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BARR

Enbridge Historical Release Technical Memorandum Addendum

To: Alex Smith, Enbridge Energy
From: Ryan Erickson
Subject: Superior Terminal Contamination: *Line 6* Historical Impacts
Date: May 24, 2017
Barr Project #: 49161092

Historical Release Site Info: *Enbridge Energy – Line 6*		
Release Name and Description	In 2012, crude oil impacted soil was encountered near a Line 6 valve during excavation activities associated with a Line 6 hydrotest at the Enbridge Superior Terminal in Superior, WI. No active release source was identified, therefore Enbridge inferred that the contamination was historical. Impacted soil was excavated, where feasible, and the condition of the soil in the final excavation sidewalls and bottom was documented through field screening and analytical sampling (Attachment A). A summary report was prepared by Barr and submitted to the WDNR in January 2014. Based on the report, the WDNR added the site to the pending Superior Terminal facility-wide ERP.	
	WDNR SERTS Spill ID #	NA
	WDNR BRRTS #	0216558991
	Discovery Date	May 8, 2012
	WDNR Closure Date	*Pending Facility-wide MOA approval*
Previous Report / Memorandum Names, Consultant, Date	Superior Terminal Line 6 Hydrotest 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: *Line 6 Trap Excavation*			
Project Name and Description	Between February and April of 2017, excavation activities associated with Line 6 pipeline trap tie-in work were completed at the Enbridge Superior Terminal (Figures 1 and 2; Attachment B). Evidence of petroleum contamination (hydrocarbon odor, rainbow sheen, trace product) was periodically identified during the excavation work. Enbridge assessed the exposed pipeline infrastructure and did not identify an active release; therefore it was inferred to be historical contamination based on the field observations and the sites proximity to historical soil contamination encountered in 2012. This Technical Memorandum Addendum provides documentation of the Line 6 Trap environmental response activities and is being submitted as an addendum to the 2012 *Line 6* BRRTS site report.		
SERTS / BRRTS # ***(if applicable)***	No new number has been issued for the site.		
Date Historical Contamination was Encountered	2/09/2017	**Date Work Completed**	Excavation complete 4/21/2017
WTM Coordinates of Current Activity	362407.89345	692739.10568	
Description of Remedial Actions, Site Assessment, and Historical Site Correlation	Soil and groundwater (material) with trace amounts of hydrocarbon contamination (hydrocarbon odor, rainbow sheen, trace product) were periodically encountered within the Line 6 Trap tie-in excavation (Figure 1; Photos 1 through 7). The material with evidence of hydrocarbon contamination was identified and segregated from clean material by the project contractors and was stockpiled on site (Photo 11) until offsite disposal could be coordinated, as described below in the *Waste Management Summary*. Based on field observations made during the excavation process by the contractor and Barr, most of the identified contaminated material was located near the impacts identified in 2012 (valve, whistle, conduit) (Photo 9; Figure 2; Attachment B). Sediment excavated from this location consisted of clay soil and sand and gravel construction fill. The groundwater elevation was approximately 3 to 4 feet below ground surface (bgs). On April 21, 2017, Barr field screened and sampled the final excavation extents (Photos 8, 9, 10; Figure 2; Attachment B) to document residual environmental impacts using the methods described in the WDNR Enbridge Superior Terminal *Site Investigation and Response Action Plan* (SI/RAP) (2014). The final excavation was approximately 150 feet long by 40 feet wide by up to 15 feet deep. Soil observed in the sidewalls consisted of fat clay fill with some sand fill around buried infrastructure		

Description of Remedial Actions, Site Assessment, and Historical Site Correlation (cont.)	and gravel fill at the ground surface. Gravel was also placed on the sloped sidewall and bottom to prevent erosion. Barr collected nine field screening soil samples (*S-1* through *S-9*) (Attachment B) from the accessible sidewalls in the area where the historical impacts had been observed. The headspace detections were all at or below 1.3 parts per million (ppm) and no other evidence of residual contamination was identified. Based on the field screening results, no confirmation analytical samples were collected. Based on the field screening results, no receptors (direct contact, groundwater, surface water, vapor) appear to be as risk. The excavation will be backfilled with clean fill upon completion of the hydrotest during the summer of 2017.
Waste Management Summary	All hydrovacuum truck slurry soil loads with any detected evidence of contamination (hydrocarbon odor, rainbow sheen, free-product) were managed as contaminated. A total of 274.25 tons of hydrocarbon contaminated soil were removed from the excavations, temporarily stockpiled in the Superior Terminal Soil Management Area, and transported to the VONCO V Landfill in Duluth, Minnesota under waste profile # 17-011-I. Soil disposal documentation is provided in Attachment C. Approximately 10,700 gallons of water with a hydrocarbon sheen were removed from the excavation and managed at the Western Lake Superior Sanitary District water treatment plant in Duluth, MN (approval received February 24, 2017). Water disposal documentation is provided in Attachment C.
Discussion / Conclusion	The 2017 Line 6 Trap excavation was located within the same area as a 2012 excavation where historical contamination was encountered. No active releases were identified in the 2012 or 2017 excavations. Soil with historical contamination was removed during 2017 excavation activities and was not identified in the final excavation extents (headspace detections < 10 ppm). Residual impacts may be present beyond the project excavation extents; however, risk of direct contact exposure is low based on the previously observed 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 monitored via a Superior Terminal facility-wide groundwater monitoring program. Risk of vapor accumulation is low because nearby buildings are built on grade, do not have basements, and facility personnel are required to wear 4-gas atmosphere monitors that would detect hazardous conditions.

Discussion / Conclusion (cont.)	Based on these conditions, Barr does not believe that additional assessment or remediation activities will be required in this location and recommends that this document be added to the original Line 6 BRRTS site file. This technical memorandum provides the required updated documentation and is considered an addendum to the pending Line 6 Report.

Attachments:

Site Photos	1 through 11
Figure 1	Site Location
Figure 2	Site Layout
Attachment A	Historical Response Documentation
Attachment B	Field Sampling and Screening Logs
Attachment C	Waste Disposal Documentation

Site Photos

Photo 1

Photo 2

Photo 1: Excavation location when hydrocarbon impacts initially encountered. Line 6 pump house visible in top right corner. Photo taken facing west on February 10, 2017.
Photo 2: Excavation extents when hydrocarbon impacts initially encountered. The contamination identified in 2012 was focused around the valve and whistle that are visible on the right side of the photo. Product is visible on the water surface at base of the valve in the bottom center of the photo and in the zoomed in Photo 3. Photo taken facing west on February 10, 2017.

Photo 3

Photo 4

Photo 3: Product on the water surface at the base of the valve. Photo taken facing west on February 10, 2017.
Photo 4: Hydrocarbon sheen on water within the excavation. Photo taken on February 10, 2017.

Photo 5

Photo 6

Photo 5: Historical abandoned and cut piping within the excavation (center of photo). Line 6 is visible on the left side of the photo. Photo taken on March 27, 2017.
Photo 6: Historical abandoned small diameter piping within the excavation with product present. Photo taken on March 27, 2017.

