Enbridge Superior Terminal
Facility-Wide Continuing Obligations
GIS Registry Update BRRTS#: 16-16-560657

SUBMITTAL DATE: January 29, 2021	
RELEASE OR ACTIVITY NAME: ENBRIDGE SUPERIOR – Tank 24 Floor	
ORIGINAL BRRTS / SRRTS # (*if applicable*): 02-16-586219	

SITE INFORMATION			
Date of Discovery *(if applicable)*	7/28/2020	**Date of Rediscovery** *(if applicable)*	NA
WDNR Notification/ Start Date	7/28/2020	**WDNR NFA Date** *(if applicable)*	10/12/2020
Coordinates of Current Activity *(decimal degrees)*	Lat: 46.683645° N Lon: -92.065148° W	**Coordinates of Current Activity *(WTM91)***	X: 362060.83922 Y: 692079.44714
Enbridge Contact and Email	Karl Beaster Karl.Beaster@enbridge.com	**Consultant Contact and Email**	Ryan Erickson rerickson@barr.com
Previous Report and Memorandum References *(if applicable)*	*2020 Tank 24 Release Response*, Barr Engineering Technical Memorandum, Submitted to Enbridge on August 21, 2020.		
Release Description and Notification	In July of 2020, Enbridge contractors replacing the floor of the Tank 24 crude oil storage tank discovered hydrocarbon-impacted fill (sand) below the floor along the northwest side of the tank (Figure 2). Enbridge personnel responded to the site to assess the site conditions and conduct environmental remediation activities. No active release was identified because the tank and associated infrastructure were empty and no definitive release source was identified during tank inspections. A release volume could also not be definitively calculated; however, the volume appeared to be greater than the Wisconsin Department of Natural Resources (WDNR) 5-gallon reporting limit based on field observations. The WDNR was notified about the release on July 28, 2020 and pending Bureau of Remediation & Redevelopment Tracking System (BRRTS) number #02-16-586219 was assigned to the site.		

Response Action Summary	
Date of Excavation, extent and soil disposal	Contaminated fill (sand) excavation activities were conducted on July 30, 31, and August 1, 2020. Clay soil was present beneath the sand fill and only shallow clay impacts (<0.3 feet) were identified and were mostly excavated as part of the tank project. Fill and limited amounts of soil with hydrocarbon impacts was removed from an area approximately 90 feet long (east to west) by 40 feet wide (north to south) by up to 2 feet thick (Table 1, sheets 1, 2, 3; Figure 2). On the north side of the contaminated area, a concrete tank footing (1.5 feet wide, 2.5 feet deep) prevented migration outside of the tank perimeter. Contaminated fill was temporarily stockpiled in the Terminal Soil Management Area until offsite disposal at the VONCO V landfill in Duluth, MN was approved.
Groundwater Depth and Nearest Monitoring Well	Groundwater was not observed in the excavation. The water table at the Superior Terminal is typically between 3 and 6 feet below ground surface (bgs) based on data from the Superior Terminal Groundwater Monitoring Program. The nearest downgradient monitoring well is MW-6, which is located approximately 800 feet to the east (Figure 2).
Soil Field Screening Results Summary	On July 31 and August 1, 2020, Barr collected field screening samples from the fill material that was being removed to delineate the impacted area and from the clay soil at the final excavation grade to identify whether residual impacts remained (Table 1, sheets 4, 5). Although samples were collected from less than 2 feet bgs, the risk of direct contact exposure is limited due to their location directly below the tank structure. Field screening for residual soil impacts were between 4.3 and 19.2 parts per million (ppm) and no other evidence of residual contamination (e.g., discoloration, odor, sheen) was identified.
Analytical Sampling Results Summary	On July 31 and August 1, 2020, Barr collected a total of four confirmation soil samples (*TK24-B-1* through *TK24-B-4*) from the final excavation bottom in locations where headspace detections exceeded 10 ppm to document residual concentrations (Table 2). The samples were analyzed for petroleum volatile organic compounds (PVOCs) plus naphthalene. All analyte concentrations were below the WDNR Direct Contact and Groundwater Residual Contaminant Levels (RCLs) except for benzene concentrations in samples *TK24-B-1, TK24-B-2, TK24-B-3* (0.250 mg/kg, 0.590 mg/kg, and 0.057 mg/kg, respectively) which exceeded the Groundwater RCL (0.0051 mg/kg) (Table 2). A new tank bottom was installed upon completion of the excavation.

Risk Assessment Discussion	
Direct Contact Receptor	There is little to no direct contact risk based on the analytical sample results, the location of the potential residual impacts beneath the tank, and Enbridge employee awareness and safety requirements.

