

## Technical Memorandum

**To:** Nick Larabel, Enbridge Energy  
**From:** Ryan Erickson  
**Subject:** Enbridge Terminal – FIAT 2800 (Booster 1) Historical Response  
**WDNR Site BRRTS #:** 02-16-588091  
**Date:** March 24, 2022  
**Project:** 49161092.11 003 002  
**Site Coordinates:** 46.688581°, -92.055853° (NAD83)

This memorandum summarizes the environmental response activities performed by Barr Engineering (Barr) at the request of Enbridge Energy (Enbridge) following the discovery of groundwater with apparent historical petroleum impacts in the FIAT 2800 project (project) excavation at the Enbridge Superior Terminal (Terminal) in Superior, Wisconsin (Figure 1).

### Background

Between July and October 2021, Enbridge contractors conducted infrastructure maintenance activities at the FIAT 2800 project site (Figure 2). On July 29, 2021, the project excavation filled with groundwater and an apparent petroleum sheen was observed on the water in the northern end of the excavation. Enbridge personnel inspected the excavation and infrastructure and did not identify a definitive sheen source such as an active release or historically-impacted soil. Based on the field observations and the excavation's proximity to known historical release sites (described below), the sheen was assumed to be associated with a nearby historical release.

Enbridge requested that Barr complete the following activities:

- review the historical release information for sites near the project excavation,
- document site conditions,
- assist with offsite management coordination of impacted water, and
- prepare a memorandum summarizing the response actions and the excavation conditions upon the completion of project activities.

Barr reviewed Terminal historical release records for sites near the project excavation and identified that the *Enbridge Terminal - Booster 1* site was located approximately 10 feet northwest of the FIAT 2800 project excavation. The Booster 1 release was 150-barrels (bbl) and occurred on September 5, 1972. Limited historical information regarding this release was available. A Wisconsin Department of Natural Resources (WDNR) Bureau for Remediation and Redevelopment Tracking System (BRRTS) number was not issued at the time of the historical release, and petroleum impacts have not been previously documented in this location during subsequent Terminal excavation activities. In addition, the Booster 1 infrastructure is no longer present in this location.

Because the location of the excavation was not within an area previously associated with a BRRTS site, a *Notification For Hazardous Substance Discharge* (Form 4400-225) was submitted to the WDNR on July 30, 2021 and BRRTS #02-16-588091 was established for the site. The WDNR notification form is provided in Attachment A.

**To:** Nick Larabel, Enbridge Energy  
**Subject:** Enbridge Terminal – FIAT 2800 (Booster 1) Historical Response  
**Date:** March 24, 2022  
**Page:** 2

## **Field Activities and Results**

On July 29, 2021, Enbridge contractors completed the FIAT 2800 project excavation at the Superior Terminal (Figure 2). The excavation was located along a stormwater drainage ditch between a Tank 5 containment berm to the southwest and a Terminal road to the northeast. The excavation was approximately 30 feet long (northwest to southeast) by 15 feet wide (northeast to southwest) by 8 feet deep. During excavation activities, no petroleum-impacted soil was identified by the hydrovac operator or the project inspector. However, on July 29, 2021, groundwater filled the completed excavation, and the project team observed a light sheen on the surface of the water in the northern end of the excavation.

On July 30, 2021, Barr inspected the site. Groundwater in the excavation was approximately 2 feet below ground surface (bgs), as shown in Photos 1 and 2. A light sheen was observed on the groundwater in the north end of the excavation (Photo 3). Excavation soil samples were not collected at the time because of the presence of groundwater. No evidence of soil impacts (e.g., sheen, discoloration) were observed in the sidewalls exposed above the water line. Barr collected water characterization sample *FIAT-2800-Water 1* from the standing water in the excavation. The sample was submitted to the ALS Environmental laboratory in Holland, Michigan for analysis of diesel range organics (DRO) and benzene, toluene, ethylbenzene, and xylenes (BTEX). BTEX analyte concentrations were below the laboratory reporting limits and Wisconsin Administrative Code NR 140 Enforcement Standard (ES) and Preventative Action Limit (PAL) criteria. DRO was detected at 0.25 milligrams per liter (mg/L) but there are no NR 140 ES or PAL criteria for DRO. Additional information regarding the disposal of the water is provided in the *Material Management* section of this document.

On September 20, 2021, Barr inspected the site again and no sheen was observed on the water surface (Photo 4). Enbridge intended to have Barr return to the site to field screen and sample the final excavation sidewalls and bottom. However, the infrastructure project was delayed and when it was completed on October 12, 2021, the project team backfilled the excavation with clean fill before soil samples could be collected.

During the final infrastructure activity on October 12, 2021, the site inspector observed that excavation soil and groundwater conditions. During that work, the inspector observed no oil, oil sheen or grease or other evidence of petroleum impacts. Photographs 5 and 6 depict the final excavation and backfill.

## **Receptor Survey**

No direct contact risks were identified based on the field observations by the project team and Barr, and clean fill material was used to backfill the excavation. No impacts to surface water were identified during the project and there is little risk of future surface water impacts based on field observations and the use of clean backfill. No groundwater risks were identified based on the results of the analytical sample collected from the excavation and based on the annual facility-wide groundwater monitoring program. Specifically, the groundwater pathway at the Superior Terminal is addressed on a facility-wide basis through the established hydrogeologic performance standard approved by the WDNR. Enbridge samples the Terminal groundwater monitoring well network (Figure 3) on an annual basis and provides the data to the WDNR. No vapor receptors were identified as the nearest enclosed structure is approximately 120 feet southeast of the excavation, and the structure is an above grade pipeline-operation building with no basement and limited human occupancy. Further, Terminal employees are required to wear four-gas detectors that would alert them to a potentially hazardous atmosphere.

**To:** Nick Larabel, Enbridge Energy  
**Subject:** Enbridge Terminal – FIAT 2800 (Booster 1) Historical Response  
**Date:** March 24, 2022  
**Page:** 3

## **Material Management**

No petroleum impacted soil was identified or generated during project excavation activities. Barr submitted the *FIAT-2800-Water 1* laboratory report and a water discharge request to the Western Lake Superior Sanitary District (WLSSD) water treatment facility, and the waste stream was approved on August 5, 2021. Approximately 5,000 gallons of excavation water were managed at the treatment facility. Note that the FIAT 2800 WLSSD water disposal request was made as an addendum to a previously established Superior Terminal water disposal approval associated with a concurrent project. The water treatment approval letter and waste characterization laboratory report are included in Attachment B. Once the water with the sheen was removed from the excavation, a sheen was not observed again, and future excavation dewatering activities followed standard facility procedures.

## **Conclusions**

Groundwater with trace petroleum impacts (sheen, DRO analyte detection) was identified in the FIAT 2800 infrastructure maintenance excavation in July 2021 near the historical Booster 1 crude oil release site. After the water with a sheen was removed from the excavation, a sheen did not return when groundwater refilled the excavation. No petroleum-impacted soil was identified by the project excavation team, infrastructure maintenance team, or inspector and no active release was identified. Groundwater with a sheen that was removed from the excavation was managed at the WLSSD water treatment facility.