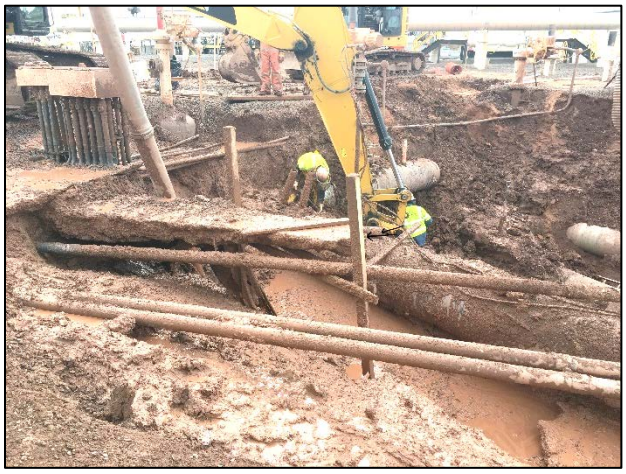


Photo 7

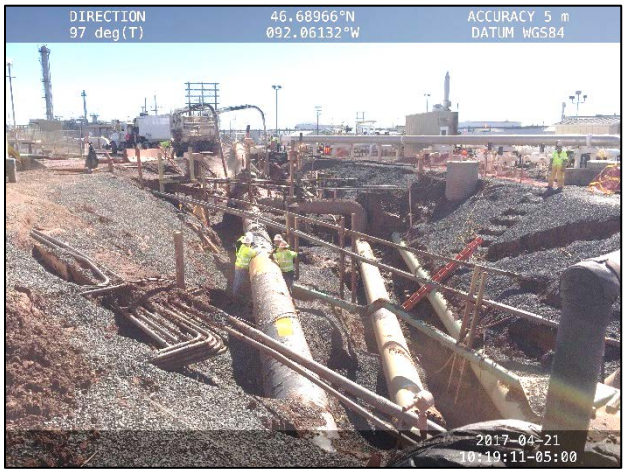


Photo 8

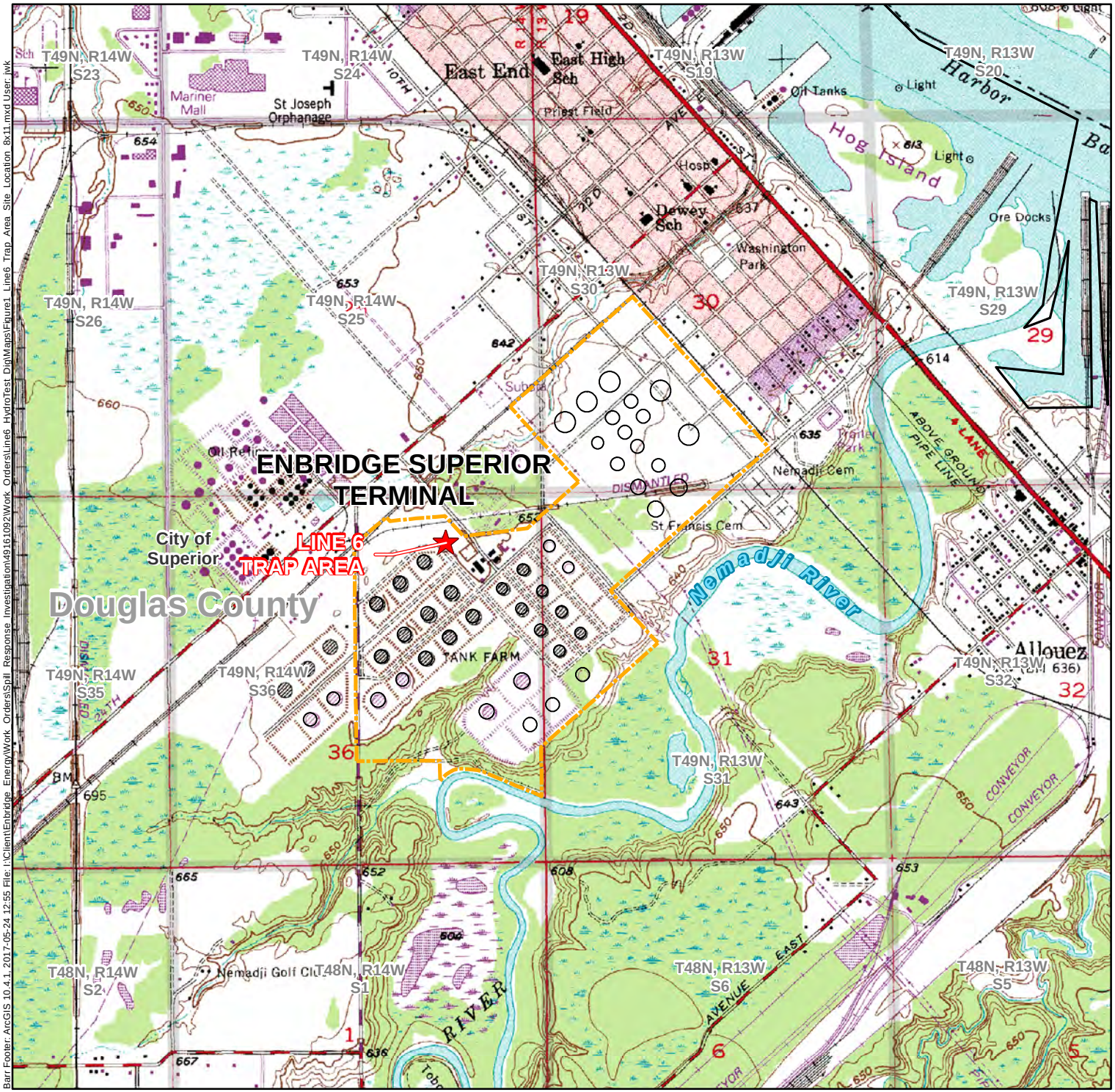
Photo 7: Project excavation with current and historical piping. A historical, cement-encased utility conduit that was cut in 2012 is visible in the left center of the photo and was associated with historical impacts encountered in 2012. Photo taken facing east on March 30, 2017.
Photo 8: Final extents of the hydrotest excavation. Line 6 is on the left side of the excavation. Photo taken facing east on April 21, 2017.

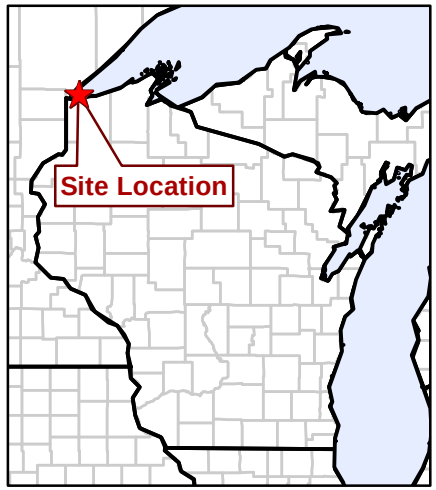
Photo 9

Photo 10

Photo 9: Area in which the majority of the contractor-observed contamination was identified. The contamination was focused along Line 6 in the same area where impacts were identified in 2012. The approximate area of contamination is marked by the dashed yellow line and a close up image of the area is presented in Photo 10. Photo taken facing northeast on April 21, 2017.
Photo 10: Area where historical contamination was encountered in 2012 and 2017. Photo taken facing northeast on April 21, 2017.

Photo 11: Excavated soil from the Line 6 pipeline trap tie-in stockpiled in the Superior Terminal SMA. Photo taken on February 13, 2017.





Site Location

Terminal Property Boundary

N

0 2,000 4,000

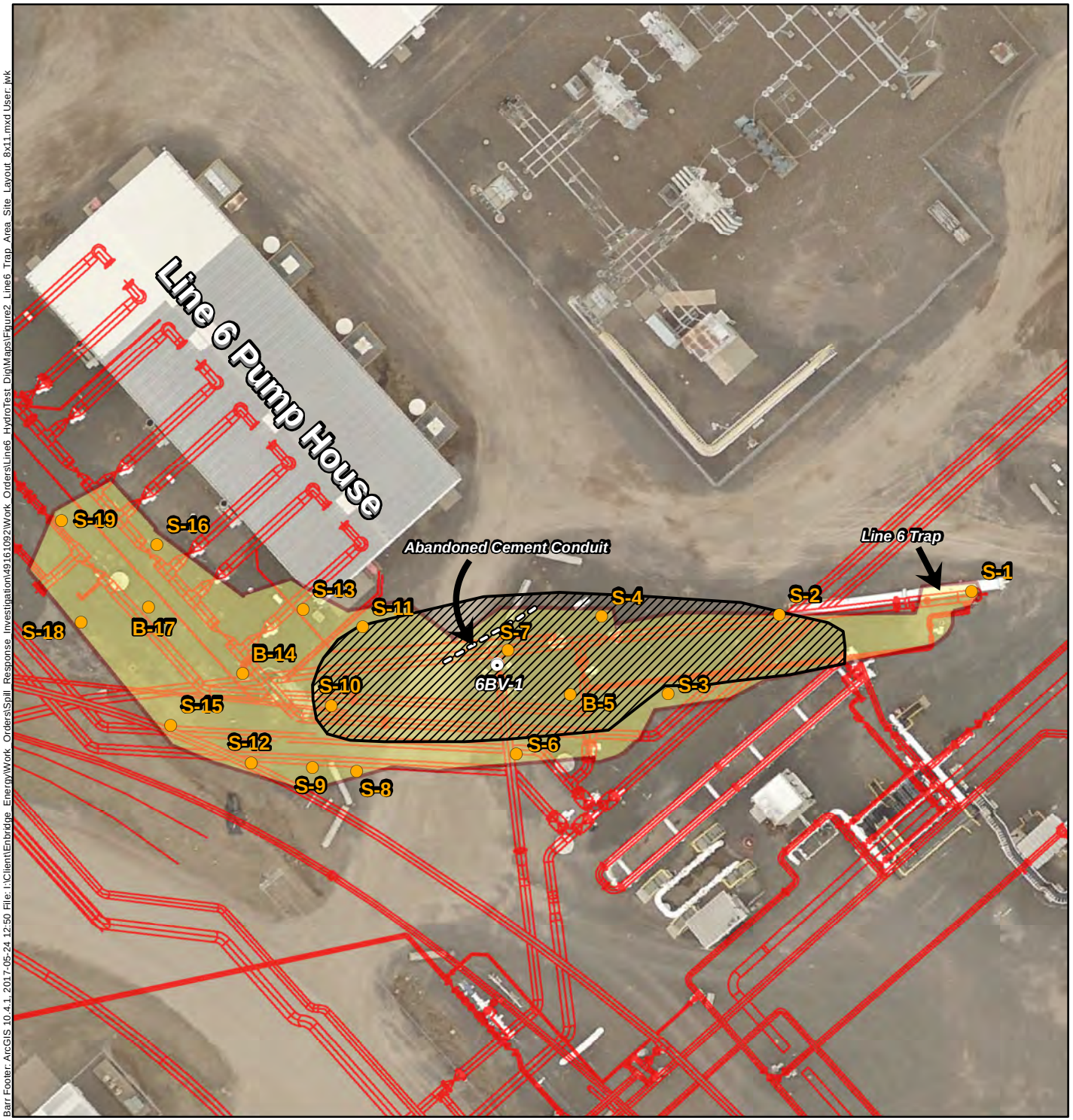
Feet

1 Inch = 2,000 Feet

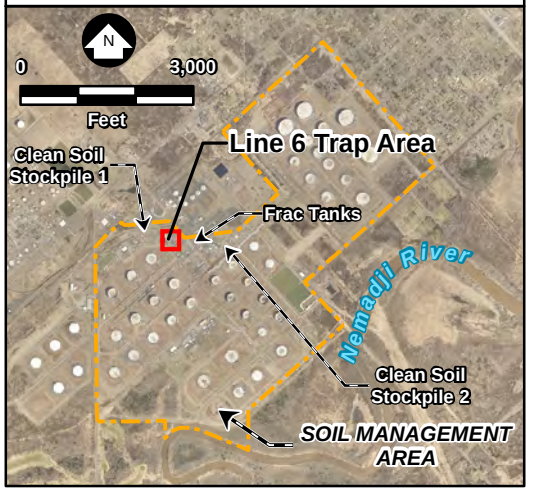
Figure 1

SITE LOCATION
LINE 6 TRAP AREA
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE



ENBRIDGE SUPERIOR TERMINAL



- Analytical Sample Locations (2014)
- 6BV-1 Valve
- Excavation Extent (2017)
- Hydrotest Excavation Extent (2014)
- Terminal Property Boundary
- Pipeline Infrastructure

N

0 40 80

Feet

1 Inch = 40 Feet

Douglas County Imagery Circa May, 2016

Figure 2

SITE LAYOUT
LINE 6 TRAP AREA
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Attachment A

Historical Response Documentation

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

www.enbridgepartners.com

Shane Yokom	Manager, Environment Operations
Joseph Peterson	Supervisor, Region Operations
Cheryl Urie	Supervisor, Programs
Jim Snider	Environmental Specialist
Rhonda O'Leary	Sr. Air Compliance Specialist
James Anklam	Sr. Environmental Analyst
Karl Beaster	Environmental Analyst II
Stacey Frerich	Environmental Analyst II
Derek Senn	Environmental Analyst II
Kelli Nelson	Environmental Analyst II
Bryan Sederberg	Environmental Analyst II
Alex Smith	Environmental Analyst
Greg St. Onge	ER Preparedness Coordinator
Julie O'Brien	Environmental Assistant

January 29, 2014

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

Re: Line 6 Hydrotest Crude Oil Impacts
Excavation Report Memo
Enbridge Energy Superior Terminal
Superior, Wisconsin

Dear Ms. Endsley:

Please find attached report regarding the clean-up of crude oil impacts discovered during the Line 6 Hydrotest project in 2012. Based on the findings presented in this report, we are requesting no further action in regards to this historical release.