Surface Water Receptor	There is little to no risk to surface water receptors from the documented residual contamination based on the results of the assessment, the site location, and the location of the nearest waterbody (1,200 feet to the southeast).
Groundwater Receptor	The nearest private water well receptor is located more than 875 feet to the north. Although soil analyte concentrations from the excavation were detected above the Groundwater RCL, the groundwater pathway at the Superior Terminal is addressed on a facility-wide basis through the established hydrogeologic performance standard approved by the WDNR. In addition, migration of residual impacts, located below the tank floor and above the water table, are not expected due to the lack of surface water infiltration and depth to groundwater.
Vapor Receptor	The nearest building is approximately 900 feet north of the site. It is a slab-on-grade building, has limited human occupancy, and it does not meet the vapor intrusion pathway conditions outlined in the approved Facility-wide SI/RAP and addendum.

Residual Contamination and Facility-Wide Eligibility Discussion	
Residual Contamination and Structural Impediments	Based on analytical sampling results, there is no evidence of residual soil contamination exceeding WDNR Direct Contact RCL criteria. Residual soil contamination exceeding the Groundwater RCL criteria for benzene remains beneath the tank. Additional excavation of this material was not feasible due to the presence of pipeline infrastructure. The limits of the excavation were within the footprint of the tank and has since been covered with a new tank bottom.
Response Action Approval and Continuing Obligations	There is no identified risk to direct contact, surface water, or vapor receptors associated with the residual contamination from this release. The risk to groundwater will be addressed through the facility-wide hydrogeologic performance standard established for the Superior Terminal. The WDNR will be notified about any identified change in environmental conditions at the site. As part of this hydrogeologic performance standard Enbridge will continue to monitor groundwater conditions of the site and, if evidence of contamination is identified, it will be reported to the WDNR and managed in accordance with the approved SI/RAP and Addendum. Based on the *Facility-Wide SI/RAP* and *Addendum* site classification, the pathway to closure for this site will be to transfer it to the Superior Terminal Facility-Wide Site (BRRTS#: 02-16-560657). The WDNR has agreed with this approach in their letter dated October 12, 2020; therefore, no additional response, investigation, or reporting activities will be required at this time.

Attachments:

Table 1	Site Investigation Field Sampling and Screening Logs
Table 2	Soil Sample Analytical Results
Figure 1	Site Location
Figure 2	Site Layout

Soil Page 1 of 2

Table 1 - Sheet 1 of 5

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 7/30/20

Location: *Milepost or Facility* Tank 24 Floor Replacement Response

Sampler: JET

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

Background Headspace: 0 ppm

Calibration Time: 06:00

Sample Nomenclature *(Location - sample type - #)*: TK24-

100 ppm = 102.6 ppm

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
TK-24-1	C2N 6"	08:15	Sand	Red/Brown	Yes	79.1
TK-24-2	C2N				↓	18.1
TK-24-3	C2NW				None/none	9.5
TK-24-4	C2N				Yes	146.5
TK-24-5	C2N				↓	85
TK-24-6	C2NW				none/none	9.2
TK-24-7	C2N				Yes	304
TK-24-8	C2N				↓	86.1
TK-24-9	C2NW				none/none	8.5
TK-24-10	B2N				yes	670
TK-24-11	B2N				↓	205.3
TK-24-12	B2NW				none/none	7.4
TK-24-13	B2N				yes	669
TK-24-14	B2N				↓	27.5
TK-24-15	B2NW				none/none	7.1
TK-24-16	A2S				yes	670
TK-24-17	B3N				↓	23.2
TK-24-18	B3NW				none/none	6.9
TK-24-19	A3N	07:45	Sand	Red/Brown	none/none	4.6
TK-24-20	A3S					2.5
TK-24-21	~~A3N~~ B3N					2.3
TK-24-22	A3S					1.8
TK-24-23	A4N					1.7
TK-24-24	A4S					1.8