Based on field observations by the project team, the results of the analytical water sample, the site's proximity to a known historical release site, no apparent risk to receptors, and ongoing facility groundwater monitoring activities, we believe that the sheen observed on the groundwater was associated with residual impacts from the nearby historical release and poses little to no risk to human health and the environment. Based on this, Barr believes that no additional investigation actions will be required, and we recommend that Enbridge request a *no action required* determination from the WDNR under 716.05. If residual contamination associated with this site is identified in the future, the WDNR will be notified, and site conditions will be documented and reported per the Superior Terminal *Site Investigation and Response Action Plan* (Barr, 2014).

## **Reference**

Barr Engineering Co. 2014, *Site Investigation and Response Action Plan Enbridge Energy Superior Terminal (Facility-Wide)*. Prepared for Enbridge Energy, July 2014.

Barr, 2019. *Continuing Obligation Package*. Technical report submitted by Barr and Enbridge to the WDNR. July 24, 2019.

## **Attachments:**

Site Photos 1 through 4  
Table 1 Water Analytical Data Summary  
Figure 1 Site Location  
Figure 2 Site Layout  
Figure 3 Receptor Survey

Attachment A WDNR Notification for Hazardous Substance Discharge, Form 4400-225

Attachment B Water Management Documentation

To: Nick Larabel, Enbridge Energy  
Subject: Enbridge Terminal – FIAT 2800 (Booster 1) Historical Response  
Date: March 24, 2022  
Page: 4

## Site Photos



**Photo 1**



**Photo 2**

**Photo 1:** Project excavation. Sheen observed on far end of excavation near buried stormwater culvert (yellow arrow). Photo taken facing northwest on July 30, 2021.

**Photo 2:** Project excavation. Sheen observed near buried stormwater culvert (yellow arrow). Photo taken facing southeast on July 30, 2021.



**Photo 3**



**Photo 4**

**Photo 3:** Sheen observed on groundwater in northern end of excavation near buried stormwater culvert (green pipe on left side of photo). Photo taken facing southeast on July 30, 2021.

**Photo 4:** Project excavation. No sheen observed. Photo taken facing northwest on September 20, 2021.



**To:** Nick Larabel, Enbridge Energy  
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**Date:** March 24, 2022  
**Page:** 5



**Photo 5**



**Photo 6**

**Photo 5:** Final project excavation after infrastructure work and before backfilling. Photo taken by inspector facing northwest on October 12, 2021.

**Photo 6:** Final project excavation after infrastructure work. Clean sand fill is shown in the middle of the photo. Photo taken by inspector facing west on October 12, 2021.

Table 1  
Water Analytical Data Summary  
Enbridge Terminal - FIAT 2800 / Booster 1 (BRRTS#: 02-16-588091)  
Superior, WI

|                                |  |  | Location              |
|--------------------------------|--|--|-----------------------|
|                                |  |  | Date                  |
|                                |  |  | FIAT-2800-<br>WATER-1 |
|                                |  |  | 7/30/2021             |
| Parameter                      | Wisconsin<br>Groundwater Public<br>Health Enforcement<br>Standards | Wisconsin<br>Preventive Action<br>Limits |                       |
| <b>Last Updated</b>            | 07/01/2015   | 07/01/2015                               |                       |
| <b>Exceedance Key</b>          | No Exceedance  | No Exceedance                            |                       |
| Volatile Organic Compounds     |  |  |                       |
| Benzene                        | 5  | 0.5                                      | < 0.46 U              |
| Ethyl benzene                  | 700  | 140                                      | < 0.34 U              |
| Toluene                        | 800  | 160                                      | < 0.45 U              |
| Xylene, m & p                  | 2000 (4)   | (4)                                      | < 0.81 U              |
| Xylene, o                      | 2000 (4)   | (4)                                      | < 0.31 U              |
| Xylene, total                  | 2000 (4)   | 400 (4)                                  | < 0.81 U              |
| Total Petroleum Hydrocarbons   |  |  |                       |
| Diesel Range Organics, C10-C28 |  |  | <b>250</b>            |

Note:

All values in ug/l

**BOLD** = detection

## Data Footnotes and Qualifiers

### Barr Standard Footnotes and Qualifiers

|   |   |
|---|---|
| U | The analyte was analyzed for, but was not detected. |
|---|---|

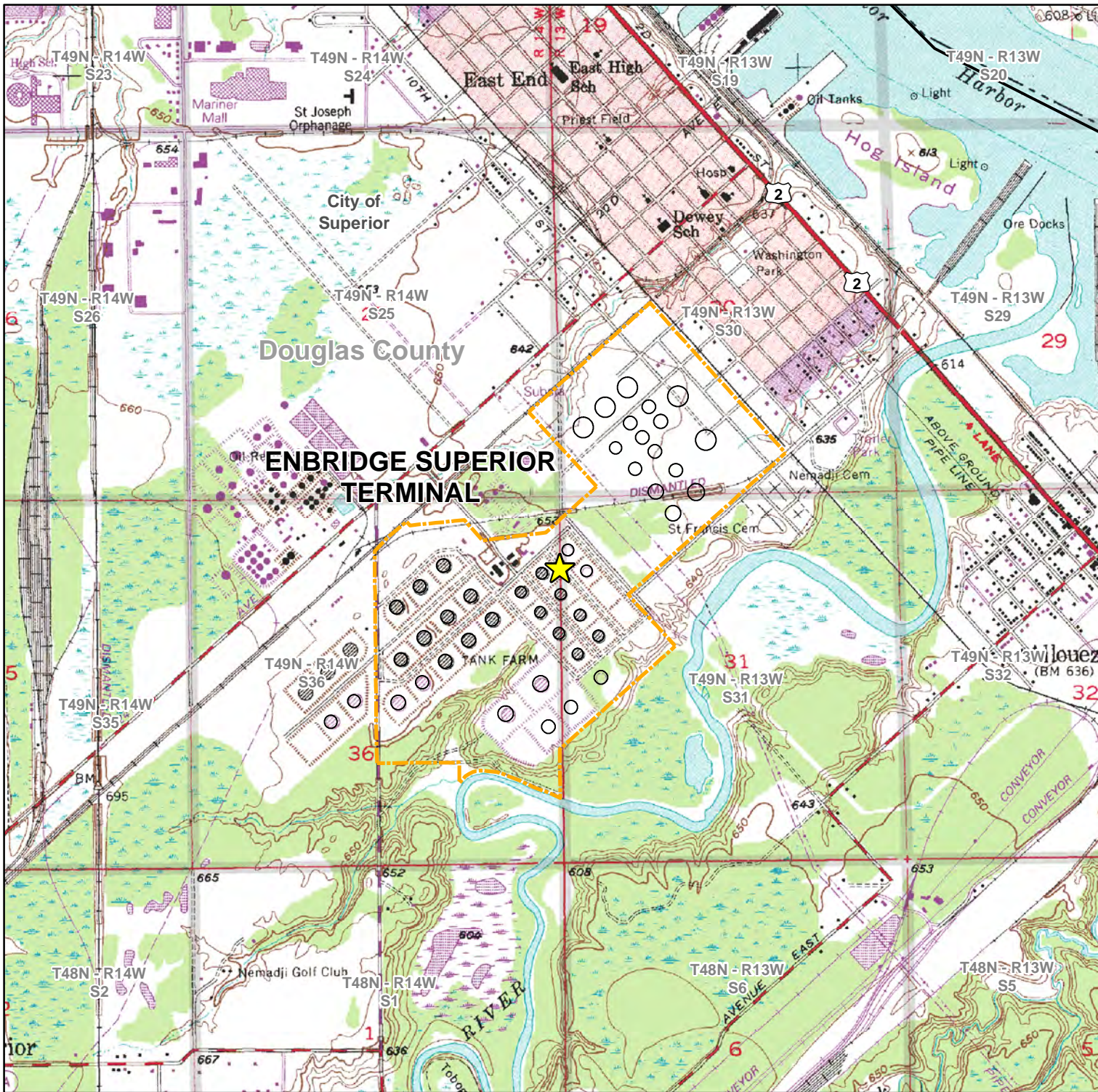
### Wisconsin Groundwater Public Health Enforcement Standards



|     |  |
|-----|--|
| (4) | Xylene includes meta-, ortho-, and para-xylene combined. |
|-----|--|