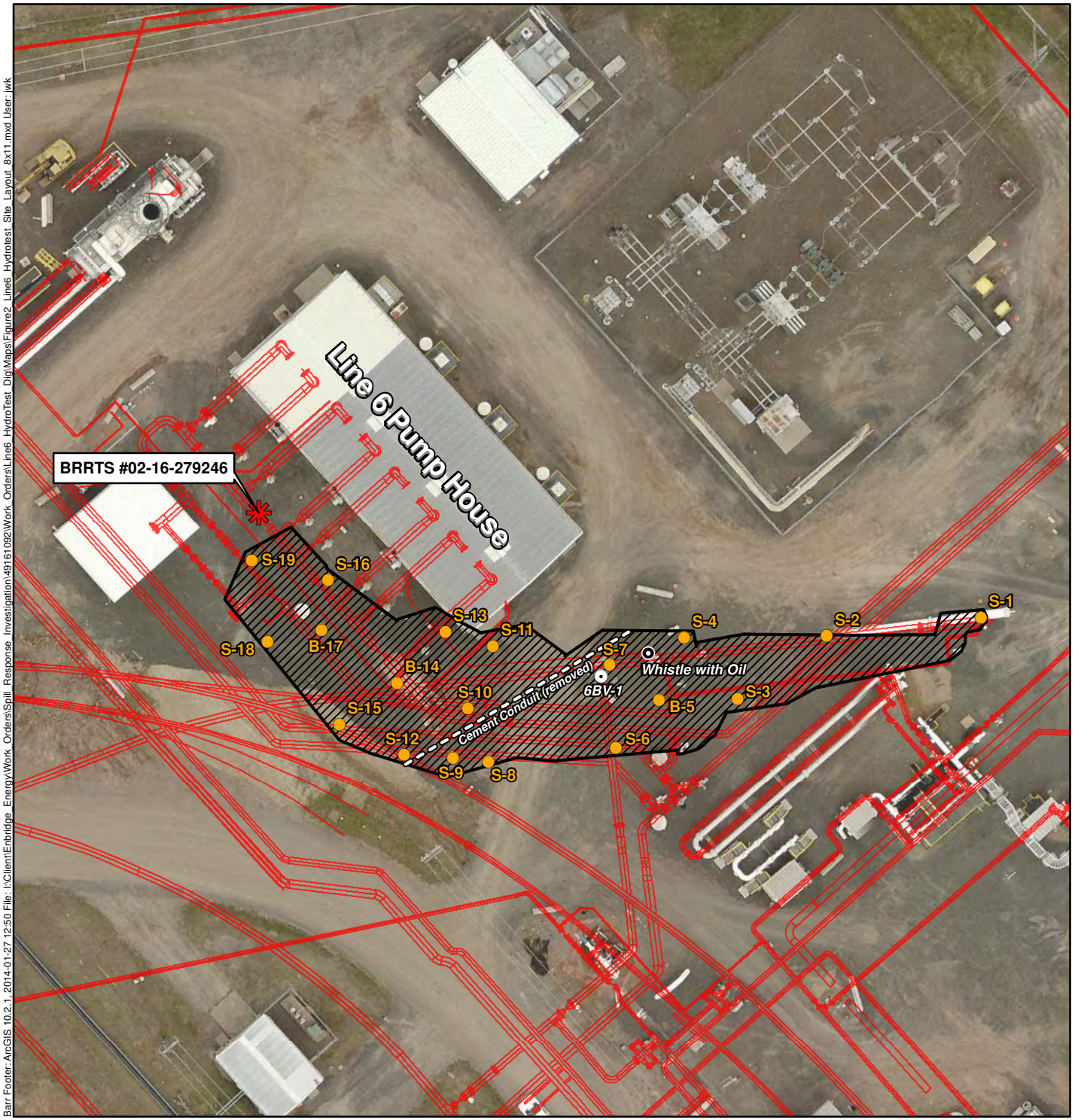
Please contact me if you have any questions or comments regarding this project.

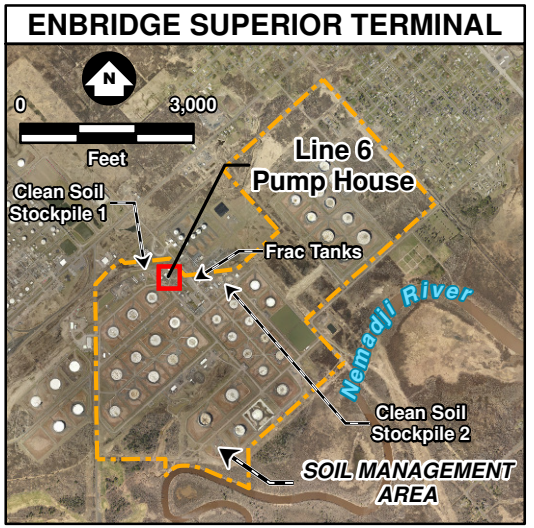
Sincerely,
Enbridge Energy

Karl F. Beaster, P.G.
Environmental Analyst

Enclosure

cc: Ryan Erickson, Barr Engineering





- Analytical Sample Locations
- 6BV-1 Valve
- Crude Oil Impacted Whistle
- Historical Release Location
- Excavation Extent
- Terminal Property Boundary
- Pipeline Infrastructure

N

0 50 100

Feet

1 Inch = 50 Feet

Douglas County Imagery Circa May, 2013

Figure 2

SITE LAYOUT MAP
LINE 6 HYDROTEST EXCAVATION
SUPERIOR TERMINAL

Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Table 1
Soil Analytical Data Summary
Line 6 Hydrotest Excavation
Enbridge Energy Terminal - Superior, Wisconsin
Units, mg/kg (unless otherwise noted)

			Parameter	Moisture	Benzene	Ethyl benzene	Toluene	Xylene, total	1,2,4-Trimethyl benzene	1,3,5-Trimethyl benzene	Diesel Range Organics-silica gel cleanup	Naphthalene	WDNR RCL Determinations[1]			
		Effective Date	Exceedance Key										Exceedance Count	Hazard Index	Cumulative Cancer Risk	Pass or Fail
Groundwater RCL			Bold		**0.0051**	**0.785**	**0.5536**	**1.97 XYL**	**1.3793 TR**	**1.3793 TR**		**0.3294**				
Industrial Direct Contact RCL		05/01/2012	No Exceed		7.41	37	818	258	219	182		26	0	1.0	0.00001	Pass
Sample Name	**Location** *(Figure 2)*	**Date**	**Depth (ft)**													
LINE 6 - S1	S-1	5/11/2012	2	13.7 %	< 0.057	< 0.057	< 0.057	< 0.17	< 0.057	< 0.057	< 10.6	--	0	0.0003	9.2E-09	Pass
LINE 6 - S2	S-2	5/11/2012	5	7.4 %	< 0.061	< 0.061	< 0.061	< 0.18	< 0.061	< 0.061	< 9.4	--	0	0.0003	9.9E-09	Pass
LINE 6 - S3	S-3	5/11/2012	8	22.5 %	< 0.066	< 0.066	< 0.066	< 0.20	< 0.066	< 0.066	< 13.8	--	0	0.0003	1.1E-08	Pass
LINE 6 - S4	S-4	5/11/2012	2	21.8 %	< 0.064	< 0.064	< 0.064	< 0.19	< 0.064	< 0.064	< 13.5	--	0	0.0003	1.0E-08	Pass
LINE 6 - B5	B-5	5/11/2012	15	29.3 %	< 0.071	< 0.071	< 0.071	< 0.21	< 0.071	< 0.071	< 12.8	--	0	0.0004	1.2E-08	Pass
LINE 6 - S6	S-6	5/11/2012	5	19.4 %	< 0.060	< 0.060	< 0.060	< 0.18	< 0.060	< 0.060	< 12.7	--	0	0.0003	9.7E-09	Pass
LINE 6 - S7	S-7	5/11/2012	6	3.4 %	**0.28 ***	**1.6 ***	0.43 *	**11.6 ***	**10.6 ***	**5.6 ***	7960	**2.18**	0	0.0348	5.8E-06	Pass
LINE 6 - S8	S-8	5/11/2012	4	6.0 %	< 0.055	< 0.055	< 0.055	< 0.17	< 0.055	< 0.055	46.5	--	0	0.0003	8.9E-09	Pass
LINE 6 - S9	S-9	5/11/2012	7	20.8 %	< 0.060	< 0.060	< 0.060	< 0.18	< 0.060	< 0.060	< 12.1	--	0	0.0003	9.7E-09	Pass
LINE 6 - S10	S-10	5/14/2012	12	20.3 %	< 0.074	< 0.074	< 0.074	< 0.22	< 0.074	< 0.074	< 10.5	--	0	0.0004	1.2E-08	Pass
LINE 6 - S11	S-11	5/14/2012	3	22.8 %	**0.18**	< 0.063	< 0.063	< 0.19	< 0.063	< 0.063	< 14.2	--	0	0.0005	2.6E-08	Pass
LINE 6 - S12	S-12	5/14/2012	5	3.6 %	< 1.1 *	**1.3 ***	**1.8 ***	**32.6 ***	**18.2 ***	**11.4 ***	5500	< 0.517	0	0.0603	5.9E-06	Pass
LINE 6 - S13	S-13	5/14/2012	12	26.8 %	< 0.076	< 0.076	< 0.076	< 0.23	< 0.076	< 0.076	< 13.3	--	0	0.0004	1.2E-08	Pass
LINE 6 - B14	B-14	5/14/2012	15	18.4 %	< 0.060	< 0.060	< 0.060	< 0.18	< 0.060	< 0.060	< 12.8	--	0	0.0003	9.7E-09	Pass
LINE 6 - S15	S-15	5/14/2012	2	23.5 %	< 0.067	< 0.067	< 0.067	< 0.20	< 0.067	< 0.067	< 13.4	--	0	0.0003	1.1E-08	Pass
LINE 6 - S16	S-16	5/14/2012	4	12.5 %	< 0.055	< 0.055	< 0.055	< 0.17	< 0.055	< 0.055	40.9	--	0	0.0003	8.9E-09	Pass
LINE 6 - B17	B-17	5/14/2012	8	18.0 %	< 0.062	< 0.062	< 0.062	< 0.19	< 0.062	< 0.062	< 9.7	--	0	0.0003	1.0E-08	Pass
LINE 6 - S18	S-18	5/14/2012	6	15.1 %	< 0.060	< 0.060	< 0.060	< 0.18	< 0.060	< 0.060	< 11.8	--	0	0.0003	9.7E-09	Pass
LINE 6 - S19	S-19	5/14/2012	7	16.5 %	< 0.062	< 0.062	< 0.062	< 0.19	< 0.062	< 0.062	< 11.3	--	0	0.0003	1.0E-08	Pass