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid = 40 FEET***

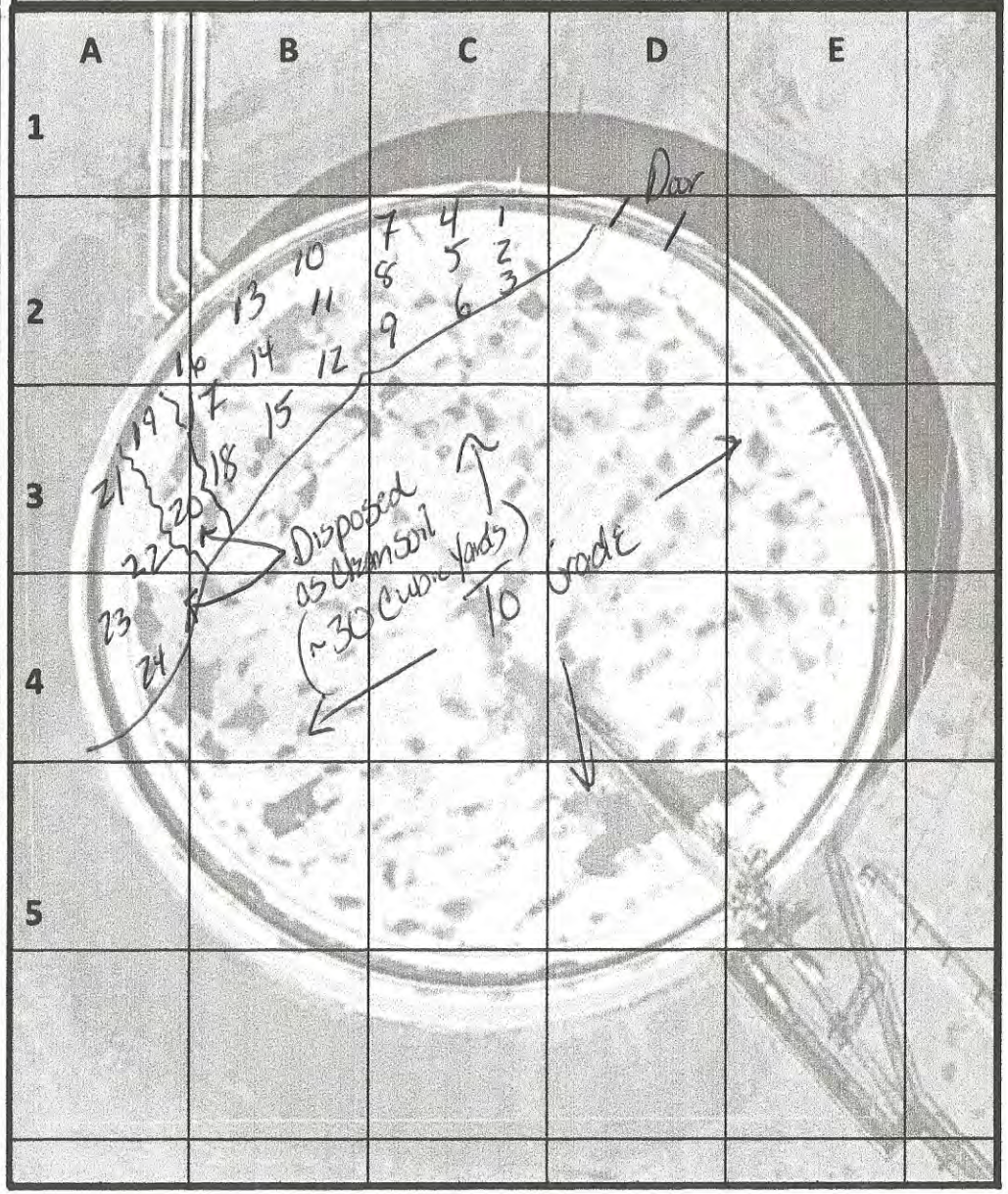


Table 1 - Sheet 2 of 5

ed Soil Screening Page 2 of 2

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 7/30/20

Location: *Milepost or Facility* Tank 24 Floor Replacement Response

Sampler: JET

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

Background Headspace: 0 ppm

Calibration Time: 06:00

Sample Nomenclature *(Location - sample type - #)*: TK24-

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
TK24-25	B2N	1.5' 10:50	Sand	Red/Brown	Yes	140
TK24-26	B2W					38.1
TK24-27	B2E					1201
TK24-28	B2S					21.5