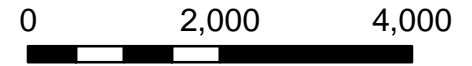
### Wisconsin Preventive Action Limits

|     |  |
|-----|--|
| (4) | Xylene includes meta-, ortho-, and para-xylene combined. |
|-----|--|





-  Site Location
-  Terminal Property Boundary



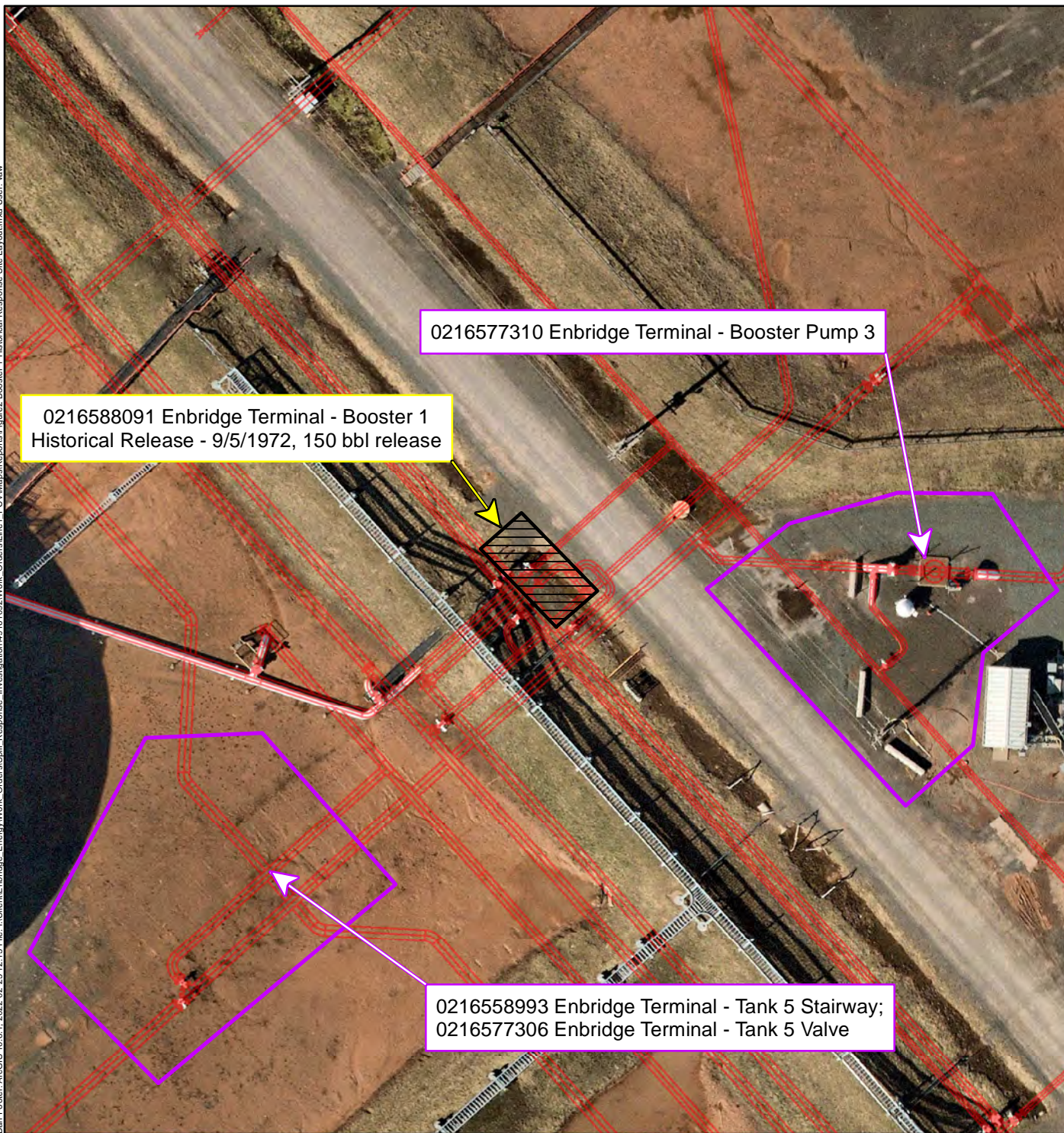
Feet

1 Inch = 2,000 Feet

Figure 1  
**SITE LOCATION**  
**FIAT 2800 / BOOSTER 1**  
**SUPERIOR TERMINAL**  
 Enbridge Energy, L.P.  
 Superior, Wisconsin



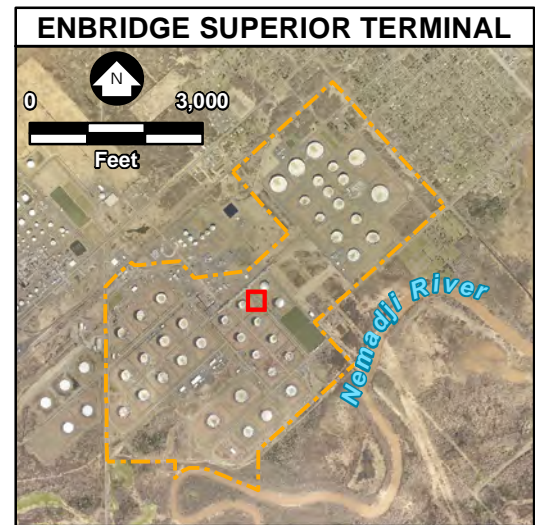








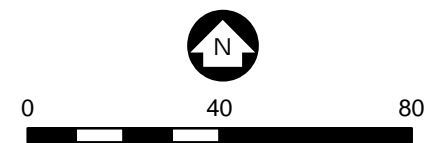
0216588091 Enbridge Terminal - Booster 1  
Historical Release - 9/5/1972, 150 bbl release

0216577310 Enbridge Terminal - Booster Pump 3

0216558993 Enbridge Terminal - Tank 5 Stairway;  
0216577306 Enbridge Terminal - Tank 5 Valve



-  FIAT 2800 Project Excavation (2021)
-  Facility-wide BRTS Site Pipeline
-  Infrastructure Terminal Property
-  Boundary



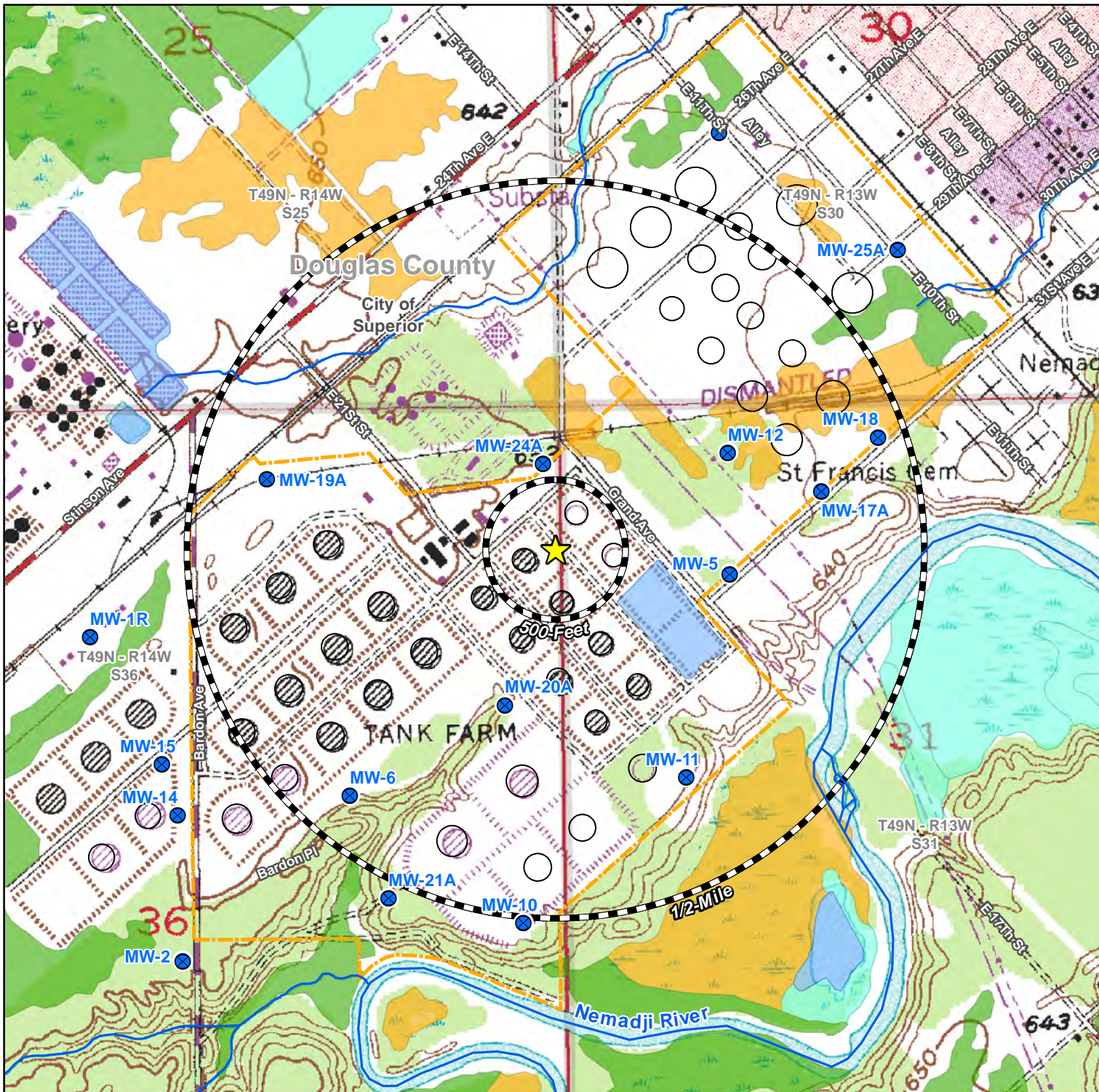
Feet  
1 Inch = 40 Feet  
Nearmap Imagery Circa April, 2021










Figure 2

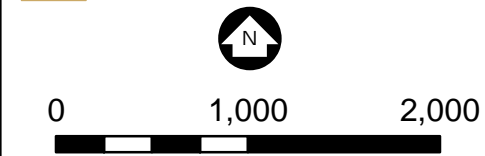
**SITE LAYOUT**  
**FIAT 2800 / BOOSTER 1**  
**SUPERIOR TERMINAL**  
Enbridge Energy, L.P.  
Superior, Wisconsin







-  Site Location
-  Enbridge Monitoring Well
-  Terminal Property Boundary
-  Watercourses
-  Receptor Buffers
- Wisconsin Wetland Inventory**
-  Emergent/wet meadow
-  Forested
-  Open Water
-  Scrub/Shrub



Feet  
 1 Inch = 1,000 Feet  
**Figure 3**  
**RECEPTOR SURVEY**  
**FIAT 2800 / BOOSTER 1**  
**SUPERIOR TERMINAL**  
 Enbridge Energy, L.P.  
 Superior, Wisconsin



**Attachment A**

**WDNR Notification For Hazardous Substance Discharge**

**Form 4400-225**



## Notification For Hazardous Substance Discharge (Non-Emergency Only)

**Emergency Discharges / Spills should be reported via the 24-Hour Hotline: 1-800-943-0003**

**Notice: Hazardous substance discharges must be reported immediately** according to s. 292.11 Wis. Stats. Non-emergency hazardous substance discharges may be reported by telefaxing or e-mailing a completed report to the Department, or calling or visiting a Department office in person. If you choose to notify the Department by telefax or by email, you should use this form to be sure that all necessary information is included. However, use of this form is not mandatory. Under s. 292.99, Wis. Stats., the penalty for violating the reporting requirements of ch. 292 Wis. Stats., shall be no less than \$10 nor more than \$5000 for each violation. Each day of continued violation is a separate offense. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than program administration. However, information submitted on this form may also be made available to requesters under Wisconsin's Public Records Law (ss. 19.31 – 19.39, Wis. Stats.).

Confirmatory laboratory data should be included with this form, to assist the DNR in processing this Hazardous Substance Release Notification.

Complete this form. **TYPE or PRINT LEGIBLY.** NOTIFY appropriate DNR region (see next page) **IMMEDIATELY** upon discovery of a potential release from (**check one**):

- Underground Petroleum Storage Tank System (additional information may be required for Item 6 below)
- Aboveground Petroleum Storage Tank System
- Dry Cleaner Facility
- Other - Describe: Pipeline Terminal

ATTN DNR: **R & R Program Associate**

Date DNR Notified: **07/30/2021**

**1. Discharge Reported By**

|                             |                                |   |
|-----------------------------|--------------------------------|---|
| Name<br><b>Karl Beaster</b> | Firm<br><b>Enbridge Energy</b> | Phone Number (include area code)<br><b>(218) 464-5623</b> |
|-----------------------------|--------------------------------|---|

|  |   |
|--|---|
| Mailing Address<br><b>11 East Superior Street, Suite 125, Duluth, MN 55802</b> | Email<br><b>karl.beaster@enbridge.com</b> |
|--|---|

**2. Site Information**

Name of site at which discharge occurred. Include local name of site/business, not responsible party name, unless a residence/vacant property.

**Enbridge Terminal - Booster 1**

Location: Include street address, not PO Box. If no street address, describe as precisely as possible, i.e., 1/4 mile NW of CTHs 60 & 123 on E side of CTH 60.

**2800 East 21st Street, Superior, WI 54880**

Municipality: (City, Village, Township) Specify municipality in which the site is located, not mailing address/city.

**Superior, WI**

|                          |  |                           |
|--------------------------|--|---------------------------|
| County<br><b>Douglas</b> | Legal Description:<br><b>NW ¼ of NW ¼ Section 31, Town 49 N, Range 13</b> <input type="radio"/> E <input checked="" type="radio"/> W | WTM:<br>X 362794 Y 692618 |
|--------------------------|--|---------------------------|

**3. Responsible Party (RP) and/or RP Representative**

Responsible Party Name: Business or owner name that is responsible for cleanup. If more than one, list all. Attach additional pages as necessary.

**Enbridge Energy**

A local governmental unit claiming an exemption from state Spill Law and Solid Waste Management responsibilities for the discharge being reported, per Wis. Stat. §§ 292.11(9)(e) and 292.23, should: 1) check this box; 2) review [DNR publication RR-055](#); and 3) provide documentation to DNR that demonstrates compliance with the statutory requirements of the liability exemptions. Local governmental units may also request a fee-based liability clarification letter from DNR by using [DNR Form 4400-237](#).

|  |                                       |   |
|--|---------------------------------------|---|
| Contact Person Name (if different)<br><b>Enbridge - Karl Beaster</b> | Phone Number<br><b>(218) 464-5623</b> | Email<br><b>karl.beaster@enbridge.com</b> |
|--|---------------------------------------|---|

|                 |      |       |          |
|-----------------|------|-------|----------|
| Mailing Address | City | State | ZIP Code |
|-----------------|------|-------|----------|

Responsible Party Name: Business or owner name that is responsible for cleanup. If more than one, list all. Attach additional pages as necessary.

|                                    |              |       |
|------------------------------------|--------------|-------|
| Contact Person Name (if different) | Phone Number | Email |
|------------------------------------|--------------|-------|

|                 |      |       |          |
|-----------------|------|-------|----------|
| Mailing Address | City | State | ZIP Code |
|-----------------|------|-------|----------|

## Notification For Hazardous Substance Discharge (Non-Emergency Only)

### 4. Hazardous Substance Information

Identify hazardous substance discharged (check all that apply):

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> VOCs<br><input type="checkbox"/> PCE<br><input type="checkbox"/> TCE<br><input type="checkbox"/> Other Chlorinated<br><input type="checkbox"/> Diesel<br><input type="checkbox"/> Fuel Oil<br><input type="checkbox"/> Gasoline<br><input type="checkbox"/> Hydraulic Oil<br><input type="checkbox"/> Jet Fuel | <i>(VOCs continued)</i><br><input type="checkbox"/> Mineral Oil<br><input type="checkbox"/> Waste Oil<br><input type="checkbox"/> Petroleum-Unknown Type<br><input type="checkbox"/> 1,4-dioxane<br><input type="checkbox"/> PAHs<br><input type="checkbox"/> PCBs<br><input type="checkbox"/> Cyanide<br><input type="checkbox"/> Leachate<br><input type="checkbox"/> Manure | <input type="checkbox"/> Metals<br><input type="checkbox"/> Arsenic<br><input type="checkbox"/> Chromium<br><input type="checkbox"/> Lead<br><input type="checkbox"/> Other: _____<br><input type="checkbox"/> Pesticides: _____<br><input type="checkbox"/> Fertilizer: _____<br><input type="checkbox"/> RCRA Hazardous Waste: _____<br><input checked="" type="checkbox"/> Other: <u>Crude oil - historical</u><br><input type="checkbox"/> Unknown |
|---|--|--|

### 5. Impacts to the Environment Information

Enter "K" for known/confirmed or "P" for potential for all that apply.

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Air Contamination<br><input type="checkbox"/> Co-mingled (Petroleum & Non-Petroleum)<br><input type="checkbox"/> Contamination in Fractured Bedrock<br><input type="checkbox"/> Contamination Within 1 Meter of Bedrock<br><input type="checkbox"/> Contaminated Private Well<br><input type="checkbox"/> Contaminated Public Well<br><input type="checkbox"/> Contamination in Right of Way | <input type="checkbox"/> Fire Explosion Threat<br><input type="checkbox"/> Free Product<br><input checked="" type="checkbox"/> Groundwater Contamination<br><input type="checkbox"/> Off-Site Contamination<br><input type="checkbox"/> Sanitary Sewer Contamination<br><input type="checkbox"/> Storm Sewer Contamination<br><input type="checkbox"/> Sediment Contamination<br>Other (specify): _____ | <input checked="" type="checkbox"/> Soil Contamination<br><input type="checkbox"/> Soil Gas Contamination<br><input type="checkbox"/> Sub-slab Vapor Contamination<br><input type="checkbox"/> Surface Water Contamination<br><input type="checkbox"/> Within 100 ft of Private Well<br><input type="checkbox"/> Within 1000 ft of Public Well |
|---|---|--|

Contamination was discovered as a result of:

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Tank closure assessment | <input type="checkbox"/> Site assessment | <input checked="" type="checkbox"/> Other - Describe: <u>Infrastructure maintenance excavation</u> |
| Date <input type="text"/>                        | Date <input type="text"/>                | Date <input type="text" value="07/30/2021"/>   |

Lab results:  Lab results will be faxed upon receipt  Lab results are attached

Additional Comments: Include a brief description of immediate actions taken to halt the release and contain or cleanup hazardous substances that have been discharged.

Enbridge is conducting maintenance on buried infrastructure at the site. Soil around the infrastructure was removed and no evidence of contamination (odor, sheen) was identified and the excavation was dry. On July 26, water from a rainstorm entered the excavation and a light sheen was observed on the water surface. No active releases were identified therefore the impacts were interpreted to be associated with historical Terminal activities. All water with a sheen and soil with evidence contamination will be disposed of at off-site facilities.

### 6. Federal Energy Act Requirements (Section 9002(d) of the Solid Waste Disposal Act (SWDA))

- |  | <u>Source</u>   | <u>Cause</u>   |
|--|---|--|
| For all confirmed releases from USTs occurring after 9/30/2007 please provide the following information: | <input type="checkbox"/> Tank<br><input type="checkbox"/> Piping<br><input type="checkbox"/> Dispenser<br><input type="checkbox"/> Submersible Turbine Pump<br><input type="checkbox"/> Delivery Problem<br><input type="checkbox"/> Other (specify): _____ | <input type="checkbox"/> Spill<br><input type="checkbox"/> Overfill<br><input type="checkbox"/> Corrosion<br><input type="checkbox"/> Physical or Mechanical Damage<br><input type="checkbox"/> Installation Problem<br><input type="checkbox"/> Other (does not fit any of above)<br><input type="checkbox"/> Unknown |
| <input checked="" type="checkbox"/> Does not apply.  |   |  |

Submit this completed form along with any associate lab results using the RR Program Submittal Portal, found on the DNR website at <https://dnr.wisconsin.gov/topic/Brownfields/Submittal.html>.

If you have any questions, please contact the appropriate regional Environmental Program Associate (EPA) listed under the "EPAs" tab at <https://dnr.wisconsin.gov/topic/Brownfields/Contact.html>.

**Attachment B**

**Water Management Documentation**





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

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## Western Lake Superior Sanitary District

Amended Letter of Approval

August 5, 2021

Nicholas Larabel, PG, CPG  
Enbridge Energy  
455 Leggitt Road  
Marshall, MN 49068

Dear Mr. Larabel,

Based on data received August 2, 2021 and August 5, 2021, the Western Lake Superior Sanitary District (WLSSD) gives approval to Enbridge to discharge up to 100,000 gallons of petroleum-impacted wastewater at WLSSD. This approval letter is effective until November 30, 2021.