PAH analyses were completed for LINE 6 - S12 and LINE 6 - S7. Only the PAH parameters that exceeded WDNR groundwater or industrial direct contact RCL's are shown on this table. All other PAH results can be found in Pace lab report 10192287 in Attachment C.

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

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

TR - Based on Trimethylbenzenes (1,2,4 - and 1,3,5- combined).

* Estimated value, QA/QC criteria not met.

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 5/9 - 5/11/12

Location: *Facility or Milepost* Enbridge Terminal Line 6 Hydrotest Excavation

Sampler: REE/CTF/BWJ2

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

Background Headspace: 0 ppm

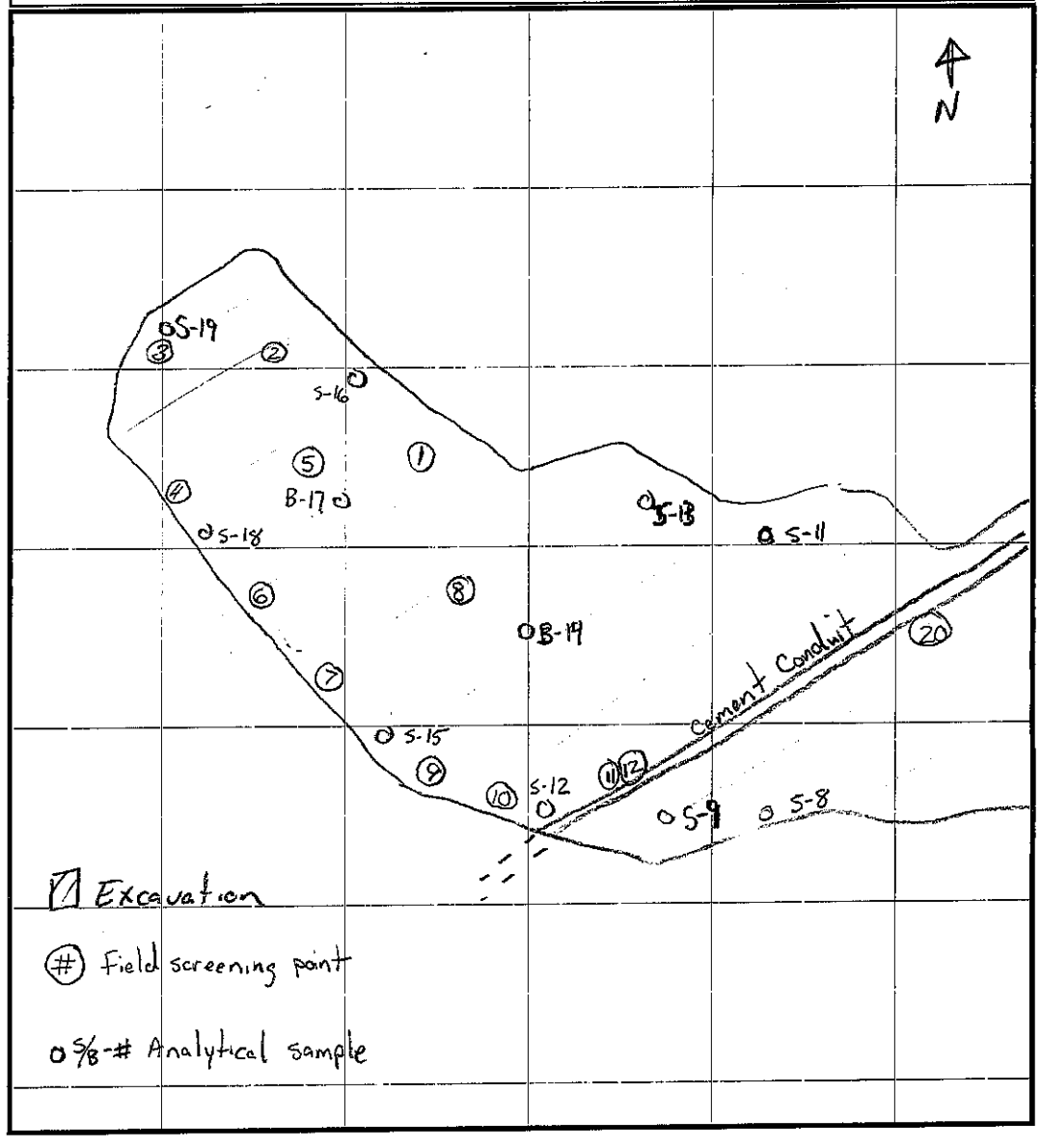
Calibration Time: —

Sample Nomenclature *(Location - sample type - #)*: Line 6 —

Soil Sample Types: R = Removed/*Screening 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: R-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
1	8		Fill/SP	Brown /N	N/-	0
2	8		SP	Brown /N		0
3	3		CL	Reddish brown/N		0.1
4	3		CL	RB/N		0
5	12		SP	Brown/N		0
6	4		CL	RB/N		0
7	3		CL	RB/N		0
8	16		SP	Brown/N		0
9	4		CL	RB/N		0
10	3		CL	RB/N		0
11	6		SP	Dark brown/Y	Petroleum/-	330+
12	4		SP	Brown/N	N/-	0.5
S-8	4			/N	N/-	7.7
S-9	7			/N		0.6
S-16	12			/N		1.3
S-11	3			/N		9.2
S-12	5			/N		696
S-13	12		CL	RB/N	N/-	0.4
B-14	15		CL	RB/N		0.4
S-15	2		CL	RB/N		0.2
S-16	4		CL	RB/N		0.5
B-17	8		SP	Brown/N		4.3
S-18	6		CL	RB/N		0.7
S-19	7					0.9

SITE SKETCH: *north is top of page; excavation extent & depth, impacted area, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid = 25 FT***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 5/9 - 5/11/12

Location: *Facility or Milepost* Enbridge Terminal Line 6 Excavation

Sampler: REE/CTF/BIL2

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

Background Headspace: 0.0 ppm

Calibration Time: –

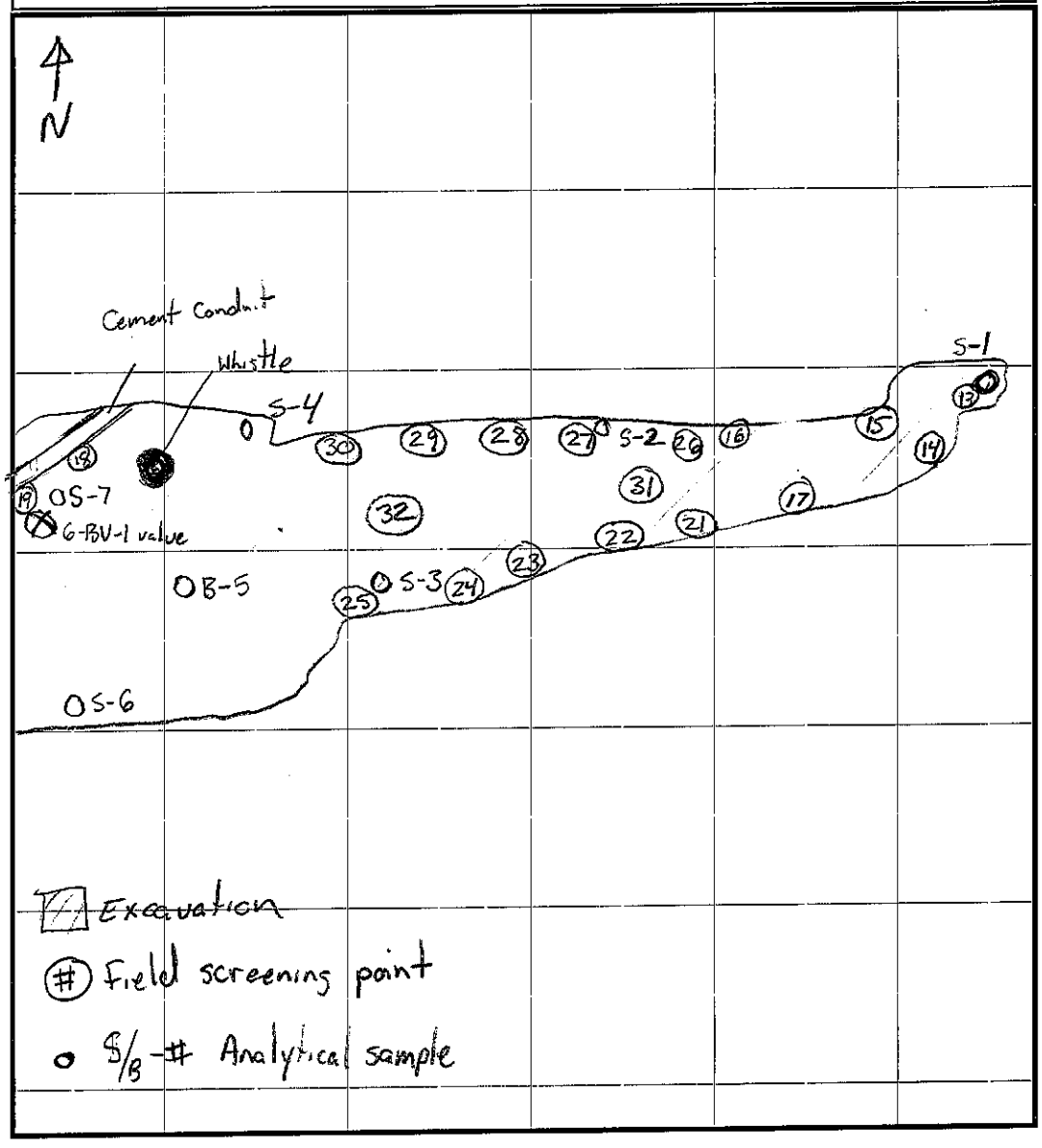
Sample Nomenclature *(Location - sample type - #)*: Line 6 –

Soil Sample Types: R = Removed/*Screening 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: R-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
13	2		Fill/CL	RB/ N	N/–	0.1
14	2		CL	RB/ N		0.2
15	2		CL	RB/N		0.0
16	2		CL	RB/N		0.1
17	2		CL	RB/N		0.5
18	7		SP	Brown/N		15.6
19	5		SP	Brown/N		79
20 Other start	7		SP	Brown/N		23
21	2		CL	RB/N		0.5
22	2		SP	Brown/N		0.4
23	3		SP	Brown/N		0.7
24	4		CL	RB/N		0.2
25	3		CL	RB/N		0.2
26	2		CL	RB/N		0.3
27	4		SP	Brown/N		0.2
28	5		SP	Brown/N		0.2
29	6		SP	Brown/N		0.3
30	4		CL	RB/N		0.2
31	6		SP	Brown/N		0.3
32	8		CL	RB/N		0.2
S-1	2			/N		0.2
S-2	5			/N		0.0
S-3	8			/N		0.0
S-4	2			/N		0.2

Additional Analytical results on Page 3

SITE SKETCH: *north is top of page; excavation extent & depth, impacted area, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid = 25 FT***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 5/9-5/11/12

Location: *Facility or Milepost* Enbridge Terminal Line 6 Hydrotest Excavation

Sampler: RGE/CTF/BJL2

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

Background Headspace: 0.0 ppm

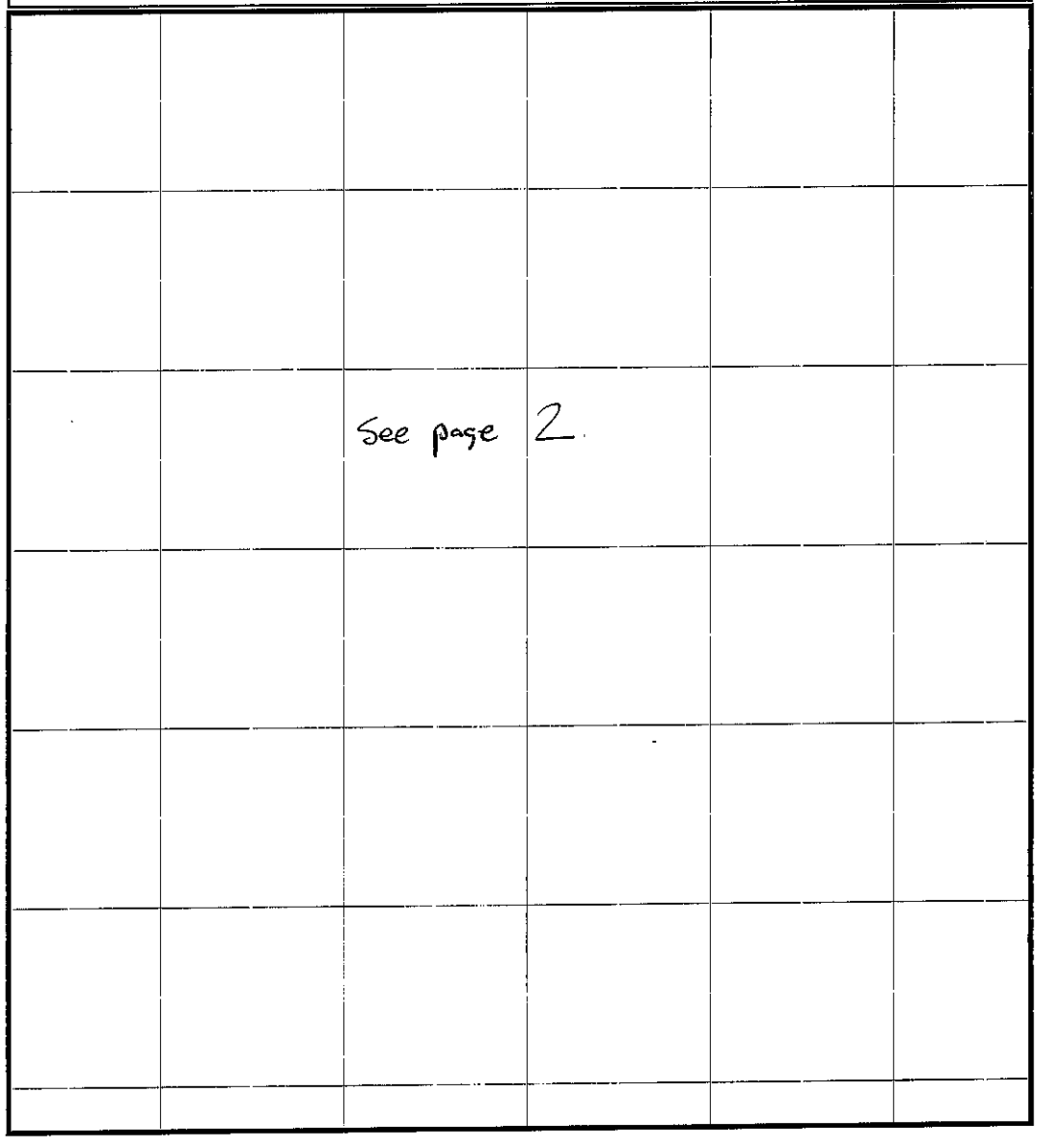
Calibration Time: —

Sample Nomenclature *(Location - sample type - #)*: Line 6

Soil Sample Types: R = Removed/*Screening 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: R-1	*4*	*16:30*	*CL*	*Reddish brown*	*Petroleum/ Rainbow*	*275*
B-5	15		Fill/	/N	N/-	3.0
S-6	5		↓	/N	↓	0.3
S-7	6		↓ SP	Dark Brown/Y	Y/-	377

SITE SKETCH: *north is top of page; excavation extent & depth, impacted area, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid =*** ***FT***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 5/9 +5/10/12

Location: *Facility or Milepost* Enbridge Terminal Line 6 Hydrotest Excavation Clean Stockpiles

Sampler: RES

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

Background Headspace: 0.0 ppm

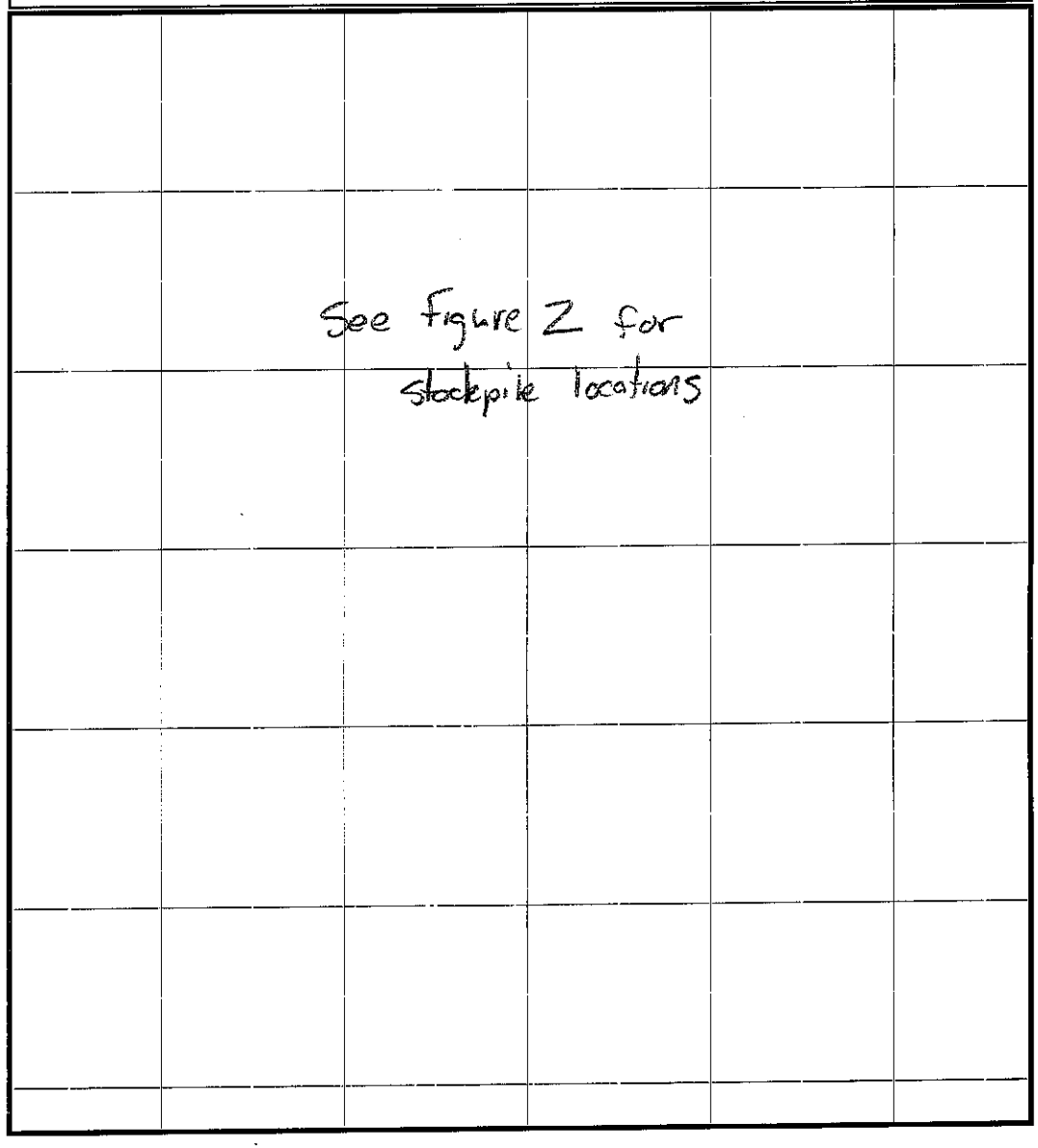
Calibration Time: _____

Sample Nomenclature *(Location - sample type - #):* Line 6

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

Sample ID	Depth (FT)	~~Date~~ ~~Time~~ (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: R-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
Clean stockpile			#1			
1		5/9	CL/SP	Reddish Brown/N	N/-	0.0
2		"	"	"	N/-	0.0
3		"	"	"	N/-	0.0
4		"	"	"	N/-	0.0
5		"	"	"	N/-	0.0
6		"	"	"	N/-	0.0
7		"	"	"	N/-	0.0
8		"	"	"	N/-	0.0
9		"	"	"	N/-	0.0
10		"	"	"	N/-	0.0
Clean stockpile			#2			
1		5/10	CL/SP		N/-	0.0
2		"	"		N/-	0.0
3		"	"		N/-	0.0
4		"	"		N/-	0.1
5		"	"		N/-	0.0
6		"	"		N/-	0.2
7		"	"		N/-	0.0
8		"	"		N/-	0.0
9		"	"		N/-	0.0
10		"	"		N/-	0.0

SITE SKETCH: *north is top of page; excavation extent & depth, impacted area, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid =*** ***FT***



Attachment B

Field Sampling and Screening Logs

SITE LAYOUT

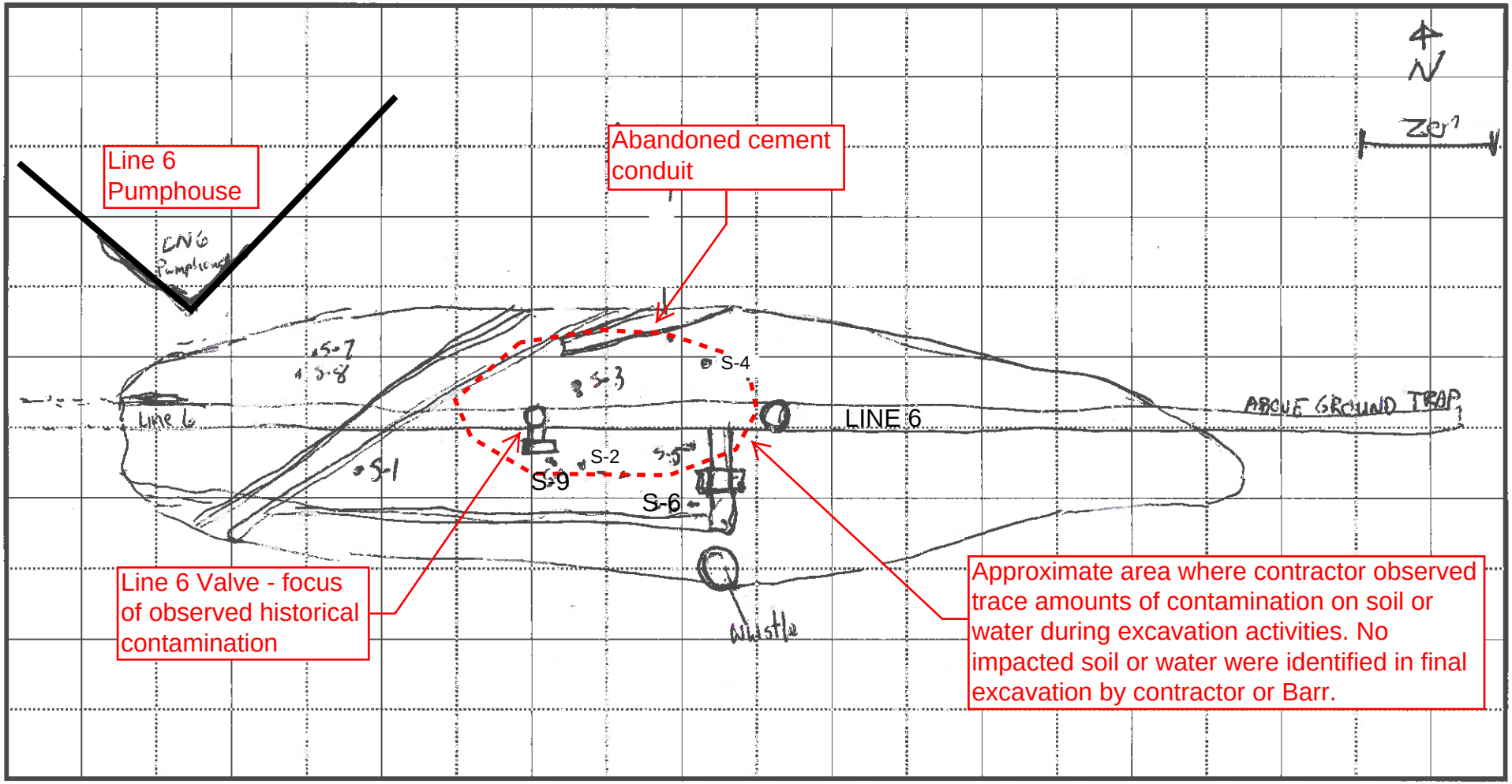
Location: *Milepost or Facility* Superior Terminal - Line 6 Trap Date: 4-21-17

Barr Personnel: RRE & REE

Was a GPS used to document the location of site features? YES or NO

Identify the GPS unit:

SITE SKETCH: *north is up; DRAW (to scale) AND LABEL THE LOCATION OF THE FOLLOWING SITE FEATURES, if applicable: release location, maximum extent of release impacts, roads, structures, pipelines and pipeline infrastucture, excavations, stockpiles, borings, wells, water tankers/frac tanks, roll-off containers, equipment staging areas, municipal utilities (electric, water, sewer...), culverts, natural features (water bodies, forested areas...), surface water drainage pathways/direction, other site features* ***1 inch/grid = 20 FEET***



SITE NOTES/LEGEND: Soil in the sidewalls consisted of clay and sand fill. Gravel was on the ground surface and was used to cover the excavation sidewalls. Excavation depths were variable but were up to 15 feet bgs near the contractor observed contamination.

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Superior Terminal Line 6 Trap

Equipment used: Photo *-ionization detector with* 11.7 *eV lamp*

Background Headspace: 0.0 ppm

Date: 4/21/17

Sampler: REE/RRE

Calibration Time: 900

Sample Nomenclature *(Location - sample type - #)*: LNG Trap

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: TK99-S-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
S-1	15	1100	CL	Red brown	N/N	0.0
S-2	15	↓			N/N	0.0
S-3	15				N/-	0.0
S-4	15				N/-	0.0
S-5	15				N/-	0.0
S-6	15				N/-	0.0
S-7	4				N/-	0.0
S-8	6	↓			N/-	0.0
S-9	12	1130			Weak Petr -	1.3

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

SEE SITE LAYOUT Figure

Attachment C

Waste Disposal Documentation

Soil Management

VONCO
Waste Management Campus

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

VONCOUSA.com
Office: 218.626.3830
Fax: 218.626.4874

February 21, 2017

Enbridge Energy
Attention: Alex Smith
1100 Louisiana Ave Suite 3300
Houston, TX 77002

RE: Profile # 17-011-I - SUP line 6 trap
Generator: Enbridge Superior Wi Terminal
Waste Stream: contaminated soil

Alex,

Please be advised that the above described waste material is acceptable for disposal at the Vonco V Waste Management Campus Facility in Duluth, MN. The waste material is acceptable per Vonco V (SW-560) Minnesota Pollution Control Agency Industrial Solid Waste Management Plan. The profile is approved for **1000** CY for disposal.

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 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 @ (218) 730-6361.

Have a great day,

Joe Pesante
Vonco V, LLC

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 - Line 6 Trap

Process Generating Waste: Historical contamination encountered in project excavation.

Estimated Volume: 250

Frequency: One time

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

Flash Point (°F): N/A 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: 2/13/2017 Sample I.D.: Line 6 Stockpile-1, -2

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: Alex Smith Date: 2/21/2017

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 _____

20-Feb-2017

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

Re: **Superior Terminal Env. (49161092.05)** Work Order: **1702742**

Dear Ryan,

ALS Environmental received 3 samples on 14-Feb-2017 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 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 13.

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

Sincerely,

Electronically approved by: Tom Beamish

Tom Beamish
Client Services Coordinator

Certificate No: WI: 399084510

ALS Group, USA

Date: 20-Feb-17

Client: Barr Engineering Company
Project: Superior Terminal Env. (49161092.05)
Work Order: **1702742**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1702742-01	Line 6 Stockpile - 1	Soil		02/13/17 12:30	02/14/17 09:30	☐
1702742-02	Line 6 Stockpile - 2	Soil		02/13/17 12:45	02/14/17 09:30	☐
1702742-03	Trip Blank	Soil		02/13/17	02/14/17 09:30	☐

ALS Group, USA

Date: 20-Feb-17

Client: Barr Engineering Company
Project: Superior Terminal Env. (49161092.05)
WorkOrder: **1702742**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
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
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: Superior Terminal Env. (49161092.05)
Work Order: 1702742

Case Narrative

Samples for the above noted Work Order were received on 02/14/17. 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: *20-Feb-17*

Client: Barr Engineering Company
Project: Superior Terminal Env. (49161092.05)
Sample ID: Line 6 Stockpile - 1
Collection Date: 02/13/17 12:30 PM

Work Order: 1702742
Lab ID: 1702742-01
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 / 2/15/17		Analyst: **IT**
DRO (C10-C28)	**510**		**1.1**	**11**	**mg/Kg-dry**	1	02/17/17 05:02
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**			Prep: SW5035 / 2/15/17		Analyst: **EMR**
Benzene	U		23	100	µg/Kg-dry	1	02/15/17 15:56
Ethylbenzene	U		23	100	µg/Kg-dry	1	02/15/17 15:56
m,p-Xylene	U		45	200	µg/Kg-dry	1	02/15/17 15:56
o-Xylene	U		33	100	µg/Kg-dry	1	02/15/17 15:56
Toluene	U		33	100	µg/Kg-dry	1	02/15/17 15:56
Xylenes, Total	U		78	300	µg/Kg-dry	1	02/15/17 15:56
Surr: 1,2-Dichloroethane-d4	*98.4*			*70-130*	*%REC*	1	02/15/17 15:56
Surr: 4-Bromofluorobenzene	*95.0*			*70-130*	*%REC*	1	02/15/17 15:56
Surr: Dibromofluoromethane	*89.8*			*70-130*	*%REC*	1	02/15/17 15:56
Surr: Toluene-d8	*97.6*			*70-130*	*%REC*	1	02/15/17 15:56
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**54**		**0.025**	**0.050**	**% of sample**	1	02/15/17 13:10

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

ALS Group, USA

Date: *20-Feb-17*

Client: Barr Engineering Company
Project: Superior Terminal Env. (49161092.05)
Sample ID: Line 6 Stockpile - 2
Collection Date: 02/13/17 12:45 PM

Work Order: 1702742
Lab ID: 1702742-02
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 / 2/15/17		Analyst: **IT**
DRO (C10-C28)	**240**		**0.91**	**9.1**	**mg/Kg-dry**	1	02/17/17 06:01
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**			Prep: SW5035 / 2/15/17		Analyst: **EMR**
Benzene	U		18	81	µg/Kg-dry	1	02/15/17 16:20
Ethylbenzene	U		19	81	µg/Kg-dry	1	02/15/17 16:20
m,p-Xylene	U		36	160	µg/Kg-dry	1	02/15/17 16:20
o-Xylene	U		26	81	µg/Kg-dry	1	02/15/17 16:20
Toluene	U		27	81	µg/Kg-dry	1	02/15/17 16:20
Xylenes, Total	U		63	240	µg/Kg-dry	1	02/15/17 16:20
Surr: 1,2-Dichloroethane-d4	*98.6*			*70-130*	*%REC*	1	02/15/17 16:20
Surr: 4-Bromofluorobenzene	*95.1*			*70-130*	*%REC*	1	02/15/17 16:20
Surr: Dibromofluoromethane	*89.0*			*70-130*	*%REC*	1	02/15/17 16:20
Surr: Toluene-d8	*99.3*			*70-130*	*%REC*	1	02/15/17 16:20
MOISTURE		Method: **SW3550C**					Analyst: **EDL**
Moisture	**46**		**0.025**	**0.050**	**% of sample**	1	02/15/17 13:10

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

ALS Group, USA

Date: *20-Feb-17*

Client: Barr Engineering Company
Project: Superior Terminal Env. (49161092.05)
Sample ID: Trip Blank
Collection Date: 02/13/17

Work Order: 1702742
Lab ID: 1702742-03
Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**			Prep: SW5035 / 2/15/17		Analyst: **EMR**
Benzene	U		6.8	30	µg/Kg-dry	1	02/15/17 14:45
Ethylbenzene	U		7.0	30	µg/Kg-dry	1	02/15/17 14:45
m,p-Xylene	U		13	60	µg/Kg-dry	1	02/15/17 14:45
o-Xylene	U		9.7	30	µg/Kg-dry	1	02/15/17 14:45
Toluene	U		9.9	30	µg/Kg-dry	1	02/15/17 14:45
Xylenes, Total	U		23	90	µg/Kg-dry	1	02/15/17 14:45
Surr: 1,2-Dichloroethane-d4	*101*			*70-130*	*%REC*	1	02/15/17 14:45
Surr: 4-Bromofluorobenzene	*96.8*			*70-130*	*%REC*	1	02/15/17 14:45
Surr: Dibromofluoromethane	*88.0*			*70-130*	*%REC*	1	02/15/17 14:45
Surr: Toluene-d8	*98.0*			*70-130*	*%REC*	1	02/15/17 14:45

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

ALS Group, USA

Date: 20-Feb-17

Client: Barr Engineering Company

QC BATCH REPORT

Work Order: 1702742

Project: Superior Terminal Env. (49161092.05)

Batch ID: **98211** Instrument ID **GC8** Method: **PUBL-SW-141**

MBLK	Sample ID: **DBLKS1-98211-98211**					Units: **mg/Kg**			Analysis Date: **02/17/17 04:32 AM**			
Client ID:		Run ID: **GC8_170217A**				SeqNo: **4291295**		Prep Date: **02/15/17**		DF: **1**		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	0.8352	0.5	5.0								J

LCS	Sample ID: **DLCSS1-98211-98211**					Units: **mg/Kg**			Analysis Date: **02/17/17 04:02 AM**			
Client ID:		Run ID: **GC8_170217A**				SeqNo: **4291294**		Prep Date: **02/15/17**		DF: **1**		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	9.291	0.5	5.0	10	0	92.9	70-120	0			

LCSD	Sample ID: **DLCSDS1-98211-98211**					Units: **mg/Kg**			Analysis Date: **02/17/17 10:00 AM**			
Client ID:		Run ID: **GC8_170217A**				SeqNo: **4291298**		Prep Date: **02/15/17**		DF: **1**		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	10.31	0.5	5.0	10	0	103	70-120	9.291	10.4	20	

The following samples were analyzed in this batch: 1702742-01A 1702742-02A

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

Client: Barr Engineering Company
Work Order: 1702742
Project: Superior Terminal Env. (49161092.05)

QC BATCH REPORT

Batch ID: **98217** Instrument ID **VMS7** Method: **SW8260B**

MBLK Sample ID: **MBLK-98217-98217** Units: **µg/Kg-dry** Analysis Date: **02/15/17 03:32 PM**
Client ID: Run ID: **VMS7_170215A** SeqNo: **4289153** Prep Date: **02/15/17** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	6.8	30	0	0	0	0-0	0			
Ethylbenzene	U	7	30	0	0	0	0-0	0			
m,p-Xylene	U	13	60	0	0	0	0-0	0			
o-Xylene	U	9.7	30	0	0	0	0-0	0			
Toluene	U	9.9	30	0	0	0	0-0	0			
Xylenes, Total	U	23	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	*999*	0	0	*1000*	0	*99.9*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*953.5*	0	0	*1000*	0	*95.4*	*70-130*	0			
Surr: Dibromofluoromethane	*874*	0	0	*1000*	0	*87.4*	*70-130*	0			
Surr: Toluene-d8	*971.5*	0	0	*1000*	0	*97.2*	*70-130*	0			

LCS Sample ID: **LCS-98217-98217** Units: **µg/Kg-dry** Analysis Date: **02/15/17 09:51 PM**
Client ID: Run ID: **VMS7_170215A** SeqNo: **4289160** Prep Date: **02/15/17** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1018	6.8	30	1000	0	102	75-125	0			
Ethylbenzene	988	7	30	1000	0	98.8	75-125	0			
m,p-Xylene	2014	13	60	2000	0	101	80-125	0			
o-Xylene	1046	9.7	30	1000	0	105	75-125	0			
Toluene	1009	9.9	30	1000	0	101	70-125	0			
Xylenes, Total	3060	23	90	3000	0	102	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1023*	0	0	*1000*	0	*102*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*985*	0	0	*1000*	0	*98.5*	*70-130*	0			
Surr: Dibromofluoromethane	*984.5*	0	0	*1000*	0	*98.4*	*70-130*	0			
Surr: Toluene-d8	*985*	0	0	*1000*	0	*98.5*	*70-130*	0			

MS Sample ID: **1702748-01A MS** Units: **µg/Kg-dry** Analysis Date: **02/15/17 08:16 PM**
Client ID: Run ID: **VMS7_170215A** SeqNo: **4289158** Prep Date: **02/15/17** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1179	7.7	34	1139	30.75	101	75-125	0			
Ethylbenzene	1213	8	34	1139	101.9	97.6	75-125	0			
m,p-Xylene	3233	15	68	2278	932.3	101	80-125	0			
o-Xylene	1328	11	34	1139	187.9	100	75-125	0			
Toluene	1755	11	34	1139	618.5	99.8	70-125	0			
Xylenes, Total	4560	26	100	3417	1120	101	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1144*	0	0	*1139*	0	*100*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1121*	0	0	*1139*	0	*98.4*	*70-130*	0			
Surr: Dibromofluoromethane	*1092*	0	0	*1139*	0	*95.9*	*70-130*	0			
Surr: Toluene-d8	*1114*	0	0	*1139*	0	*97.8*	*70-130*	0			

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

Client: Barr Engineering Company
Work Order: 1702742
Project: Superior Terminal Env. (49161092.05)

QC BATCH REPORT

Batch ID: **98217** Instrument ID **VMS7** Method: **SW8260B**

MSD Sample ID: **1702748-01A MSD** Units: **µg/Kg-dry** Analysis Date: **02/15/17 08:40 PM**

Client ID: Run ID: **VMS7_170215A** SeqNo: **4289159** Prep Date: **02/15/17** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1238	7.7	34	1139	30.75	106	75-125	1179	4.86	30	
Ethylbenzene	1296	8	34	1139	101.9	105	75-125	1213	6.63	30	
m,p-Xylene	3514	15	68	2278	932.3	113	80-125	3233	8.36	30	
o-Xylene	1427	11	34	1139	187.9	109	75-125	1328	7.2	30	
Toluene	1928	11	34	1139	618.5	115	70-125	1755	9.43	30	
Xylenes, Total	4941	26	100	3417	1120	112	75-125	4560	8.02	30	
Surr: 1,2-Dichloroethane-d4	*1139*	0	0	*1139*	0	*100*	*70-130*	1144	*0.449*	*30*	
Surr: 4-Bromofluorobenzene	*1110*	0	0	*1139*	0	*97.4*	*70-130*	1121	*1.02*	*30*	
Surr: Dibromofluoromethane	*1079*	0	0	*1139*	0	*94.7*	*70-130*	1092	*1.26*	*30*	
Surr: Toluene-d8	*1105*	0	0	*1139*	0	*97*	*70-130*	1114	*0.77*	*30*	

The following samples were analyzed in this batch: 1702742-01C 1702742-02C 1702742-03A

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

Client: Barr Engineering Company
Work Order: 1702742
Project: Superior Terminal Env. (49161092.05)

QC BATCH REPORT

Batch ID: **R206173** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R206173** Units: **% of sample** Analysis Date: **02/15/17 01:10 PM**
Client ID: Run ID: **MOIST_170215B** SeqNo: **4289710** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.025	0.050								J

LCS Sample ID: **LCS-R206173** Units: **% of sample** Analysis Date: **02/15/17 01:10 PM**
Client ID: Run ID: **MOIST_170215B** SeqNo: **4289709** 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: **1702763-31A DUP** Units: **% of sample** Analysis Date: **02/15/17 01:10 PM**
Client ID: Run ID: **MOIST_170215B** SeqNo: **4289700** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	25.01	0.025	0.050	0	0	0		25.52	2.02	5	

DUP Sample ID: **1702807-02B DUP** Units: **% of sample** Analysis Date: **02/15/17 01:10 PM**
Client ID: Run ID: **MOIST_170215B** SeqNo: **4289707** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	20.02	0.025	0.050	0	0	0		19.46	2.84	5	

The following samples were analyzed in this batch: 1702742-01B 1702742-02B

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

1702742

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: № 47609

COC 1 of 1

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr Engineering
Address: 375 S. Lake Ave Duluth	Address:
Name: Ryan Erickson	Name: ~ Same ~
email: rerickson@barr.com	email:
Copy to: datamgt@barr.com / JTaraldsen@barr.com	
Project Name: Superior Terminal Env.	Barr Project No: 49161092.05 002 002

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

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: DRO	Soil: BTEX	Soil: % Solids	Preservative Code	Field Filtered Y/N
1. Line 6 Stockpile-1	—	—		2/13/17	12:30	S	N	4		1	2	1	DRO, BTEX, % Moisture	
2. Line 6 Stockpile-2	—	—		2/13/17	12:45	S	N	4		1	2	1	↓	
3. Trip Blank	—	—		2/13/17	12:30	G/C	—	1			1	—	BTEX	
4. Temp Blank	—	—		—	—	—	—						—	
5.														
6.														
7.														
8.														
9.														
10.														

Standard TAT

BARR USE ONLY							
Sampled by: J.Taraldsen	Relinquished by:	On Ice? (Y) N	Date 2/13/17	Time 16:00	Received by: FedEx	Date	Time
Barr Proj. Manager: R Erickson	Relinquished by: FedEx	On Ice? (Y) N	Date 2/14/17	Time 0930	Received by:	Date	Time
Barr DQ Manager: J.Taraldsen	Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other:				Air Bill Number:	Requested Due Date: ☒ Standard Turn Around Time ☐ Rush (mm/dd/yyyy)	
Lab Name: AIS							
Lab Location: Holland MI	Lab WO:	Temperature on Receipt (°C):			Custody Seal Intact? ☐ Y ☐ N ☐ None		

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

5R2 3.0°C

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: **14-Feb-17 09:30**

Work Order: **1702742** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 14-Feb-17 (Date) Reviewed by: (eSignature) (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):	3.0/3.0 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	2/14/2017 3:17:51 PM		
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 II Waste Management Campus
15301 140th Avenue SE
Becker, MN 55308
Permit: SW 580

17-011-I SUP Terminal Line 6 Trap

Date	Ticket	Customer	Truck	Material	Tons
02/28/2017	284523	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	12.37
02/28/2017	284524	001342 - Enbridge Pipelines LLC	S39858W	Contaminated Soil Tons	13.21
02/28/2017	284526	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	13.19
02/28/2017	284527	001342 - Enbridge Pipelines LLC	S39858W	Contaminated Soil Tons	14.75
02/28/2017	284531	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	12.44
02/28/2017	284532	001342 - Enbridge Pipelines LLC	S39858W	Contaminated Soil Tons	14.62
02/28/2017	284535	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	13.45
02/28/2017	284536	001342 - Enbridge Pipelines LLC	S39858W	Contaminated Soil Tons	14.55
02/28/2017	284541	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	11.98
02/28/2017	284542	001342 - Enbridge Pipelines LLC	S39858W	Contaminated Soil Tons	14.28
05/02/2017	285927	001342 - Enbridge Pipelines LLC	S98692W	Contaminated Soil Tons	15.18
05/02/2017	285934	001342 - Enbridge Pipelines LLC	S98692W	Contaminated Soil Tons	15.32
05/02/2017	285942	001342 - Enbridge Pipelines LLC	S98692W	Contaminated Soil Tons	14.33
05/02/2017	285946	001342 - Enbridge Pipelines LLC	S98692W	Contaminated Soil Tons	14.89
05/02/2017	285954	001342 - Enbridge Pipelines LLC	S98692W	Contaminated Soil Tons	16.25
05/03/2017	285968	001342 - Enbridge Pipelines LLC	S36746W	Contaminated Soil Tons	15.81
05/03/2017	285974	001342 - Enbridge Pipelines LLC	S36746W	Contaminated Soil Tons	16.38
05/03/2017	285982	001342 - Enbridge Pipelines LLC	S36746W	Contaminated Soil Tons	14.58
05/03/2017	285995	001342 - Enbridge Pipelines LLC	S36746W	Contaminated Soil Tons	16.67
				Total Tons	***274.25***
				Total Loads	***19***

Water Management

2626 Courtland Street
Duluth, MN 55806-1894
phone 218.722.3336
fax 218.727.7471
www.wlssd.com

WLSSD

Western Lake Superior Sanitary District

February 24, 2017

Mr. Alex Smith, Environmental Advisor
Barr Engineering for Enbridge
325 South Lake Ave
Duluth MN

Re: WLSSD Discharge Approval (Enbridge Line 6 Trap Excavation)

Dear Mr. Smith:

Based on the analytical information provided on **02/24/2017**, the WLSSD approves the discharge of **approximately 2,000 to 20,000 gallons of contaminated groundwater from the Enbridge Superior Terminal excavation site** 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 approval extends for the 2-3 months during which multiple groundwater dewatering and disposal events from the above named site may be necessary.

This is a one time only approval for the waste described. It does not release **Barr Engineering or 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 **Barr Engineering or 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 to be disposed, and volume of each discharge must be noted, and given to the process control operator. **Please attempt to discharge at our facility between 7:00 a.m. and 5:00 p.m. If you are unable to discharge at that time please call the process control operator (218) 722-3336 ext. 301 with your estimated time of arrival.**

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

Sincerely,

Julie Macor

Julie Macor
Chemist

ENBRIDGE

Superior Terminal - Water Tanker Ledger
2800 East 21st Street
Superior, WI 54880

Tanker #/Company: Jeff Foster

Date of First Load: 02-24-17 SMA Contractor: Four Star

Date Water Sampled: _____ Sampling Contractor: _____

Date Offsite Disposal: _____ Disposal Facility: WLSSD Profile #: _____

Load #	Date Water Added	Water Source			Tanker #	Load Volume (gallons)	Running Total (gallons)	Comments *Water source and degree of contamination* * **NO CRUDE OIL DISPOSAL IN TANKERS**
		Project Name	Project Contractor	Contractor Vehicle				
Ex. Onsite	*1/23/2013*	*Tank 99*	*PLM*	*Vac truck 789*	*123*	*2000*	*2000*	*Rainwater with sheen, drops of product from Tank 99 excavation*
1	02-24-17	Line 6	MN Limited	4071	P1	7200	7200	Water with sheen
2	02-24-17	Line 6	MN Limited	4071	P1	3500	10700	Water with sheen
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

COMMENTS *(additional source, handling, disposal notes...)*:

ENBRIDGE CONTACTS:

Terminal - Tom Peterson (715) 718-1572; Dennis Wedan (218) 428-1002.

Environment - Karl Beaster (715) 718-1040; Alex Smith (715) 817-8322.

JEFF FOSTER PETROLEUM DIVISION

33 WINTER STREET
SUPERIOR, WI 54880

Date 2/24/17 № 66273

Load at Enbridge Superior State WI

Trip # 4 Star Construction

LOAD UNDER: Project - Superior Term Line #6 Trap

PRODUCT:	OXY	Ordered GALLONS	Delivered GALLONS
Gasoline: UN1203 Flammable-liquid UNLEADED		Ground	Water
Gasoline: UN1203 Flammable-liquid UNLEADED	Load #1		7,200 Approx
Gasoline: UN1203 Flammable-liquid UNLEADED Plus / Prem	Load #2		3,500 Approx
Gasoline: UN1203 Flammable -liquid UNLEADED Plus / Prem			10,700
#1 / #2 Fuel Oil *COMBUSTIBLE LIQUID* NA1993 ULS KERO / RED / CLEAR BIO		Start 2/24/17 0730	
#1 / #2 Fuel Oil *COMBUSTIBLE LIQUID* NA1993 ULS KERO / RED / CLEAR BIO		End 2/24/	
#1 / #2 Fuel Oil *COMBUSTIBLE LIQUID* NA1993 ULS KERO / RED / CLEAR BIO			
#1 / #2 Fuel Oil *COMBUSTABLE LIQUID* NA 1993 ULS KERO / RED / CLEAR BIO			
Pump & Transport Ground Water From Enbridge Superior to WLSSD Duluth			

STICK READINGS

BEFORE	AFTER

BEFORE	AFTER

BEFORE	AFTER

DELIVER TO: WLSSD
Duluth, MN

BEFORE	AFTER

BILL OF LADING #

DRIVER Larry LaPlante

TRUCK # 4071 TRAILER # P-1

SIGNED