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid = 40 FEET***

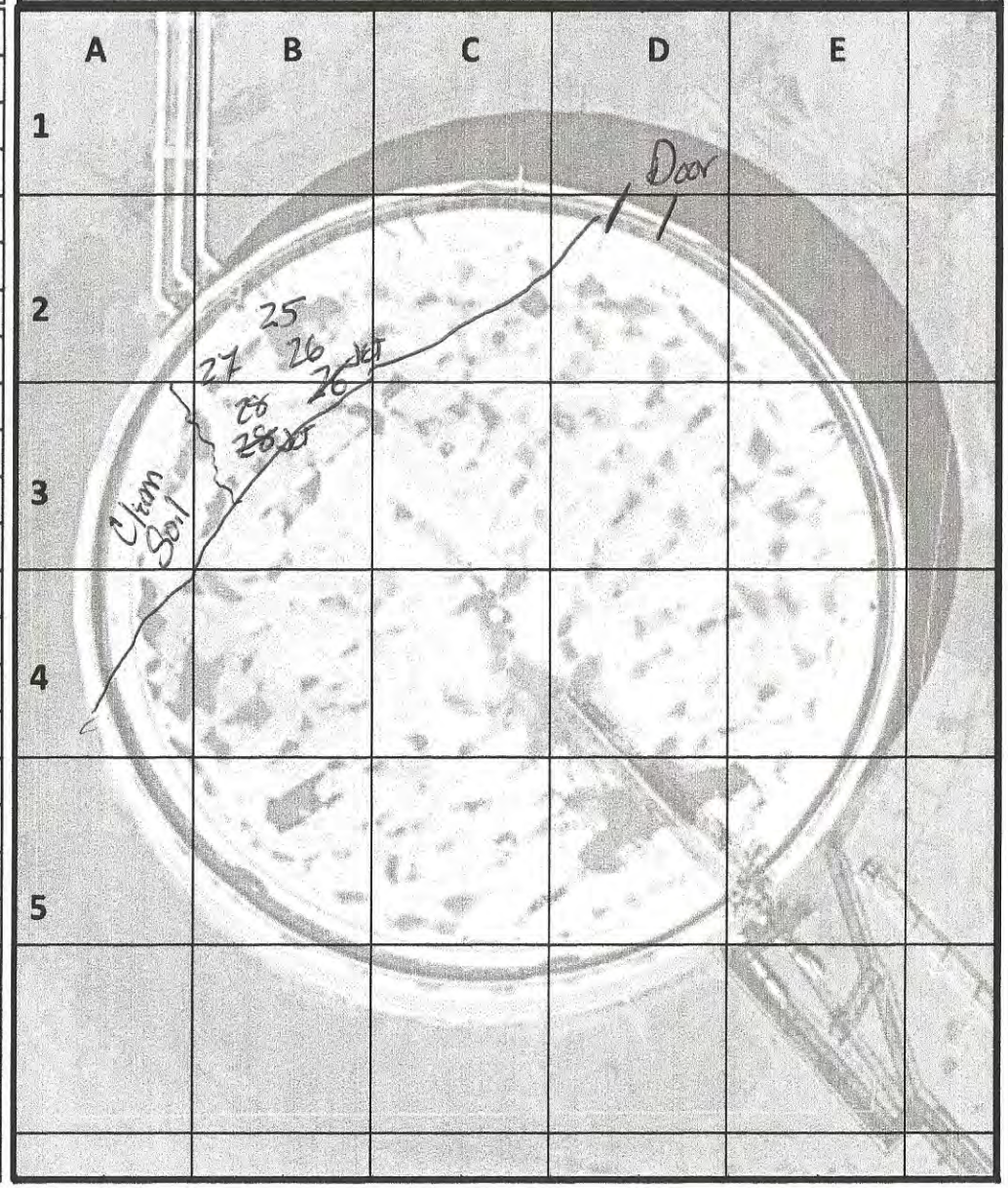


Table 1 - Sheet 3 of 5

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

adspace Readings

~~PPB~~ 55.

Date: 7/30/20

Location: *Milepost or Facility* Tank 24 Floor Replacement Response

Sampler: JES

Equipment used: _____ -*ionization detector with* _____ *eV lamp*

Background Headspace: 0 ppm

Calibration Time: 09:45

Sample Nomenclature *(Location - sample type - #):* TK24-

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

100 ppm = 101.5 ppm

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
A3-N	6"	17:10	CL	Red/Brown	none/none	2.7
B3-N						3.1
B3-S						2.5
A3-N						3.1
A3-N-2						2.7
A3-S						2.2
A3-SW						6.8
A4-NW						4.7
A4-S						4.7

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* **1 inch/grid = 40 FEET**

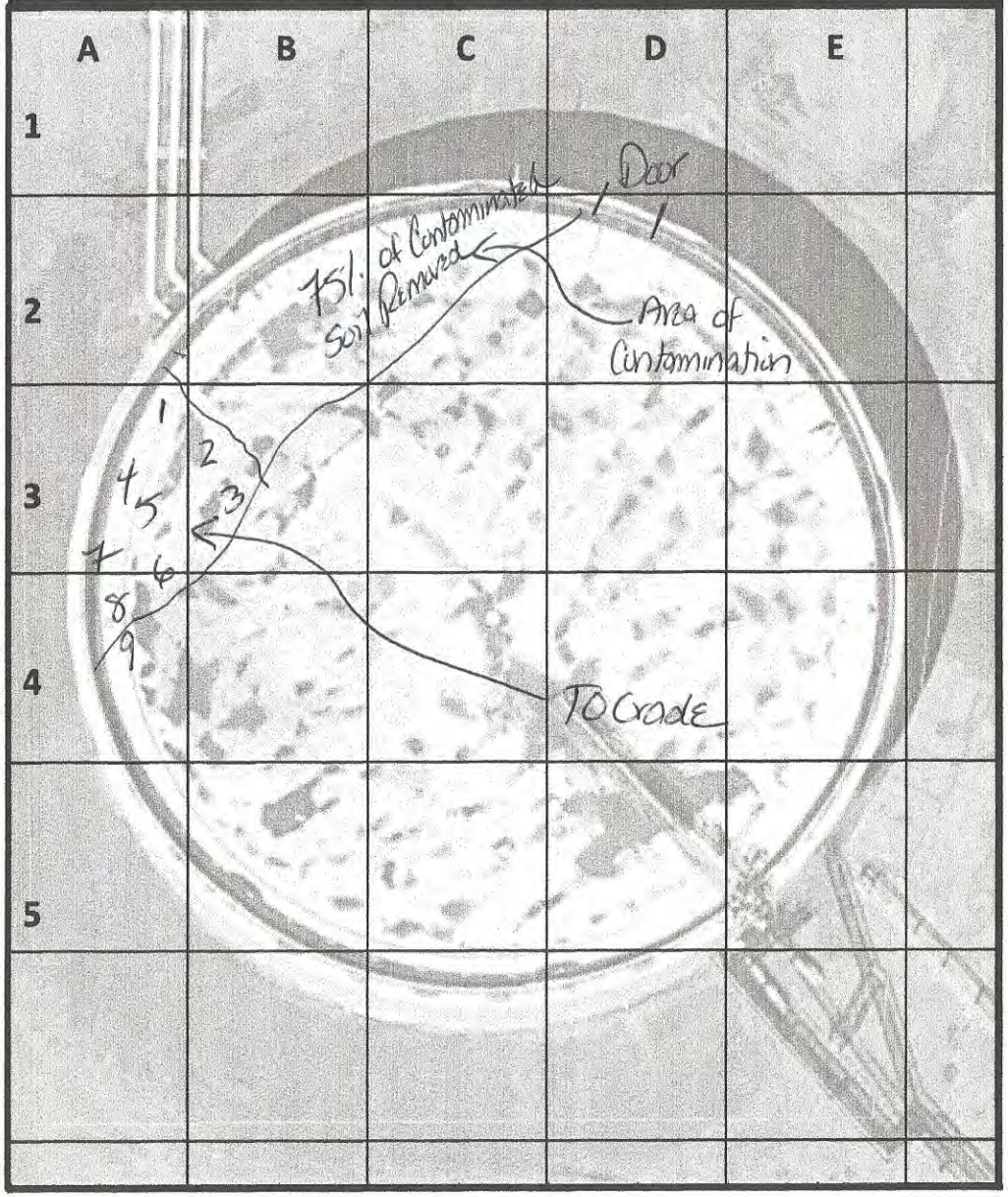


Table 1 - Sheet 4 of 5

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

...de) Headspace Readings

Date: 7/31/20

Location: *Milepost or Facility* Tank 24 Floor Replacement Response

Sampler: JET

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

Background Headspace: 0 ppm

Calibration Time: 07:00

Sample Nomenclature *(Location - sample type - #)*: TK24-

100 ppm = 104.5 ppm

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
TK-24-1 B3-S	6"	14:00	CL	Red/Brown	none/none	7.9
TK-24-2 B3-N						13.6
TK-24-3 B3-SW						9.8
TK-24-4 B2-NE						9.9
TK-24-5 B2-S						16.6
TK-24-6 B3-N						9.6
TK-24-7 C2-NW						18.7
TK-24-8 C2-NW						19.2
TK-24-9 C2-SOUTH						8.9
TK-24-10 C2-NE						5.7
TK-24-11 C2-N						9.1
TK-24-12 C2-S						4.3

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid = 40 FEET***

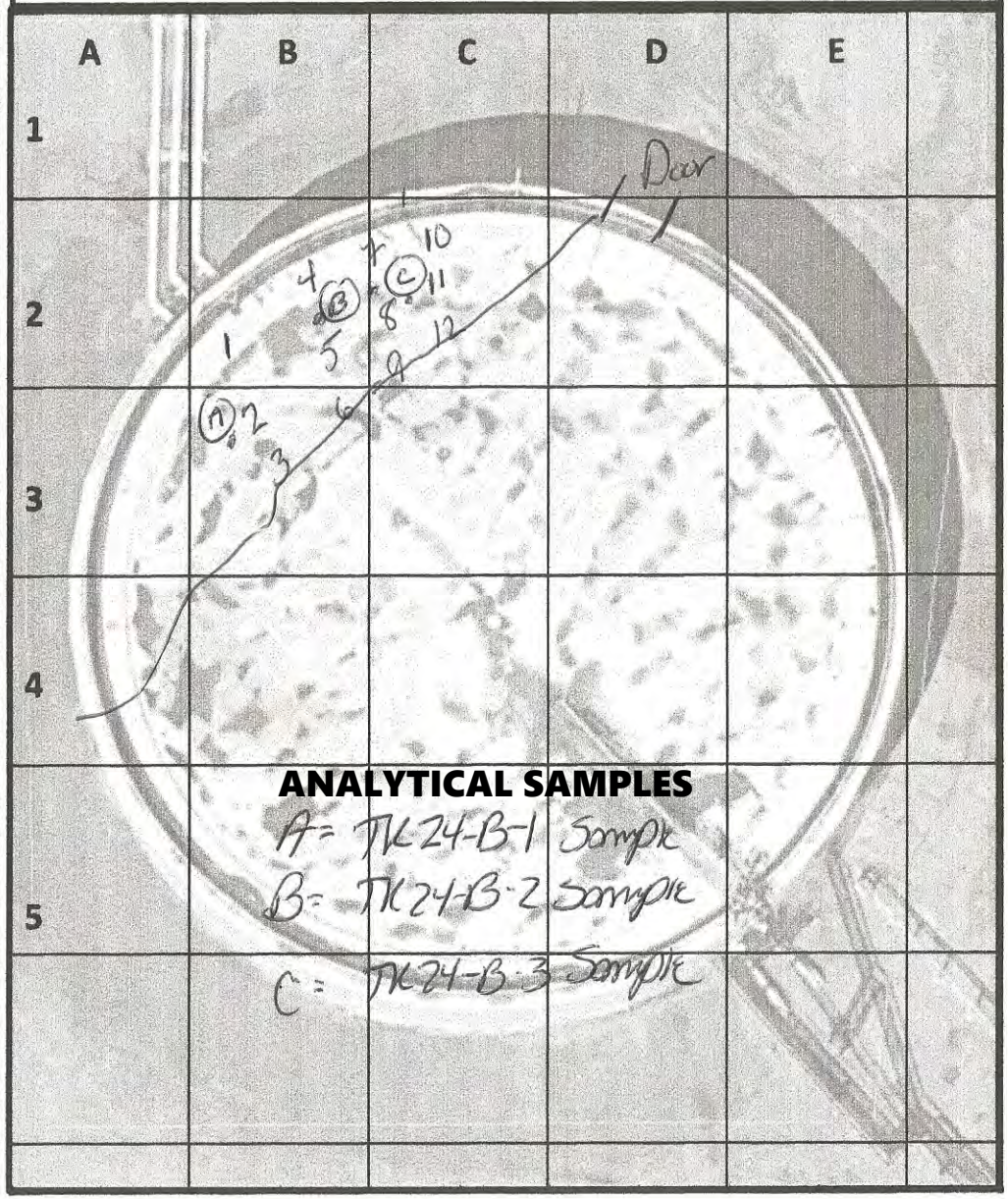


Table 1 - Sheet 5 of 5

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 24 Floor Replacement Response

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

Background Headspace: 0 ppm

Date: 8/1/20

Sampler: JET

Calibration Time: 07:00

Sample Nomenclature *(Location - sample type - #)*: TK24-

100 ppm = 102.2 ppm

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
TK-24-1 C2-N	6"	09:30	CL	Red/Brown	none/none	7.7
TK-24-2 C2-N						8.0
TK-24-3 C2-S						5.7
TK-24-4 C2-N						6.2
TK-24-5 C2-N						6.1
TK-24-6 C2-S						8.5
TK-24-7 C2NE						6.0
TK-24-8 C2-S						12.5
TK-24-9 C2NE						16.0
TK-24-10 C2NE						7.9