A hauler licensed to dispose of wastewater at WLSSD is required. Any petroleum on the water surface must be removed before water is transported. The hauler is required to leave a manifest in the drop box on Building 8, which states volume, date, time, description of water, and hauler. Please attempt to discharge during business hours 7am – 5pm.

The wastewater will be billed at the domestic rate of \$1.9862/1000 gallons. There is one-time fee of \$50 for the approval letter.

This approval letter does not release Enbridge or any consultant/contractor from any conditions/regulations set forth by MPCA or any other agency that regulated discharge. In addition, this approval does not release Enbridge or any consultant/contractor involved from any liabilities associated with conducting this discharge.

Thank you,

A handwritten signature in black ink that reads "James Forsberg". The signature is fluid and cursive, with a large, sweeping flourish at the end.

James Forsberg, Lab Leader  
Western Lake Superior Sanitary District (WLSSD)  
2626 Courtland St, Duluth, MN 55806  
Direct 218-740-4853  
[james.forsberg@wlssd.com](mailto:james.forsberg@wlssd.com)



04-Aug-2021

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

Re: **FIAT- 2800**

Work Order: **21080013**

Dear Ryan,

ALS Environmental received 1 sample on 31-Jul-2021 11:00 AM for the analyses presented in the following report.

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

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

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

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

Sincerely,

A handwritten signature in black ink that reads "Jodi Blouw".

Electronically approved by: Jodi Blouw

Jodi Blouw

## Report of Laboratory Analysis

Certificate No: WI: 399084510

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

Environmental 

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

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**Client:** Barr Engineering Company  
**Project:** FIAT- 2800  
**Work Order:** 21080013

**Work Order Sample Summary**

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| <u>Lab Samp ID</u> | <u>Client Sample ID</u> | <u>Matrix</u> | <u>Tag Number</u> | <u>Collection Date</u> | <u>Date Received</u> | <u>Hold</u>              |
|--------------------|-------------------------|---------------|-------------------|------------------------|----------------------|--------------------------|
| 21080013-01        | FIAT-2800-Water 1       | Groundwater   |                   | 7/30/2021 10:00        | 7/31/2021 11:00      | <input type="checkbox"/> |



**Client:** Barr Engineering Company  
**Project:** FIAT- 2800  
**WorkOrder:** 21080013

**QUALIFIERS,  
ACRONYMS, UNITS**

| <u>Qualifier</u> | <u>Description</u>  |
|------------------|---|
| *                | Value exceeds Regulatory Limit  |
| **               | Estimated Value   |
| a                | Analyte is non-accredited   |
| B                | Analyte detected in the associated Method Blank above the Reporting Limit   |
| E                | Value above quantitation range  |
| H                | Analyzed outside of Holding Time  |
| Hr               | BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.  |
| J                | Analyte is present at an estimated concentration between the MDL and Report Limit   |
| ND               | Not Detected at the Reporting Limit   |
| O                | Sample amount is > 4 times amount spiked  |
| P                | Dual Column results percent difference > 40%  |
| R                | RPD above laboratory control limit  |
| S                | Spike Recovery outside laboratory control limits  |
| U                | Analyzed but not detected above the MDL   |
| X                | Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level. |

| <u>Acronym</u> | <u>Description</u>                  |
|----------------|-------------------------------------|
| DUP            | Method Duplicate                    |
| LCS            | Laboratory Control Sample           |
| LCSD           | Laboratory Control Sample Duplicate |
| LOD            | Limit of Detection (see MDL)        |
| LOQ            | Limit of Quantitation (see PQL)     |
| MBLK           | Method Blank                        |
| MDL            | Method Detection Limit              |
| MS             | Matrix Spike                        |
| MSD            | Matrix Spike Duplicate              |
| PQL            | Practical Quantitation Limit        |
| RPD            | Relative Percent Difference         |
| TDL            | Target Detection Limit              |
| TNTC           | Too Numerous To Count               |
| A              | APHA Standard Methods               |
| D              | ASTM                                |
| E              | EPA                                 |
| SW             | SW-846 Update III                   |

| <u>Units Reported</u> | <u>Description</u>   |
|-----------------------|----------------------|
| µg/L                  | Micrograms per Liter |
| mg/L                  | Milligrams per Liter |

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**Client:** Barr Engineering Company  
**Project:** FIAT- 2800  
**Work Order:** 21080013

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**Case Narrative**

Samples for the above noted Work Order were received on 07/31/2021. 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:**

Batch 181296, Method PUBL-SW-141, Sample DLCSDW1-181296: The RPD between the LCS and LCSD was outside of the control limit. The sample results should be considered estimated for this analyte:

No other deviations or anomalies were noted.

**ALS Group, USA**

Date: 04-Aug-21

**Client:** Barr Engineering Company  
**Project:** FIAT- 2800  
**Sample ID:** FIAT-2800-Water 1  
**Collection Date:** 7/30/2021 10:00 AM

**Work Order:** 21080013  
**Lab ID:** 21080013-01  
**Matrix:** GROUNDWATER

| Analyses                               | Result      | Qual | MDL                 | PQL         | Units                      | Dilution Factor | Date Analyzed       |
|--|-------------|------|---------------------|-------------|----------------------------|-----------------|---------------------|
| <b>DIESEL RANGE ORGANICS BY GC-FID</b> |             |      | Method: PUBL-SW-141 |             | Prep: PUBL-SW-141 / 8/3/21 |                 | Analyst: <b>SJB</b> |
| <b>DRO (C10-C28)</b>                   | <b>0.25</b> |      | <b>0.017</b>        | <b>0.10</b> | <b>mg/L</b>                | 1               | 8/3/2021 15:49      |
| <b>VOLATILE ORGANIC COMPOUNDS</b>      |             |      | Method: SW8260C     |             |                            |                 | Analyst: <b>JNS</b> |
| Benzene                                | U           |      | 0.46                | 1.5         | µg/L                       | 1               | 8/3/2021 02:47      |
| Ethylbenzene                           | U           |      | 0.34                | 1.1         | µg/L                       | 1               | 8/3/2021 02:47      |
| m,p-Xylene                             | U           |      | 0.81                | 2.7         | µg/L                       | 1               | 8/3/2021 02:47      |
| o-Xylene                               | U           |      | 0.31                | 1.0         | µg/L                       | 1               | 8/3/2021 02:47      |
| Toluene                                | U           |      | 0.45                | 1.5         | µg/L                       | 1               | 8/3/2021 02:47      |
| Xylenes, Total                         | U           |      | 0.81                | 4.4         | µg/L                       | 1               | 8/3/2021 02:47      |
| Surr: 1,2-Dichloroethane-d4            | 108         |      |                     | 75-120      | %REC                       | 1               | 8/3/2021 02:47      |
| Surr: 4-Bromofluorobenzene             | 90.4        |      |                     | 80-110      | %REC                       | 1               | 8/3/2021 02:47      |
| Surr: Dibromofluoromethane             | 107         |      |                     | 85-115      | %REC                       | 1               | 8/3/2021 02:47      |
| Surr: Toluene-d8                       | 94.0        |      |                     | 85-110      | %REC                       | 1               | 8/3/2021 02:47      |

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



**Client:** Barr Engineering Company  
**Work Order:** 21080013  
**Project:** FIAT- 2800

**QC BATCH REPORT**

Batch ID: **181296** Instrument ID **GC8** Method: **PUBL-SW-141**

| MBLK          |         | Sample ID: <b>DBLKW1-181296-181296</b> |      |         |               | Units: <b>mg/L</b>    |               | Analysis Date: <b>8/3/2021 02:35 PM</b> |      |              |      |
|---------------|---------|--|------|---------|---------------|-----------------------|---------------|---|------|--------------|------|
| Client ID:    |         | Run ID: <b>GC8_210803A</b>             |      |         |               | SeqNo: <b>7635705</b> |               | Prep Date: <b>8/3/2021</b>              |      | DF: <b>1</b> |      |
| Analyte       | Result  | MDL                                    | PQL  | SPK Val | SPK Ref Value | %REC                  | Control Limit | RPD Ref Value                           | %RPD | RPD Limit    | Qual |
| DRO (C10-C28) | 0.03136 | 0.017                                  | 0.10 |         |               |                       |               |   |      |              | J    |

| LCS           |         | Sample ID: <b>DLCSW1-181296-181296</b> |      |         |               | Units: <b>mg/L</b>    |               | Analysis Date: <b>8/3/2021 03:12 PM</b> |      |              |      |
|---------------|---------|--|------|---------|---------------|-----------------------|---------------|---|------|--------------|------|
| Client ID:    |         | Run ID: <b>GC8_210803A</b>             |      |         |               | SeqNo: <b>7635706</b> |               | Prep Date: <b>8/3/2021</b>              |      | DF: <b>1</b> |      |
| Analyte       | Result  | MDL                                    | PQL  | SPK Val | SPK Ref Value | %REC                  | Control Limit | RPD Ref Value                           | %RPD | RPD Limit    | Qual |
| DRO (C10-C28) | 0.08248 | 0.017                                  | 0.10 | 0.1     | 0             | 82.5                  | 75-115        | 0                                       |      |              | J    |

| LCSD          |        | Sample ID: <b>DLCSDW1-181296-181296</b> |      |         |               | Units: <b>mg/L</b>    |               | Analysis Date: <b>8/3/2021 04:27 PM</b> |      |              |      |
|---------------|--------|---|------|---------|---------------|-----------------------|---------------|---|------|--------------|------|
| Client ID:    |        | Run ID: <b>GC8_210803A</b>              |      |         |               | SeqNo: <b>7635708</b> |               | Prep Date: <b>8/3/2021</b>              |      | DF: <b>1</b> |      |
| Analyte       | Result | MDL                                     | PQL  | SPK Val | SPK Ref Value | %REC                  | Control Limit | RPD Ref Value                           | %RPD | RPD Limit    | Qual |
| DRO (C10-C28) | 0.1023 | 0.017                                   | 0.10 | 0.1     | 0             | 102                   | 75-115        | 0.08248                                 | 21.4 | 20           | R    |

The following samples were analyzed in this batch: 21080013-01B

Client: Barr Engineering Company  
 Work Order: 21080013  
 Project: FIAT- 2800

# QC BATCH REPORT

Batch ID: **R323438C** Instrument ID **VMS11** Method: **SW8260C**

| MBLK                               |        | Sample ID: 11V-BLKW2-210802-R323438C |     |         |               | Units: µg/L    |               | Analysis Date: 8/3/2021 12:56 AM |      |           |      |
|------------------------------------|--------|--------------------------------------|-----|---------|---------------|----------------|---------------|----------------------------------|------|-----------|------|
| Client ID:                         |        | Run ID: VMS11_210802B                |     |         |               | SeqNo: 7631844 |               | Prep Date:                       |      | DF: 1     |      |
| Analyte                            | Result | MDL                                  | PQL | SPK Val | SPK Ref Value | %REC           | Control Limit | RPD Ref Value                    | %RPD | RPD Limit | Qual |
| Benzene                            | U      | 0.46                                 | 1.5 |         |               |                |               |                                  |      |           |      |
| Ethylbenzene                       | U      | 0.34                                 | 1.1 |         |               |                |               |                                  |      |           |      |
| m,p-Xylene                         | U      | 0.81                                 | 2.7 |         |               |                |               |                                  |      |           |      |
| o-Xylene                           | U      | 0.31                                 | 1.0 |         |               |                |               |                                  |      |           |      |
| Toluene                            | U      | 0.45                                 | 1.5 |         |               |                |               |                                  |      |           |      |
| Xylenes, Total                     | U      | 0.81                                 | 4.4 |         |               |                |               |                                  |      |           |      |
| <i>Surr: 1,2-Dichloroethane-d4</i> | 20.82  | 0                                    | 0   | 20      | 0             | 104            | 75-120        | 0                                |      |           |      |
| <i>Surr: 4-Bromofluorobenzene</i>  | 18.63  | 0                                    | 0   | 20      | 0             | 93.2           | 80-110        | 0                                |      |           |      |
| <i>Surr: Dibromofluoromethane</i>  | 21.26  | 0                                    | 0   | 20      | 0             | 106            | 85-115        | 0                                |      |           |      |
| <i>Surr: Toluene-d8</i>            | 18.69  | 0                                    | 0   | 20      | 0             | 93.4           | 85-110        | 0                                |      |           |      |

| LCS                                |        | Sample ID: 11V-LCSW2-210802-R323438C |     |         |               | Units: µg/L    |               | Analysis Date: 8/2/2021 11:50 PM |      |           |      |
|------------------------------------|--------|--------------------------------------|-----|---------|---------------|----------------|---------------|----------------------------------|------|-----------|------|
| Client ID:                         |        | Run ID: VMS11_210802B                |     |         |               | SeqNo: 7631842 |               | Prep Date:                       |      | DF: 1     |      |
| Analyte                            | Result | MDL                                  | PQL | SPK Val | SPK Ref Value | %REC           | Control Limit | RPD Ref Value                    | %RPD | RPD Limit | Qual |
| Benzene                            | 21.71  | 0.46                                 | 1.5 | 20      | 0             | 109            | 70-130        | 0                                |      |           |      |
| Ethylbenzene                       | 18.94  | 0.34                                 | 1.1 | 20      | 0             | 94.7           | 76-123        | 0                                |      |           |      |
| m,p-Xylene                         | 38.28  | 0.81                                 | 2.7 | 40      | 0             | 95.7           | 75-130        | 0                                |      |           |      |
| o-Xylene                           | 19.02  | 0.31                                 | 1.0 | 20      | 0             | 95.1           | 76-127        | 0                                |      |           |      |
| Toluene                            | 20.36  | 0.45                                 | 1.5 | 20      | 0             | 102            | 76-125        | 0                                |      |           |      |
| Xylenes, Total                     | 57.3   | 0.81                                 | 4.4 | 60      | 0             | 95.5           | 76-127        | 0                                |      |           |      |
| <i>Surr: 1,2-Dichloroethane-d4</i> | 20.18  | 0                                    | 0   | 20      | 0             | 101            | 75-120        | 0                                |      |           |      |
| <i>Surr: 4-Bromofluorobenzene</i>  | 19.93  | 0                                    | 0   | 20      | 0             | 99.6           | 80-110        | 0                                |      |           |      |
| <i>Surr: Dibromofluoromethane</i>  | 20.46  | 0                                    | 0   | 20      | 0             | 102            | 85-115        | 0                                |      |           |      |
| <i>Surr: Toluene-d8</i>            | 19.38  | 0                                    | 0   | 20      | 0             | 96.9           | 85-110        | 0                                |      |           |      |

