98.6*	*70-130*	0			
Surr: Toluene-d8	*975*	0	0	*1000*	0	*97.5*	*70-130*	0			

The following samples were analyzed in this batch: 20091181-01A

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

Client: Barr Engineering Company
Work Order: 20091181
Project: Line 6A Valve (49161092.08 003 003)

QC BATCH REPORT

Batch ID: **R298269** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R298269** Units: **% of sample** Analysis Date: **9/17/2020 09:54 AM**
Client ID: Run ID: **MOIST_200916A** SeqNo: **6713392** 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	0.1	0.10								

LCS Sample ID: **LCS-R298269** Units: **% of sample** Analysis Date: **9/17/2020 09:54 AM**
Client ID: Run ID: **MOIST_200916A** SeqNo: **6713391** 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	0.1	0.10	100	0	100	98-102	0			

DUP Sample ID: **20090808-01C DUP** Units: **% of sample** Analysis Date: **9/17/2020 09:54 AM**
Client ID: Run ID: **MOIST_200916A** SeqNo: **6713376** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.51	0.1	0.10	0	0	0	0-0	16.87	8.4	10	

DUP Sample ID: **20090876-16A DUP** Units: **% of sample** Analysis Date: **9/17/2020 09:54 AM**
Client ID: Run ID: **MOIST_200916A** SeqNo: **6713382** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.37	0.1	0.10	0	0	0	0-0	15.91	3.45	10	

The following samples were analyzed in this batch: 20091181-01C

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

20091181

Barr Engineering Co. Chain of Custody

BARR ☐ Ann Arbor ☐ Bismarck ☐ Duluth ☐ Hibbing ☐ Jefferson City ☐ Minneapolis

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

COC Number: 53094

COC 1 of 1

REPORT TO	INVOICE TO
Company: Barr Engineering	Company:
Address: 325 S. Lake Ave, Duluth	Address: Barr Engineering
Name: Kyon Ericksen	Name: — Same —
email: rericksen@barr.com	email:
Copy to: datamgt@barr.com, JJoraldsen@Barr.com	
Project Name: Line 6A Valve	Barr Project No: 49/1092.08 003003

Location	Sample Depth Start	Stop	Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y / N	Total Number Of Containers	Analysis Requested Water	Soil: BTEX	Soil: DRO	Soil: % Solids	Preservative Code	Field Filtered Y/N
1. Line 6A Valve Stockpile-1	—	—		9/14/20	10:35	S		2		1	1	1	—	—
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														

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 = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, I = Ascorbic Acid, J = NH_4Cl, K = Zn Acetate, O = Other

BTEX, DRO, % Moisture

ASAP TAT

EB

BARR USE ONLY

Sampled by: Jim Joraldsen

Barr Proj. Manager: Kyon Ericksen

Barr DQ Manager: Jim Joraldsen

Lab Name: ALS Environmental

Lab Location: Holland - MI

Relinquished by: Jim Joraldsen — On Ice? (Y) N — Date 9/14/20 — Time 14:30

Relinquished by: — On Ice? Y N — Date — Time

Received by: — Date 9/15/20 — Time 14:00

Received by: — Date — Time

Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other:

Air Bill Number:

Lab WO: Temperature on Receipt (°C): 3.1°C IR3 Custody Seal Intact? ☐ Y ☐ N ☐ None

Requested Due Date: ☐ Standard Turn Around Time ☒ Rush ASAP TAT (mm/dd/yyyy)

Distribution - White-Original: Accompanies Shipment to Laboratory; **Yellow Copy:** Include in Field Documents; **Pink Copy:** Send to Data Management Administrators.

H:\RLG\STDFORMS\Chain Of Custody Form 2015 RLG Rev. 06/16/15

ALS Group, USA

Sample Receipt Checklist

Client Name: **BARRENG-MN** Date/Time Received: **15-Sep-20 11:00**

Work Order: **20091181** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 16-Sep-20 (Date) Reviewed by: Ehrland Bosworth (eSignature) 16-Sep-20 (Date)

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2/4.2 C	IR3	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	9/16/2020 7:29:58 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

VONCO

Vonco V Waste Management Campus
1100 West Gary Street
Duluth, MN 55808
Permit: SW 536

20-075-I Enbridge EnergySuperior Terminal Line 6A					
Date	**Ticket**	**Customer**	**Truck**	**Material**	**Tons**
11/17/2020	327004	001342 - Enbridge Pipelines LLC	R78119W	Contaminated Soil - Tons	18.44
11/17/2020	327005	001342 - Enbridge Pipelines LLC	S39858W	Contaminated Soil - Tons	15.54
				Total Tons	**33.98**
				Total Loads	**2**