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid = 40 FEET***

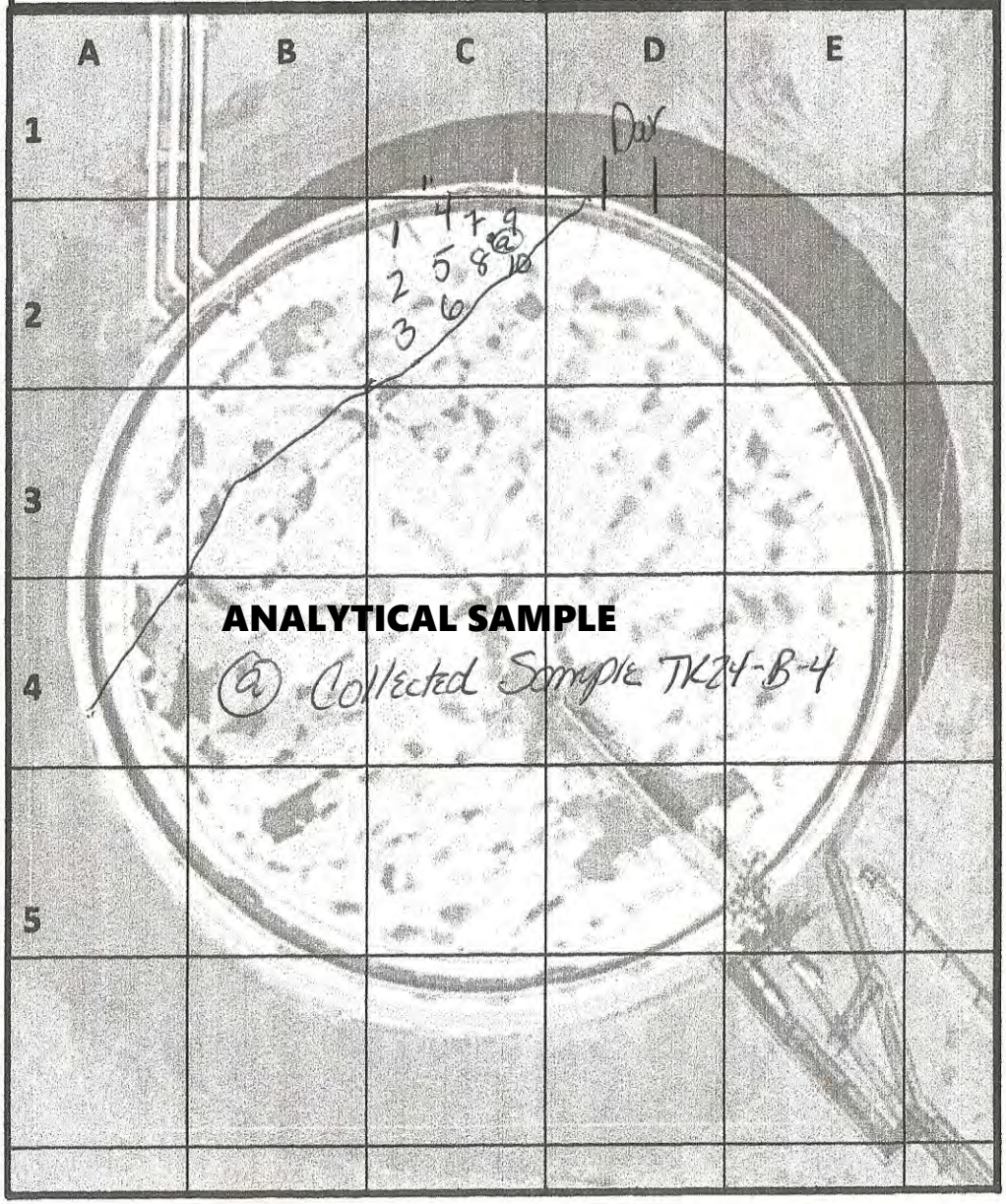


Table 2
Analytical Soil Data Summary
Tank 24 Response
Enbridge Energy

		Location	TK24-B-1	TK24-B-2	TK24-B-3	TK24-B-4
		Date	7/31/2020	7/31/2020	7/31/2020	8/01/2020
		Depth	0 ft	0 ft	0 ft	0 ft
Parameter	Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs				
Effective Date	06/01/2018	06/01/2018				
Exceedance Key	**BOLD**	No Exceedances				
Volatile Organic Compounds						
1,2,4-Trimethylbenzene	1.3787	219	0.160	< 0.035 U	0.320	< 0.022 U
1,3,5-Trimethylbenzene	1.3787	182	0.054J	< 0.055 U	0.110J	< 0.034 U
Benzene	**0.0051**	7.07	**0.250**	**0.590**	**0.057**	< 0.0050 U
Ethyl benzene	1.57	35.4	0.100	0.074	0.100	< 0.0065 U
Naphthalene	0.6582	24.1	0.130J	< 0.110 U	0.120J	< 0.070 U
Toluene	1.1072	818	< 0.0076 U	< 0.013 U	0.046	< 0.0080 U
Xylene, total	3.96	260	0.074J	< 0.063 U	0.280	< 0.039 U

-All values in mg/kg unless otherwise noted

Barr Standard Footnotes and Qualifiers

U	The analyte was analyzed for, but was not detected.
J	Analyte is present at an estimated concentration between the MDL and Report Limit

Site Location

Tank 24

Terminal Property Boundary

N

0 2,000 4,000

Feet

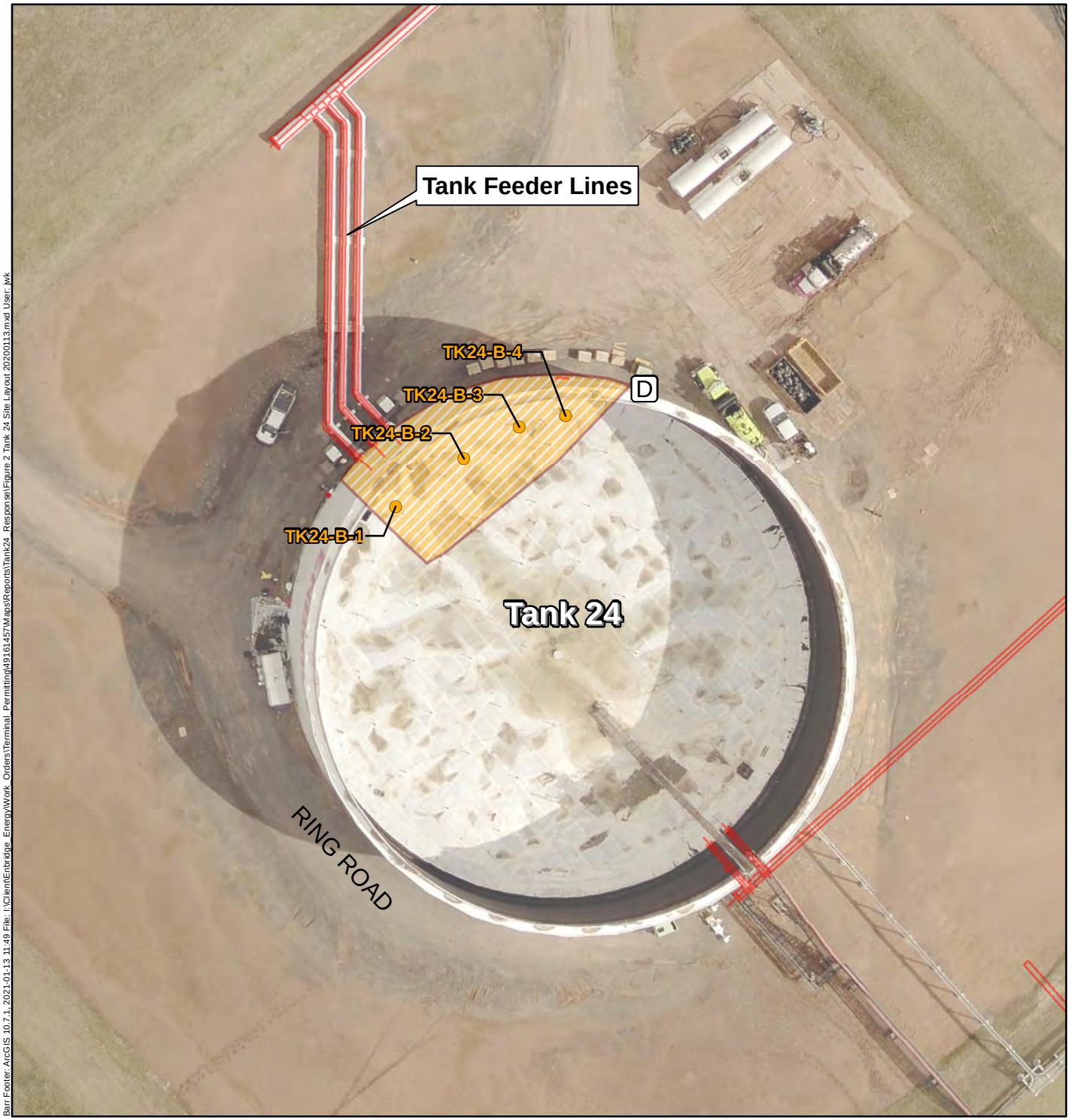
1 Inch = 2,000 Feet

Figure 1

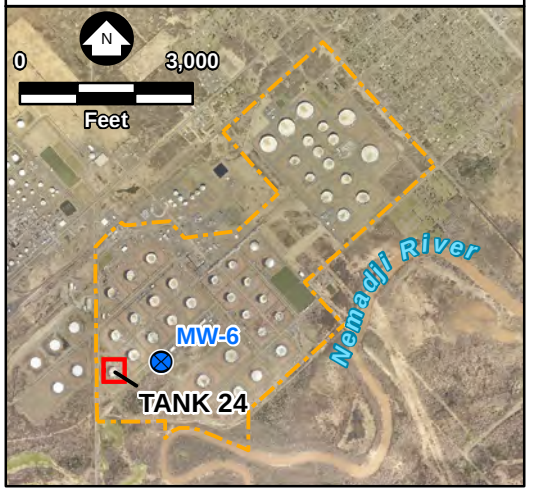
SITE LOCATION
TANK 24 RESPONSE
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.7.1, 2020-08-26 12:56 File: I:\Client\Enbridge_Energy\Work_Orders\Terminal_Permitting\49161457\Maps\Reports\Tank24_Response\Figure 1 Tank 24 Site Location.mxd User: jwk



ENBRIDGE SUPERIOR TERMINAL



- Enbridge Monitoring Well
- D — Project Access Door
- Confirmation Soil Sample
- Excavated Contaminated Fill and Potential Residual Contamination
- Pipeline Infrastructure
- Terminal Property Boundary

N

0 50 100

Feet

1 Inch = 50 Feet

Douglas County Imagery Circa May, 2019

Figure 2

SITE LAYOUT
TANK 24 RESPONSE
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE