

Enbridge Historical Release Technical Memorandum Addendum

To: Alex Smith, Enbridge Energy
From: Laura Novitzki and Ryan Erickson
Subject: Superior Terminal Historical Contamination: Nemadji Release Corridor
Date: December 8, 2016
Barr Project #: 49161253.23

Historical Release Site Info – Nemadji Release	
Release Name and Description	Approximately 4,500 barrels of crude oil were released from a Terminal pipeline valve south of Tank 13. Crude oil from the release covered a section of the adjacent roadway and accumulated in the stormwater ditches on each side of the road, as shown in the historical release figure (Attachment A). Remedial actions were taken to clean-up the release; however, some residual sub-surface contamination was not removed due to the presence of buried pipeline infrastructure.
	WDNR SERTS Spill ID # 04-16-454807
	WDNR BRRTS # 02-16-513788
	Release Date January 24, 2003
	WDNR Closure Date April 8, 2008 (conditional); March 24, 2010 (final case closure)
Report / Memorandum Name, Consultant, Date	Remediation and Case Closure Report: January 24, 2003 Release; Superior Terminal, Natural Resources Engineering Company (December 2003); Superior Terminal Historical Contamination: Historical Nemadji Release Corridor, Barr Engineering (June 2016)
GIS Registry Update included (Attachment D)?	No

Historical Release Documentation provided in Attachment A.

Current / Updated Project Info – Nemadji Release Corridor (TK17, TK13 Basin, TK13 Valve)			
Project Name and Description	Superior Terminal pipeline infrastructure maintenance / improvement excavations were conducted along the historical Nemadji Release Corridor in the fall of 2016 (Figure 1). Soil and water with historical crude oil contamination was encountered in excavations along the corridor north of the Tank 17 (TK17) basin and south of Tank 13 (TK13 Basin, TK13 Valve) (Figure 2).		
SERTS / BRRTS # (if applicable)	Not applicable		
Date Historical Contamination was Encountered	TK17: 8/3/2016 TK13 Basin: 9/30/2016 TK13 Valve: 9/30/2016	Date Work Completed	TK17: 8/3/2016 TK13 Basin: 10/3/2016 TK13 Valve: 10/3/2016
WTM Coordinates of Current Activity	TK17: X: 362264.3132 TK13 Basin: X: 362,323.3752 TK13 Valve: X: 362,332.9796	Y: 692500.2441 Y: 692,612.6593 Y: 692,582.6819	
Description of Remedial Actions, Site Assessment, and Historical Site Correlation	<p>Tank 17: Hydrocarbon contaminated soil and water was encountered within potholes and an excavation on the north side of the Tank 17 containment berm (Photos 1 through 3; Figure 2). The site was located in between two previously reported (Barr, 2016) contaminated excavations and the observed contamination was similar to the impacts reported in those locations. Analytical samples were collected from the adjacent excavations to the east and west, but not from the recent excavation. No analyte concentrations from the samples collected from the adjacent excavations exceeded WDNR Industrial Residual Contaminant Levels.</p> <p>Tank 13 Basin: An approximately 10 cubic yard pocket of contaminated soil was encountered 4-5 feet below ground surface near buried lines in an excavation within the southern corner of the Tank 13 containment basin (Photos 4 and 5; Figure 2). All identified contaminated soil was excavated for the project and no residual soil contamination or water with a sheen was identified within the final excavation. This site is not within the Nemadji Release footprint but is within 75 feet of it and is directly connected via buried pipeline infrastructure.</p> <p>Tank 13 Valve: Groundwater with a hydrocarbon sheen was observed within a valve excavation south of Tank 13 (Photos 6 through 8; Figure 2). The sheen was not observed during excavation activities; only after the excavation was stopped and groundwater flowed into the excavation. No organic vapors, no petroleum odor, and no visual evidence of contamination was detected in soil samples collected at 2</p>		

	<p>feet below ground surface (Attachment B). A trace amount of sheen was visible on water at the base of the excavation; however, it was not a rainbow sheen.</p>
<p>Waste Management Summary</p>	<p>75.70 tons of crude oil impacted soil removed from the excavations was managed at the VONCO V Landfill in Duluth, Minnesota under the Nemadji Corridor waste profile #16-017-I between September and October, 2016 (Attachment C).</p>
<p>Discussion / Conclusion</p>	<p>The Tank 17, Tank 13 Basin, and Tank 13 Valve excavations were located within the footprint of or were connected to the historical Nemadji Release area via buried pipeline infrastructure. No active releases were identified in these locations. Similar historical impacts have been identified near these locations, were reported to the WDNR, and were attributed to the Nemadji Release. Based on the location of the impacts, the field observations, and the ongoing Superior Terminal facility-wide groundwater monitoring program, Barr does not believe additional assessment or remediation activities will be required.</p>

Attachments:

- Current Site Photos
- Figure 1 Site Location
- Figure 2 Site Layout
- Attachment A Historical Release Documentation
- Attachment B Current Field Sampling and Screening Log
- Attachment C Current Waste Disposal Documentation
- Attachment D Documentation for GIS Registry Update (not applicable)

Site Photos

Tank 17



Photo 1



Photo 2

Photo 1: Tank 17 excavation. Photo taken facing south on August 3, 2016.

Photo 2: Tank 17 excavation. Photo taken facing north on August 3, 2016.



Photo 3: Tank 17 excavation. A hydrocarbon sheen is visible on the excavation water surface. Photo taken on August 3, 2016.

Tank 13 Basin



Photo 4



Photo 5

Photo 4: Tank 13 Basin excavation. Photo taken facing north on September 30, 2016.

Photo 5: Tank 13 Basin excavation contaminated soil in stockpile. Photo taken on September 30, 2016.

Tank 13 Valve



Photo 6



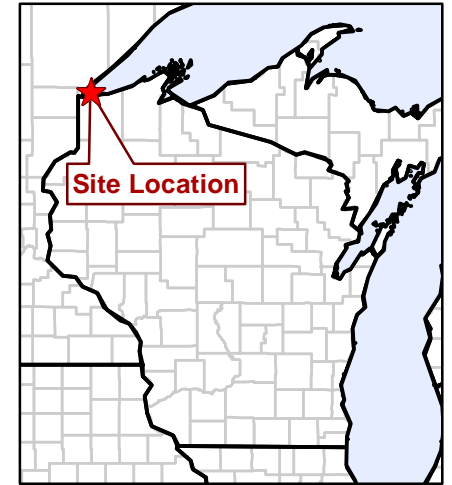
Photo 7

Photo 6: Tank 13 Valve excavation. Photo taken facing northwest on October 3, 2016.

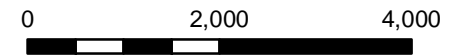
Photo 7: Tank 13 Valve excavation. Photo taken facing northeast on October 3, 2016.



Photo 8: Tank 13 Valve excavation. A sheen is visible on the excavation water surface. Photo taken on October 3, 2016.



- Nemadji Release Corridor
- Terminal Property Boundary

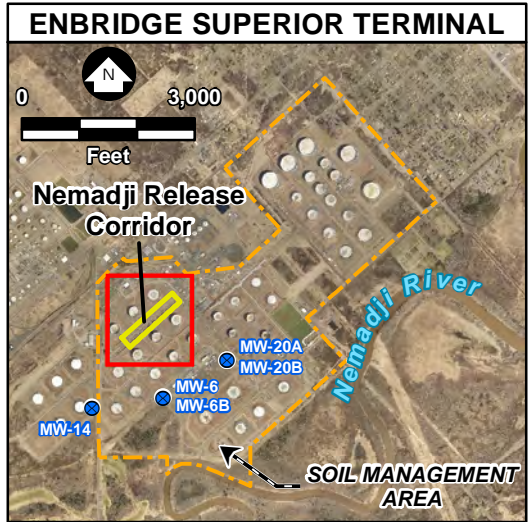
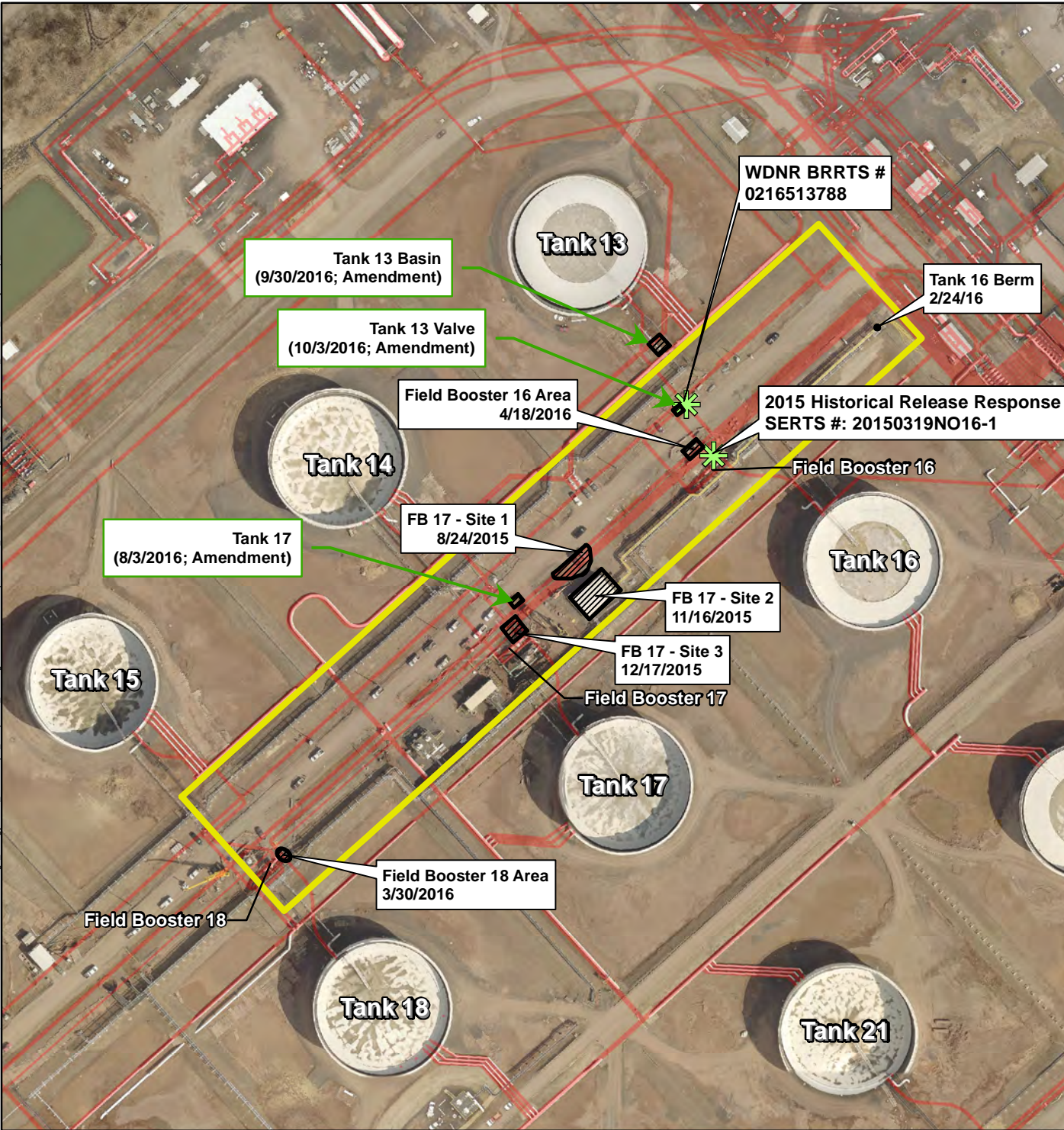


Feet
 1 Inch = 2,000 Feet
 Figure 1

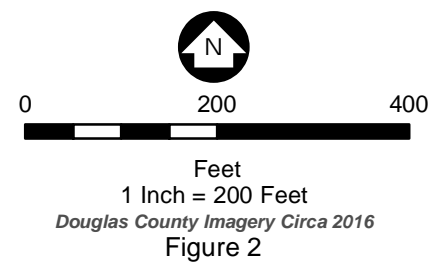
SITE LOCATION
NEMADJI RELEASE CORRIDOR
HISTORICAL CONTAMINATION
SUPERIOR TERMINAL
 Enbridge Energy, L.P.
 Superior, Wisconsin



Barr Footer: ArcGIS 10.4, 2016-12-07 16:38 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161253\MapaTank14_17_Excavations\Figure2_Nemadji_Release_Corridor_SiteLayoutMap_8x11.mxd User: lwk



- Historical Release Location
- Monitoring Wells
- Nemadji Release Corridor
- Excavation Extents
- Pipeline Infrastructure
- Terminal Property Boundary



**SITE LAYOUT
NEMADJI RELEASE CORRIDOR
HISTORICAL CONTAMINATION
SUPERIOR TERMINAL**
Enbridge Energy, L.P.
Superior, Wisconsin



Attachment A:
Historical Release Information

Christopher Goscinak

From: Alex Smith <alex.smith@enbridge.com>
Sent: Thursday, March 19, 2015 4:44 PM
To: Ryan E. Erickson
Cc: Christopher Goscinak
Subject: Fwd: Terminal spill reported today SERTS ID 20150319NO16-1
Attachments: ATT00001.htm; image002.gif; ATT00002.htm; image003.gif; ATT00003.htm; ATT00004.htm; image005.gif; ATT00005.htm; ATT00006.htm; spillTemp.xml682910.pdf; ATT00007.htm

Ryan,

In the morning can you send me a sat image with the gps coordinates? I'll give John a call too and provide an update.

Thanks for all the help today guys!

Alex Smith

Begin forwarded message:

From: "Sager, John E - DNR" <John.Sager@wisconsin.gov>
Date: March 19, 2015 at 4:24:34 PM CDT
To: "Alex Smith (alex.smith@enbridge.com)" <alex.smith@enbridge.com>
Subject: Terminal spill reported today SERTS ID 20150319NO16-1

Hi Alex,

I received the hotline notification for the release reported today. The SERTS ID for the release is 20150319NO16-1. Please use the SERTS ID on correspondence regarding this release. Please send me the coordinates of the spill and a brief status report. I will call you tomorrow morning. If anything comes up that is urgent please call me on my cell phone (715) 490-0123.

Thanks.

We are committed to service excellence.

Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.





John Sager

Hydrogeologist – Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
1701 N. 4th St.
Superior, WI 54880
Phone: (715) 392-7822
Fax: (715) 392-7993
john.sager@wisconsin.gov

***** IMPORTANT NOTICE*****



Legend

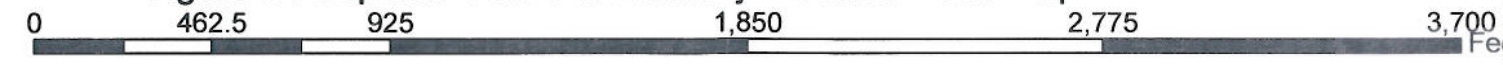
-  Oiled Extent / Scraped Area
-  Excavated Area
-  Release Location
-  Sorbent Booms & Hay Bales


N
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S



Enbridge Energy, Limited Partnership

Figure 2 : Superior Terminal Nemadji Release - Site Map



DATE ISSUED: 1/26/2003	
DATE REVISED: 12/12/03	
SCALE: 1:6,011	
DRAWN BY: JAS Z (Enbridge) Leaks, Remediation, Compliance, Operations Superior Terminal/Superior-Nemadji, Jan 24, 2003 maps	
SERIES: Douglas County	715-395-5680



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
John Gozdzialski, Regional Director

Northern Region Headquarters
107 Sutliff Avenue
Rhinelander, Wisconsin 54501-3349
Telephone 715-365-8900
FAX 715-365-8932
TTY Access via relay - 711

March 24, 2010

Mr. Joseph McGaver
Enbridge Energy
119 N. 25th Street East
Superior, WI 54880

SUBJECT: Final Case Closure with Land Use Limitations or Conditions
Enbridge Energy Co. - Nemadji Release,
Superior, WI 54880

WDNR BRRTS Activity #: 02-16-513788

Dear Mr. McGaver:

On April 3, 2008, the Northern Region Closure Committee reviewed the above referenced case for closure. This committee reviews environmental remediation cases for compliance with state laws and standards to maintain consistency in the closure of these cases. On April 8, 2008, you were notified that the Closure Committee had granted conditional closure to this case.

On May 21, 2008 the Department received correspondence indicating that you have complied with the requirements of closure. Documentation was provided regarding borehole abandonment.

Based on the correspondence and data provided, it appears that your case meets the requirements of ch. NR 726, Wisconsin Administrative Code. The Department considers this case closed and no further investigation or remediation is required at this time.

GIS Registry

The conditions of case closure set out below in this letter require that your site be listed on the Remediation and Redevelopment Program's GIS Registry. The specific reasons are summarized below:

- Residual soil contamination exists that must be properly managed should it be excavated or removed
- If a structural impediment that obstructs a complete site investigation or cleanup is removed or modified, additional environmental work must be completed
- Before the land use could be changed from industrial to non-industrial, additional environmental work must be completed

Information that was submitted with your closure request application will be included on the GIS Registry. To review the sites on the GIS Registry web page, visit the RR Sites Map page at

<http://dnr.wi.gov/org/aw/rr/gis/index.htm>. If your property is listed on the GIS Registry because of remaining contamination and you intend to construct or reconstruct a well, you will need prior Department approval in accordance with s. NR 812.09(4)(w), Wis. Adm. Code. To obtain approval, Form 3300-254 needs to be completed and submitted to the DNR Drinking and Groundwater program's regional water supply specialist. This form can be obtained on-line <http://dnr.wi.gov/org/water/dwg/3300254.pdf> or at the web address listed above for the GIS Registry.

Closure Conditions

Please be aware that pursuant to s. 292.12 Wisconsin Statutes, compliance with the requirements of this letter is a responsibility to which you and any subsequent property owners must adhere. If these requirements are not followed or if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety, welfare, or the environment, the Department may take enforcement action under s. 292.11 Wisconsin Statutes to ensure compliance with the specified requirements, limitations or other conditions related to the property or this case may be reopened pursuant to s. NR 726.09, Wis. Adm. Code. It is the Department's intent to conduct inspections in the future to ensure that the conditions included in this letter including compliance with referenced maintenance plans are met.

Remaining Residual Soil Contamination

Residual soil contamination remains in the area associated with Tank 13 in the area of TP-13 S1 and TP-13 S4, B-2 and B-3 and with Tank 14 in the area of S-BC-8 and SCW-5 as identified on the attached map Superior Terminal Nemadji Release Soil Sample Locations and Cross-Sections dated November 20, 2007, which is attached and was in the information submitted to the Department of Natural Resources. The locations and numbers of the tanks are identified within the property boundaries on the attached Enbridge Energy Co Tank Location Map prepared by the Department on July 23, 2008. If soil in the specific locations described above is excavated in the future, then pursuant to ch. NR 718 or, if applicable, ch. 289, Stats., and chs. 500 to 536, the property owner at the time of excavation must sample and analyze the excavated soil to determine if residual contamination remains. If sampling confirms that contamination is present the property owner at the time of excavation will need to determine whether the material would be considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable standards and rules. In addition, all current and future owners and occupants of the property need to be aware that excavation of the contaminated soil may pose an inhalation or other direct contact hazard and as a result special precautions may need to be taken to prevent a direct contact health threat to humans.

Structural Impediments

Structural impediments existing at the time of cleanup, piping associated with the tank farm within the area identified as Parcel 3C on the Superior – Terminal: Nemadji Release Map of All Contaminated Properties, made complete remediation of the soil contamination on this property impracticable. Pursuant to s. 292.12(2)(b), Wis. Stats., if the structural impediments on this property that are described above are removed, the property owner shall conduct an investigation of the degree and extent of crude oil contamination. If contamination is found at that time, the Wisconsin Department of Natural Resources shall be immediately notified and the contamination shall be properly remediated in accordance with applicable statutes and rules. If soil in the specific locations described above is excavated, the property owner at the time of

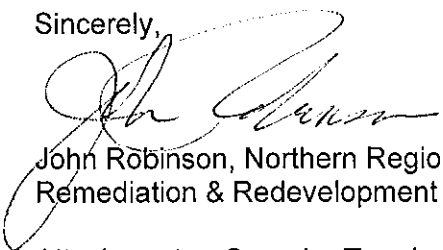
excavation must sample and analyze the excavated soil to determine if residual contamination remains. If sampling confirms that contamination is present the property owner at the time of excavation will need to determine whether the material would be considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable statutes and rules. In addition, all current and future owners and occupants of the property need to be aware that excavation of the contaminated soil may pose an inhalation or other direct contact hazard and as a result special precautions may need to be taken during excavation activities to prevent a health threat to humans.

Industrial Residual Soil Standards

Soil samples that are representative of currently remaining residual soil contamination on this property were collected in April, May and June of 2003, and contained Polynuclear Aromatic Hydrocarbon concentrations that exceeded NR 720.11, Table 2, Wis. Adm. Code, non-industrial soil standards and met NR 720.11, Table 2, Wis. Adm. Code, industrial soil standards. Soil samples that are representative of currently remaining residual soil contamination on this property were collected during several events from March to October of 2003 contained Polynuclear Aromatic Hydrocarbons in concentrations that met the site-specific industrial soil standards developed for this site. Therefore, pursuant to s. 292.12(2)(c), Wis. Stats., the property described above may not be used or developed for a residential, commercial, agricultural or other non-industrial use, unless (at the time that the non-industrial use is proposed) an investigation is conducted, to determine the degree and extent of Polynuclear Aromatic Hydrocarbons contamination that remains on the property, and remedial action is taken as necessary to meet all applicable non-industrial soil cleanup standards. If soil in the specific locations described above is excavated in the future, the property owner at the time of excavation must sample and analyze the excavated soil to determine if residual contamination remains. If sampling confirms that contamination is present the property owner at the time of excavation will need to determine whether the material would be considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable statutes and rules. In addition, all current and future owners and occupants of the property need to be aware that excavation of the contaminated soil may pose an inhalation or other direct contact hazard and as a result special precautions may need to be taken during excavation activities to prevent a health threat to humans.

The Department appreciates your efforts to restore the environment at this site. If you have any questions regarding this closure decision or anything outlined in this letter, please contact me at 715 365-8976.

Sincerely,



John Robinson, Northern Region Team Supervisor
Remediation & Redevelopment Program

Attachments: Superior Terminal Nemadji Release: Soil Sample Locations and Cross Sections
Enbridge Energy Co Tank Location Layout
Superior – Terminal: Nemadji Release Map of All Contaminated Properties

→ cc: Barry Power – 1409 Hammond Ave., Suite 10
Superior, Wisconsin 54880

Attachment B

Current Field Sampling and Screening Log

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: Milepost or Facility Nemadji Corridor - Tank 13 Basin

Equipment used: PID -ionization detector with 16.7 eV lamp

Background Headspace: 0.0 ppm

Date: 9/30/16

Sample Nomenclature (Location - sample type - #): _____

Sampler: PBB

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

Calibration Time: 1000



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	6	1100	CL	Reddish Brown	N/W	0.0
S-2	5					0.0
S-3	4					0.0
S-4	3					0.0
S-5	2	1115				0.0

SITE SKETCH: north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features... **1 inch/grid = 10 FEET**

Southern 1/4 of basin
 Tank 13
 30'
 No observed impacts
 Pipeline
 100' x 8' bags
 No observed impacts
 S-5 S-4 S-2 S-3 S-1
 Contractor observed impacts (color, discoloration) from approximately 4-5 feet bags
 Wave ground pipe
 Electrical rack
 - Contractor removed all apparent impacts
 - Barr did not observe any evidence of residual contamination

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: Milepost or Facility Nemadji Corridor - Tank 13 Valve

Equipment used: PID -ionization detector with 10.6 eV lamp

Sample Nomenclature (Location - sample type - #): _____

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

Background Headspace: 0 ppm

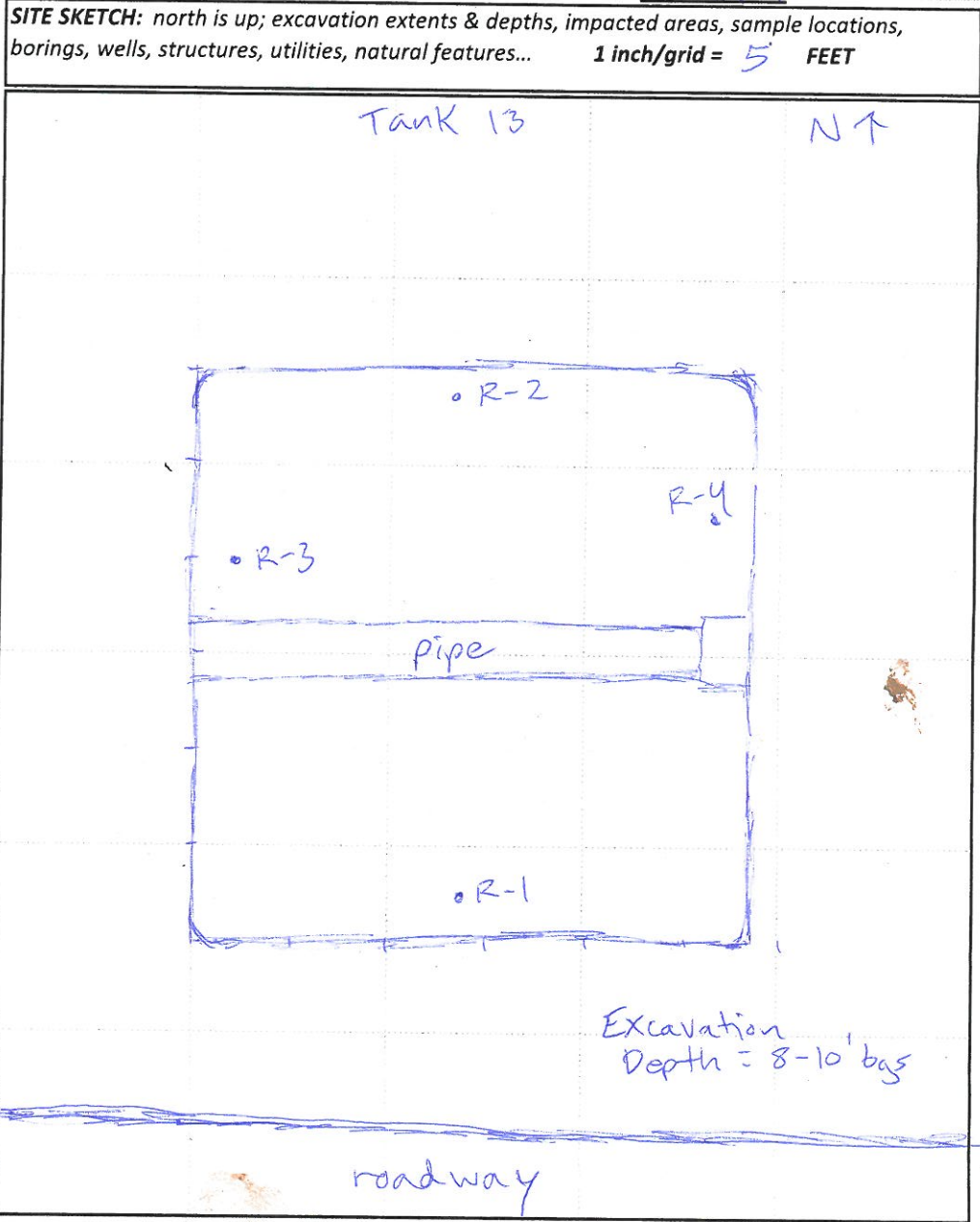
Date: 10/3/16

Sampler: LEN

Calibration Time: 10:00 am



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
R-1	2	11:15	CL	Reddish brown	N/N	0
R-2	2	↓	CL	"	N/N	0
R-3	2	↓	CL	"	N/N	0
R-4	2	11:20	sand	"	N/N	0



Booster Pump 216
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Attachment C

Current Waste Disposal Documentation



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

16-017-I Terminal Nemadji Release

Date	Ticket	Customer	Truck	Material	Tons
03/11/2016	272003	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	14.50
03/11/2016	272008	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	16.38
03/11/2016	272013	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	15.38
03/30/2016	272433	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	13.43
03/30/2016	272438	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	12.57
03/30/2016	272461	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	14.94
03/30/2016	272471	001342 - Enbridge Pipelines LLC	S38099W	Contaminated Soil Tons	15.94
03/30/2016	272472	001342 - Enbridge Pipelines LLC	S39449X	Contaminated Soil Tons	14.15
03/30/2016	272473	001342 - Enbridge Pipelines LLC	S36746W	Contaminated Soil Tons	13.78
04/18/2016	273067	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	18.41
04/18/2016	273077	001342 - Enbridge Pipelines LLC	T53691W	Contaminated Soil Tons	20.72
09/14/2016	279261	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	14.11
09/14/2016	279262	001342 - Enbridge Pipelines LLC	PRZ2133	Contaminated Soil Tons	13.17
09/14/2016	279271	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	15.06
10/12/2016	281029	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	19.35
10/12/2016	281037	001342 - Enbridge Pipelines LLC	PRZ2130	Contaminated Soil Tons	14.01
				Total Tons	245.90
				Total Loads	16

Attachment D

Documentation for GIS Registry Update (not applicable)