| MS                                 |        | Sample ID: 21072086-05A MS |       |         |               | Units: µg/L    |               | Analysis Date: 8/3/2021 09:03 AM |      |           |      |
|------------------------------------|--------|----------------------------|-------|---------|---------------|----------------|---------------|----------------------------------|------|-----------|------|
| Client ID:                         |        | Run ID: VMS11_210802B      |       |         |               | SeqNo: 7631866 |               | Prep Date:                       |      | DF: 1000  |      |
| Analyte                            | Result | MDL                        | PQL   | SPK Val | SPK Ref Value | %REC           | Control Limit | RPD Ref Value                    | %RPD | RPD Limit | Qual |
| Benzene                            | 46300  | 460                        | 1,500 | 20000   | 23950         | 112            | 70-130        | 0                                |      |           |      |
| Ethylbenzene                       | 17900  | 340                        | 1,100 | 20000   | 310           | 88             | 76-123        | 0                                |      |           |      |
| m,p-Xylene                         | 37630  | 810                        | 2,700 | 40000   | 830           | 92             | 75-130        | 0                                |      |           |      |
| o-Xylene                           | 18010  | 310                        | 1,000 | 20000   | 330           | 88.4           | 76-127        | 0                                |      |           |      |
| Toluene                            | 27790  | 450                        | 1,500 | 20000   | 3370          | 122            | 76-125        | 0                                |      |           |      |
| Xylenes, Total                     | 55640  | 810                        | 4,400 | 60000   | 1160          | 90.8           | 76-127        | 0                                |      |           |      |
| <i>Surr: 1,2-Dichloroethane-d4</i> | 21050  | 0                          | 0     | 20000   | 0             | 105            | 75-120        | 0                                |      |           |      |
| <i>Surr: 4-Bromofluorobenzene</i>  | 20540  | 0                          | 0     | 20000   | 0             | 103            | 80-110        | 0                                |      |           |      |
| <i>Surr: Dibromofluoromethane</i>  | 21600  | 0                          | 0     | 20000   | 0             | 108            | 85-115        | 0                                |      |           |      |
| <i>Surr: Toluene-d8</i>            | 18960  | 0                          | 0     | 20000   | 0             | 94.8           | 85-110        | 0                                |      |           |      |

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

Client: Barr Engineering Company

# QC BATCH REPORT

Work Order: 21080013

Project: FIAT- 2800

Batch ID: R323438C

Instrument ID VMS11

Method: SW8260C

| MSD                                |              |          |                       |              | Sample ID: 21072086-05A MSD |                | Units: µg/L   |               | Analysis Date: 8/3/2021 09:25 AM |           |      |
|------------------------------------|--------------|----------|-----------------------|--------------|-----------------------------|----------------|---------------|---------------|----------------------------------|-----------|------|
| Client ID:                         |              |          | Run ID: VMS11_210802B |              |                             | SeqNo: 7631867 |               | Prep Date:    |                                  | DF: 1000  |      |
| Analyte                            | Result       | MDL      | PQL                   | SPK Val      | SPK Ref Value               | %REC           | Control Limit | RPD Ref Value | %RPD                             | RPD Limit | Qual |
| Benzene                            | 45950        | 460      | 1,500                 | 20000        | 23950                       | 110            | 70-130        | 46300         | 0.759                            | 30        |      |
| Ethylbenzene                       | 18570        | 340      | 1,100                 | 20000        | 310                         | 91.3           | 76-123        | 17900         | 3.67                             | 30        |      |
| m,p-Xylene                         | 38450        | 810      | 2,700                 | 40000        | 830                         | 94             | 75-130        | 37630         | 2.16                             | 30        |      |
| o-Xylene                           | 18410        | 310      | 1,000                 | 20000        | 330                         | 90.4           | 76-127        | 18010         | 2.2                              | 30        |      |
| Toluene                            | 24430        | 450      | 1,500                 | 20000        | 3370                        | 105            | 76-125        | 27790         | 12.9                             | 30        |      |
| Xylenes, Total                     | 56860        | 810      | 4,400                 | 60000        | 1160                        | 92.8           | 76-127        | 55640         | 2.17                             | 30        |      |
| <i>Surr: 1,2-Dichloroethane-d4</i> | <i>20980</i> | <i>0</i> | <i>0</i>              | <i>20000</i> | <i>0</i>                    | <i>105</i>     | <i>75-120</i> | <i>21050</i>  | <i>0.333</i>                     | <i>30</i> |      |
| <i>Surr: 4-Bromofluorobenzene</i>  | <i>20370</i> | <i>0</i> | <i>0</i>              | <i>20000</i> | <i>0</i>                    | <i>102</i>     | <i>80-110</i> | <i>20540</i>  | <i>0.831</i>                     | <i>30</i> |      |
| <i>Surr: Dibromofluoromethane</i>  | <i>21960</i> | <i>0</i> | <i>0</i>              | <i>20000</i> | <i>0</i>                    | <i>110</i>     | <i>85-115</i> | <i>21600</i>  | <i>1.65</i>                      | <i>30</i> |      |
| <i>Surr: Toluene-d8</i>            | <i>19290</i> | <i>0</i> | <i>0</i>              | <i>20000</i> | <i>0</i>                    | <i>96.4</i>    | <i>85-110</i> | <i>18960</i>  | <i>1.73</i>                      | <i>30</i> |      |

The following samples were analyzed in this batch: | 21080013-01A |

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



Sample Receipt Checklist

Client Name: **BARRENG-MN**

Date/Time Received: **31-Jul-21 11:00**

Work Order: **21080013**

Received by: **LYS**

Checklist completed by *Lydia Sweet* 02-Aug-21  
eSignature Date

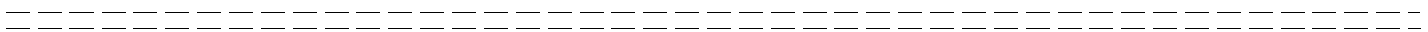
Reviewed by: *Jadi Blawie* 03-Aug-21  
eSignature Date

Matrices: Water

Carrier name: FedEx

|   |   |  |   |
|---|---|--|---|
| Shipping container/cooler in good condition?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | Not Present <input type="checkbox"/>            |
| Custody seals intact on shipping container/cooler?      | Yes <input type="checkbox"/>            | No <input type="checkbox"/>            | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles?                 | Yes <input type="checkbox"/>            | No <input type="checkbox"/>            | Not Present <input checked="" type="checkbox"/> |
| Chain of custody present?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Chain of custody agrees with sample labels?             | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Samples in proper container/bottle?                     | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Sample containers intact?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Sufficient sample volume for indicated test?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| All samples received within holding time?               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Container/Temp Blank temperature in compliance?         | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Sample(s) received on ice?                              | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |   |
| Temperature(s)/Thermometer(s):                          | <u>4.6/4.6c</u>                         |  | <u>IR1</u>                                      |
| Cooler(s)/Kit(s):                                       | <u> </u>                                |  |   |
| Date/Time sample(s) sent to storage:                    | <u>8/2/2021 9:41:52 AM</u>              |  |   |
| Water - VOA vials have zero headspace?                  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | No VOA vials submitted <input type="checkbox"/> |
| Water - pH acceptable upon receipt?                     | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | N/A <input type="checkbox"/>                    |
| pH adjusted?  | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> | N/A <input type="checkbox"/>                    |
| pH adjusted by:   | <u> </u>                                |  |   |

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction: