State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
William H. Smith, Regional Director

Northern Region Headquarters
107 Sutliff Ave.
Rhinelander, Wisconsin 54501-0818
Telephone 715-365-8900
FAX 715-365-8932
TDD 715-365-8957

October 1, 1999

Mr. Mark Miller
Murphy Oil USA, Inc.
PO Box 2066
Superior, WI 54880

Subject: Murphy Oil USA, Inc., 2400 Stinson Ave, Superior, WI BRRTS # 02-16-221811

Dear Mr. Miller:

The Department of Natural Resources provided a notice to you that the degree and extent of gasoline and diesel fuel contamination at the above-named site was required to be investigated and remediated. We have since been informed that the required investigation and remediation has been accomplished.

On September 2, 1999, the above-named site was reviewed by the Northern Region Closeout Committee for a determination as to whether or not the case qualified for close out under ch. NR 726, Wis. Adm. Code.

Based on the investigative and remedial documentation provided to the Department, it appears that the gasoline and diesel fuel contamination at the above-named site has been remediated in compliance with the requirements of chs. NR 700 to 724, Wis. Adm. Code. Therefore, the Department considers the case "closed," having determined that no further action is necessary at the site at this time. However, the case may be reopened pursuant to s. NR 726.09, Wis. Adm. Code, if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety or welfare or the environment.

Please note that this case closure is contingent upon proper documentation of proper abandonment of the monitoring wells on site. If monitoring wells remain at this site, please provide the documentation that this action has been completed, or have your consultant do so. Please complete Form 3300-5B and send it to my attention at the above address.

NOTICE OF REMAINING SOIL CONTAMINATION Residual soil contamination remains at this site, as indicated in the information submitted to the Department. If site conditions change in the future and this residual contaminated soil is excavated, the property owner at that time will be required to sample and analyze the excavated soil in order to determine whether the contamination still remains. Depending upon the results of that characterization, the owner may also have to properly store, treat, or dispose of any excavated materials, and/or take special precautions during excavation activities to prevent a direct contact threat to humans.

If you have any additional information which was not formerly provided to the Department, and which you feel would significantly impact this closure decision, you may submit that information for our re-evaluation of case closure.

If you have any questions, please call me at 715-365-8990.

Sincerely,
NORTHERN REGION

Janet Kazda

Janet Kazda
Case Closeout Committee

cc: File
Lori Huntoon, Dept of Commerce
Jim Hosch, Superior

Dennis Kugle
Gannet Fleming
8025 Excelsior Dr
Madison, WI 53717

NOR Case Closeout
Buck Slip

UID#: 02-16-221811 **Date Rec'd:** 8/4/99 **(FI)**

SITE NAME: Murphy Oil USA Inc

ADDRESS: Superior

COUNTY: Douglas **GMU:** LS

FROM: **GMU Designee or Project Manager** James C. Hosek
Signature

_____ **Based on my review, I recommend: closure / additional actions (circle one) of this case.**

_____ **A memo is attached to explain my recommendation. Required for committee reviews.**

TO: **Fast Track Review**

_____ **Jamie Dunn (Lake Superior & St. Croix Basins)**

_____ **Ken Markart (Upper Wisconsin & Upper Chippewa Basins)**

_____ **Chuck Weister (All Basins)**

Final case closure is contingent upon:

_____ **Final abandonment of monitoring wells**

_____ **Removal of wastes (e.g., excavated impacted soils, drummed investigative wastes) from the site for proper treatment or disposal.**

_____ **Completion of excavated soil remediation through:**

___ **Landspreading**
___ **RP Managed - exsitu bioremediation pile(s)**
___ **RP Managed - on site bioremediation pile(s)**

~~WCAS~~ _____ **Deed Instrument for:** Soil above 720? <Comm46?

X **Other:** Site specific language in letter re: soil will be solid waste if excavated from beneath RR tracks.

Closure letter should include a variance for PAL exceedances. **Yes** **(No)**

X **Committee action complete; route to Janet Kazda for processing**

Date: 8-18-99 **(FO)** **By:** James C. Hosek

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CASE SUMMARY AND CLOSE OUT FORM

Form 4400-202
5-98

NOTE: Use of this form is required by the Department for any case close out application filed pursuant to ch. 292, Wis. Stats. and ch. NR 726, Wis. Adm. Code. Completion of this form is mandatory for applications for case closure. The Department will not consider or act upon your application unless you complete and submit this application form. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than reviewing close out requests and determining the need for additional response action.

I certify that, to the best of my knowledge, the information presented on and attached to this form is true and accurate. This recommendation for case closure is based upon all available data as of July 21, 99 (date). I have read the Case Summary and Close Out Form Instructions and all required information has been included.

Form Completed By: Dennis Kugle 7/21/99
(Signature) (Date)

Printed Name: Dennis Kugle Company Name: Gannett Fleming

If not site owner, relationship to site owner: Consultant

Address: 8025 Excelsior Drive Madison 53717

Telephone Number: (608) 836-1500 FAX Number: (608) 831-7337

Environmental Consultant (if different then above):

Address:

Telephone Number: ( ) FAX Number: ( )

FOR DEPARTMENT USE ONLY

Type of Case: LUST Spill ER Land Recycling Other DNR Reviewer:

WDNR Site Name: MURPHY OIL USA, INC.

Complete Site Address: 2400 STINSON AVE. SUPERIOR

WDNR BRRTS Case #: 02-16-221811 FID #:

PECFA Claim #: NA

Responsible Party Name: MURPHY OIL USA, INC.

Complete Responsible Party Address: 2407 STINSON AVE. SUPERIOR WI 54880

Site Legal Description : 1/4, NE 1/4, NW 1/4, Sec 36, T 49 N, R 14 (E/W) Town: SUPERIOR

County: Douglas Latitude: 46° 41' 26.0" Longitude: 92° 04' 08.0"

Type Of Closure Requested:

Soil
- ___ < NR 720.09/720.11 Generic RCLs
- ___ NR 720.19(2) Soil Performance Stds.
- ___ NR 720.19(3) Site Specific Stds.
- X < COMM 46 Direct Contact Standards

Groundwater
- ___ < NR 140.10 Table 1 & Table 2 Values
- ___ NR 140.28(2) PAL Exemption
- ___ NR 726.05(2)(b) Natural Attenuation

Contaminant Type(s): Gasoline & Diesel Fuel Products Quantity Released: Unknown

Date of Incident/Discovery: _____ Zoning of Property: Industrial

Enforcement Actions Closed Out? ____Yes ____No X NA Permits Closed Out? ____Yes ____No X NA

Form 4 Pending? ____Yes ____No X NA Date Closure Submitted to DNR: 7/29/99

WDNR BRRTS Case #: 02-16-221811 WDNR Site Name: _____

1. CASE HISTORY AND JUSTIFICATION FOR CLOSURE ATTACHED? X Yes __No

2. SOIL PRE-REMEDIATION OR INVESTIGATION ANALYTICAL RESULTS

Extent Defined? X Yes ___No Soil Type(s): clay Depth to Bedrock: > 300 feet

Potential Receptors for Direct Contact (i.e. vapor migration, contaminated soil left in place): None

Tables of Pre-remedial Analytical Results Attached? X Yes __No Maps of Pre-remedial Sample Locations Attached? X Yes __No

3. SOIL POST REMEDIATION ANALYTICAL RESULTS

Remedial Action Completed? X Yes ___No 720.19 Analysis? ___Yes X No (If yes, attach supporting documentation)

Were Soils Excavated? X Yes ____No Quantity: 330 yd^3 Disposal Method: Thermal Treatment

Final Confirmation Sampling Methods: Grab samples from excavation

Soil Disposal Form Attached? ____Yes X No Final Disposal Location: Lakehead Blacktop

Estimated volume of insitu soils exceeding NR 720 RCLs: Not possible because of adjacent RR tracks

Tables for Post Remedial Analytical Results Attached? X Yes __No Maps of Post Remedial Sample Locations Attached? X Yes No

Brief Description of Remedial Action Taken: Soil excavation, see attached report for details

4. GROUNDWATER ANALYTICAL RESULTS

Potential Receptors for Groundwater Migration Pathway: None

Extent of Contamination Defined? ____Yes ____No X NA Remedial Action Completed? ____Yes ____No ____NA

# of Sample Rounds: ____ Depth(s) to Groundwater/Flow Direction(s): _____

Field Analyses? ____Yes ____No Lab Analyses? ____Yes ____No # of Sampling Points: _____

NR 141 Monitoring Wells Sampled: _____ # Temporary Groundwater Sampling Points Sampled: _____

Recovery Sumps Sampled: _____ # Municipal Wells Sampled: _____ # Private Wells Sampled: _____

Has DNR Been Notified of Substances in Groundwater w/o Standards? ___Yes ___No

Any Potable Wells Within 1200 Feet of Site? ___Yes ___No If Yes, How Many? _____

Have They Been Sampled? ___Yes ___No Have Well Owners/Occupants Been Notified of Results? ___Yes___No

Preventive Action Limit Exceeded? ____Yes ____No (If Yes, identify location(s) _____

Enforcement Standard Exceeded? ____Yes ____No (If Yes, identify location(s) _____

Tables of Analytical Results Attached? ___Yes ___No Map of Groundwater Sample Locations Attached? ___Yes___No

Brief Description of Remedial Action Taken:

WDNR BRRTS Case #: 02-16-221811 WDNR Site Name: Pipeline Release Site

FOR DEPARTMENT USE ONLY

FIRST REVIEW DATE: _____ [X] **Approved** [ ] **Denied**

(Signature) 9-1-99 (Signature) 8/31/99 (Signature) (Signature)

SECOND REVIEW DATE: _____ [ ] **Approved** [ ] **Denied**

(Signature) (Signature) (Signature) (Signature)

COMMITTEE RECOMMENDATION:

X **Closure Approved Per:**

- ____ No Restrictions
- ____ Groundwater Use Restriction
- ____ Zoning Verification
- ____ Deed Restriction
- ____ Deed Affidavit
- X Site Specific Close Out Letter Necessary
- ____ Well Abandonment Documentation
- ____ Soil Disposal Documentation
- ____ Public Notice Needed
- ____ NR 140 Exemption For: _____
- X Specific Comments: If contaminated soil beneath RR tracks is excavated, it will have to be handled as a solid waste. This is also a COMM 46 closure.

____ **Closure Denied, Needs More:**

- ____ Investigation
- ____ Groundwater Monitoring
- ____ Soil Remediation
- ____ Groundwater Remediation
- ____ Documentation Of Soil Landspreading Or Biopile Destiny
- ____ Specific Comments: _____

WISCONSIN DEPARTMENT OF NATURAL RESOURCES **Form 4400 -202**
Case Summary and Close Out Form Instructions **5/98**

The Case Summary and Close Out Form and attached instructions have been designed by staff in the Bureau for Remediation and Redevelopment to provide responsible parties, environmental consultants, Department staff, and other interested parties with a checklist of information that must be evaluated prior to case closure. The closure of a case means that the Department has determined that no further response is required at that time. Various closure options are available within Department codes. Responsible parties and their consultants should specify the options sought for closure for the soils and groundwater at their site. Groundwater quality standards found in NR 140 and soil standards found in NR 720 must generally be met. However, some closure options allow closure where groundwater or soil standards are not met provided that deed or groundwater use restrictions are imposed on the subject property. A previously closed case may be reopened by the Department if information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety or welfare or the environment.

In order to expedite the closure process for your case, you should submit a complete and accurate submittal according to the following instructions. Submit the Case Summary and Close Out Form and required attachments as a stand alone document and **please do not** submit the close out request in a bound report. The information supplied should succinctly summarize the chronological history of the entire case and should reinforce the justification for closure. Submission of tabulated analytical results from previous reports are acceptable (i.e. it is not necessary to create new tables). However, do not submit previously submitted reports themselves as attachments. **Submittals with incomplete forms and/or documentation will be returned.** The following should be included in the order shown:

√ **(A) Case Summary and Close Out Form** must be complete. A brief, **written** case history, justification for case closure and description of the remedial action taken must be included. The type of closure requested for both the soil and groundwater must be indicated.

IN REPORT **(B) Site Map**, per NR 716.15(2)(d)5-6, to scale showing the layout of the buildings, roads, tank and/or discharge locations, utilities, receptors, monitoring and potable wells, property lines and other relevant features of the site. If possible, the scale should be 1 inch = 10 or 20 feet.

NONE DONE **(C) Pre-Remedial Soil Analytical Results Table(s)** which show the analytical results and sample depths of all of the pre-remedial soil samples (i.e. tank pull, site investigation, etc.). If more than one table, please put them in chronological order. Highlight those results which exceed the NR 720 soil standards. Provide the level of detection for results which are below the detection level (i.e. don't just list as ND). Identify the depth of the water table. All data must be in table format as identified in NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets)

NA **(D) Pre-Remedial Soil Sample Location Map(s)** which show the locations of the items from B, above, and the soil sample locations from C, above. Highlight those sample locations which exceed NR 720. Maps should be prepared according to the applicable portions of NR 716.15(2)(h)1. You may submit more than one map.

NA **(E) Pre-Remedial Geologic Cross Section(s)** including source location(s), extent of soil and groundwater contamination, soil sample locations, water table elevation, and bedrock elevation, if encountered. Maps should be prepared according to NR 716.15(2)(g)5-8 and NR 716.15(2)(h)1-2.

IN REPORT **(F) Post-Remedial Soil Analytical Results Table(s)** which show the analytical results and sample depths of all of the post-remedial soil samples. Highlight the analyses which exceed NR 720 soil standards. Provide the level of detection for analytical results which are below the detection level (i.e. don't just list as ND). Identify the depth of the water table. All data must be in table format as identified in NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets).

IN REPORT **(G) Post-Remedial Soil Sample Location Map(s)** which show the locations of items from B, above, and the soil sample locations from F, above. Highlight those sample locations which exceed NR 720. Maps should be prepared according to the applicable portions of NR 716.15(2)(h)1. You may submit more than one map.

NA **(H) Post-Remedial Geologic Cross Section(s)** including former source location(s), remaining soil contamination, soil sample locations, extent of excavation, water table elevation, and bedrock elevation, if encountered. Maps should be prepared according to NR 716.15(2)(g)5-8 and NR 716.15(2)(h)1-2.

NA **(I) Groundwater Analytical Results Table(s)** showing all of the site's historical groundwater analytical results in chronological order. Highlight those results which exceeded NR 140 (differentiate between PAL and ES exceedances). All data must be in table format as identified in NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets). Differentiate between pre-remedial, remedial and post-remedial samples (i.e. identify when the groundwater remediation system was active/inactive).

No GW Yet
Sampling Done

NA **(J) Groundwater Sample Location Map(s)** which show the locations of the items from B, above, and all of the monitoring wells/sumps/extraction wells/potable wells. Highlight those wells which have PAL or ES exceedances (in the most recent round of sampling, differentiate between PAL and ES). Maps should be prepared according to the applicable portions of NR 716.15(2)(h)1. You may submit more than one map.

NA **(K) Groundwater Contour Map(s)** which show the historical changes in direction, elevation and/or gradient. Provide one map if data is consistent. Maps should be prepared according to the applicable portions of NR 716.15(2)(g)5-8 and NR 716.15(2)(h)1-2.

APPENDIX C

COPY OF AUGUST 10, 1998, SECOND REQUEST FOR CLOSURE

94

eder associates
a division of Gannett Fleming

GANNETT FLEMING, INC.
8025 Excelsior Drive
Madison, WI 53717-1900
Office: (608) 836-1500
Fax: (608) 831-3337

July 29, 1999
File #34265.004

Ms. Janet Kazda
Program Assistant
Wisconsin Department of Natural Resources
Rhinelander Office
107 Sutliff Avenue
P.O. Box 818
Rhinelander, WI 54501

Re: Murphy Oil USA, Inc., Superior
Request for Closure of Underground Pipeline Release Site
BRRTS #: 02-16-221811

Dear Ms. Kazda:

On behalf of Murphy Oil USA, Inc., Gannett Fleming, Inc. (fka Eder Associates) is requesting closure from the Wisconsin Department of Natural Resources (WDNR) for an underground pipeline release site at Murphy's Superior refinery. Soil that was adjacent to and under the pipeline and which was affected by the October 1997 release of gasoline and diesel fuel products, has been removed to the extent practical. In total, about 330 yd^3 of soil have been excavated. The excavated soil was transported off site and thermally treated at Lakehead Blacktop and Materials in Superior.

Soil was initially excavated in October 1997. Field-screening and visual observations were used to guide the work, and about 310 yd^3 of soil were excavated. Fifteen confirmation soil samples were collected for laboratory analysis, but only two of the fifteen confirmation samples contained levels of petroleum volatile organic compounds (PVOCs) above applicable NR 720 residual contaminant levels (RCLs). One confirmation sample also contained diesel range organics (DRO) above the NR 720 RCL of 250 mg/kg.

The WDNR reviewed the initial confirmation sampling results and requested that additional soils be excavated from the area where the elevated DRO level was measured because the area was accessible. The two areas where samples with PVOCs above NR 720 standards were obtained could not be removed because of adjacent railroad tracks. In July 1998, about 20 yd^3 of additional soil were excavated from the area with elevated DRO levels. When the excavation was complete, a confirmation sample was collected, and no detectable levels of gasoline range organics (GRO), DRO, or PVOCs were measured.

Continued . . .

Ms. Janet Kazda
Wisconsin Department of Natural Resources
July 29, 1999

In summary, post-excavation soil sampling results show that all soil containing GRO, DRO, or PVOCs above NR 720 RCLs has been removed to the extent practical because of the adjacent railroad tracks. In addition, there are no levels of PVOCs remaining that exceed or even come close to the proposed COMM 46 and NR 746 direct-contact standards. Based on this information, we believe that this site does not pose a threat to public health, safety, and welfare or to the environment.

Enclosed with this report are a WDNR case closure request form 4400-202 and a check for $750.00 to cover the WDNR's review fee.

Site Conditions

Figure 1 is a USGS map showing the location of the refinery, and Figure 2 is a refinery site plan. The site of the underground pipeline release is on relatively flat land in the east-central part of the refinery, as shown on Figure 2. The closest surface water to the release site is Newton Creek, located about 1,200 feet to the southeast. The creek is shown on both Figures 1 and 2. The surrounding land is also owned by Murphy and is part of the refinery. The ground surface in the area of the pipeline is unpaved but consists of low-permeability clay.

Access to the refinery property, which is zoned industrial, is restricted to Murphy employees and subcontractors. The entire property is fenced and uses 24-hour security guards. Any work done on refinery property requires a "safe work permit" that is issued by trained Murphy personnel. This permit must be reissued daily and is updated if conditions warrant. The work permits detail the type of work to be performed, who will be doing the work, the equipment/machinery to be used, the type of personal protective equipment that is required, and the monitoring (i.e., field screening, air monitoring) that is required. In those circumstances where contaminated soil is encountered, only HAZWOPER-trained personnel are allowed to do the work.

These institutional controls prevent exposure to the general public and minimize the likelihood of any workers being exposed to potentially harmful levels of petroleum-related constituents. This level of control goes far beyond the typical fence in a remote or unused industrial area. Further, there is no chance of real or potential impact to other off-site receptors of concern, such as humans, plants, and animals; water supply wells; basements; or water and sewer utility lines.

Continued . . .

The potable and process water supply for the refinery and the area around the refinery is provided by the City of Superior, which obtains its water from Lake Superior. On April 21, 1999, we requested a well records search of the area around the refinery from the Wisconsin Geological & Natural History Survey. Only two private wells were located: One is about one mile northwest of the refinery and was installed in 1941, and the other is less than a quarter-mile southeast of the refinery at Lakehead Pipeline and was installed in 1953. Murphy contacted Lakehead Pipeline to inquire about the status of this well. The well is no longer in service, and Lakehead now obtains its water from the City of Superior. Copies of the well records request form and the two well logs are included as Appendix A. There are no active private or public water supply wells at or in the area around the refinery.

The site is underlain by 300 feet of clay, as documented by a boring done on refinery property, meaning there is no developable groundwater available. There is moist clay at about 3 to 5 feet below grade across the site. This has been confirmed by measuring water levels in monitoring wells on refinery property. Given the results of physical parameter testing of soil throughout the refinery, the moist clay meets the definition of low-permeability material, as defined in proposed COMM 46. This conclusion is confirmed by the fact that it typically takes weeks for the water table wells to recover after they are purged.

Background Information on Release

On September 29, 1997, Murphy discovered petroleum product on the ground surface adjacent to the spot where two underground pipelines exit the ground and start running aboveground. The underground pipelines carry gasoline and diesel fuel products. Neither the volume of the release nor its duration could be determined. The two pipes run 4 to 5 feet below the ground surface.

Excavation of Soils

On October 9, 1997, Twin Ports Testing (TPT) directed the excavation of about 310 yd^3 of soil affected by the underground pipeline release. TPT used field-screening and visual observations to guide the excavation and collected fifteen confirmation soil samples for laboratory analysis. The excavation extended a maximum of 3 feet below the pipeline. All fifteen samples were analyzed for

Continued . . .

GRO, DRO, and PVOCs. On March 2, 1998, Murphy sent the excavation sampling report prepared by TPT dated January 1998, and a formal request for closure to Mr. Jim Hosch in the WDNR's Superior office. Copies of Murphy's letter and the TPT report are attached as Appendix B.

In an April 20, 1998, WDNR letter to Murphy, Mr. Hosch stated that before closure could be considered, further definition of the horizontal and vertical extent and degree of contamination was required in the three areas where benzene or DRO were above NR 720 RCLs. In a June 29th meeting in Madison attended by Mr. Hosch and other WDNR representatives, Murphy representatives, and Gannett Fleming representatives, we discussed the March 2, 1998, request for closure and the WDNR's subsequent request for additional work. During that meeting, it was agreed that removing additional soils from along the east side of the excavation was not practical or necessary, given the location of the adjacent railroad track, the low permeability of the clay soils in the area excavated, and the low levels of GRO, DRO, and PVOCs remaining in the soil. However, the WDNR insisted that further work near the location of TPT's sample R-1 would be required because the area was accessible. Based on that request, TPT supervised the excavation about 20 yd^3 of additional soils from this area on July 6, 1998. The results of the confirmation sample collected following those excavation activities show that no detectable levels of GRO, DRO, or PVOCs remained. The results of that additional excavation work were sent to Mr. Hosch as a second request for closure on August 10, 1998. A copy of this second request is included in Appendix C.

Request for Closure

Analytical results for the sixteen confirmation soil samples collected from the excavation associated with the cleanup of the pipeline release show that only two samples contained any PVOCs above an applicable NR 720 RCL. These two samples, both collected from the sidewall of the excavation that ran parallel and immediately adjacent to a set of railroad tracks, contained 0.120 and 0.546 mg/kg of benzene, above the NR 720 RCL of 0.055 mg/kg. However, these benzene levels are far below the proposed COMM 46 and NR 746 direct-contact standard of 1.1 mg/kg. These data document that Murphy's efforts to remove the soil affected by the release from the underground pipeline was very effective, especially considering the site conditions. We believe that the WDNR would agree that site conditions (i.e., adjacent railroad tracks) make it impractical to achieve generic NR 720 RCLs at all locations. In actuality, the two samples cited above were collected almost from under the railroad

Continued . . .

Ms. Janet Kazda
Wisconsin Department of Natural Resources
July 29, 1999

tracks. These data show that the low levels of petroleum-related compounds remaining in the soils where the pipeline release occurred are unlikely to ever affect groundwater, considering the relatively impermeable nature of the clay soils throughout the area.

Based on information included with this closure request, we believe that the pipeline site has been cleaned up to the extent practicable and does not pose a threat to public health, safety, and welfare or to the environment. For these reasons, we are requesting closure of the pipeline release site from the WDNR. We look forward to your favorable response to this request, and if you have any questions or need additional information, please contact us.

Sincerely,

GANNETT FLEMING, INC.

Dennis F. Kugle
Vice President

DFK/jec
Enc.

cc: Lee Vail (Murphy/New Orleans)
Liz Lundmark (Murphy/Superior)
Kevin Melnyk (Murphy/El Dorado)
Greg Neve (Murphy/Superior)
James Hosch (WDNR/Superior)
Richard Lewandowski (DeWitt, Ross & Stevens)

Gannett Fleming

FIGURE 2

GENERAL DIRECTION OF GROUNDWATER FLOW

HILL AVENUE

LEGEND

- Monitoring Well Location
- Monitoring Well Nest Location
- (65) Former Tank Location
- Liner

MW-8

MW-6

MW-4 MW-5

MW-7

MW-1/T29

MW-1/T31

MW-5/T66

MW-2/T59

MW-1&PZ-1/T59

MW-1

MW-2

MW-3B

MW-1/PP PZ-1/PP

MW-2/PP

Propane/ Butane Loading Area

Pond 1 (Closed)

Pond 6 (Closed)

Pond 7 Aeration Pond

Pond 8 Settling Pond

Fire Water Pond No. 2

Fire Water Pond No. 3

Fire Water Pond No. 4

Fire Water Pond No. 5

MW-9

20'x150' Soil Excavated 10/97 And 7/98 (WDNR Closure Request Pending)

MW-7/T66

MW-4&PZ-4/T66

MW-1&PZ-1/T66

MW-1/T67

MW-6/T66

MW-2/T67

PZ-2/T66

PZ-3/T66

MW-2/T66

MW-3/T66

Flare

Warehouse

Maintenance Shop

Process Area

Process Area

Process Area

MW-1/T8

MW-2/T8

Railcar Loading Area

Fire House

Boiler House

Loading Area

100'ø Equalization Tank

30'ø Primary Clarifer

Treatment Plant Building

MW-10

STINSON AVENUE

MW-11

Storage

Lab

Office

Marketing

MW-14

MW-13

MW-12

BARDON AVENUE

Impoundment Area

NEWTON CREEK

NOTE

Monitoring Well Locations Are Based On Field Sketches From The Field Investigation Reports And Are Approximate.

0 300

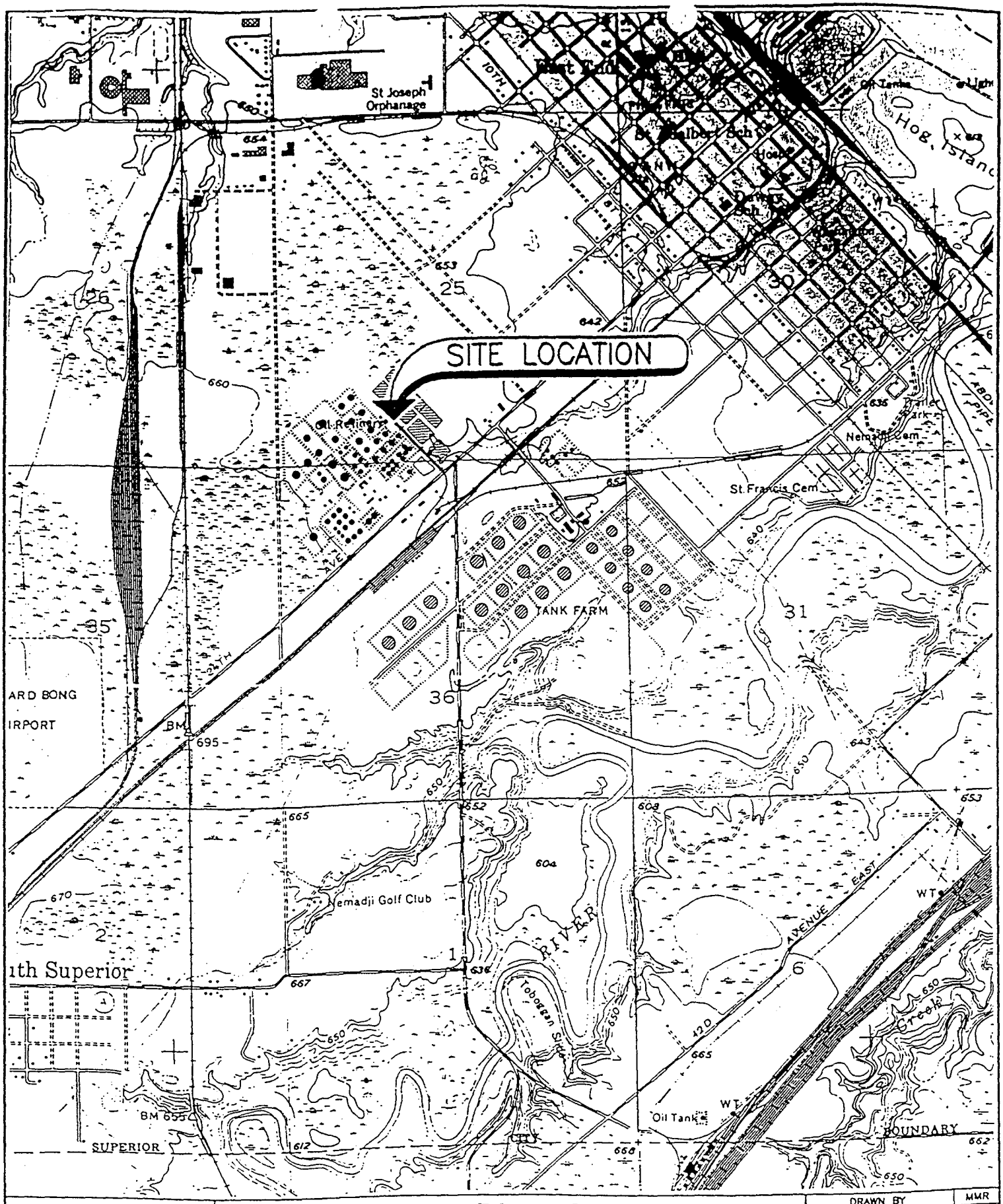
Approximate Scale In Feet

072799
34265WBE

SITE PLAN

MURPHY OIL USA, INC

SUPERIOR, WISCONSIN

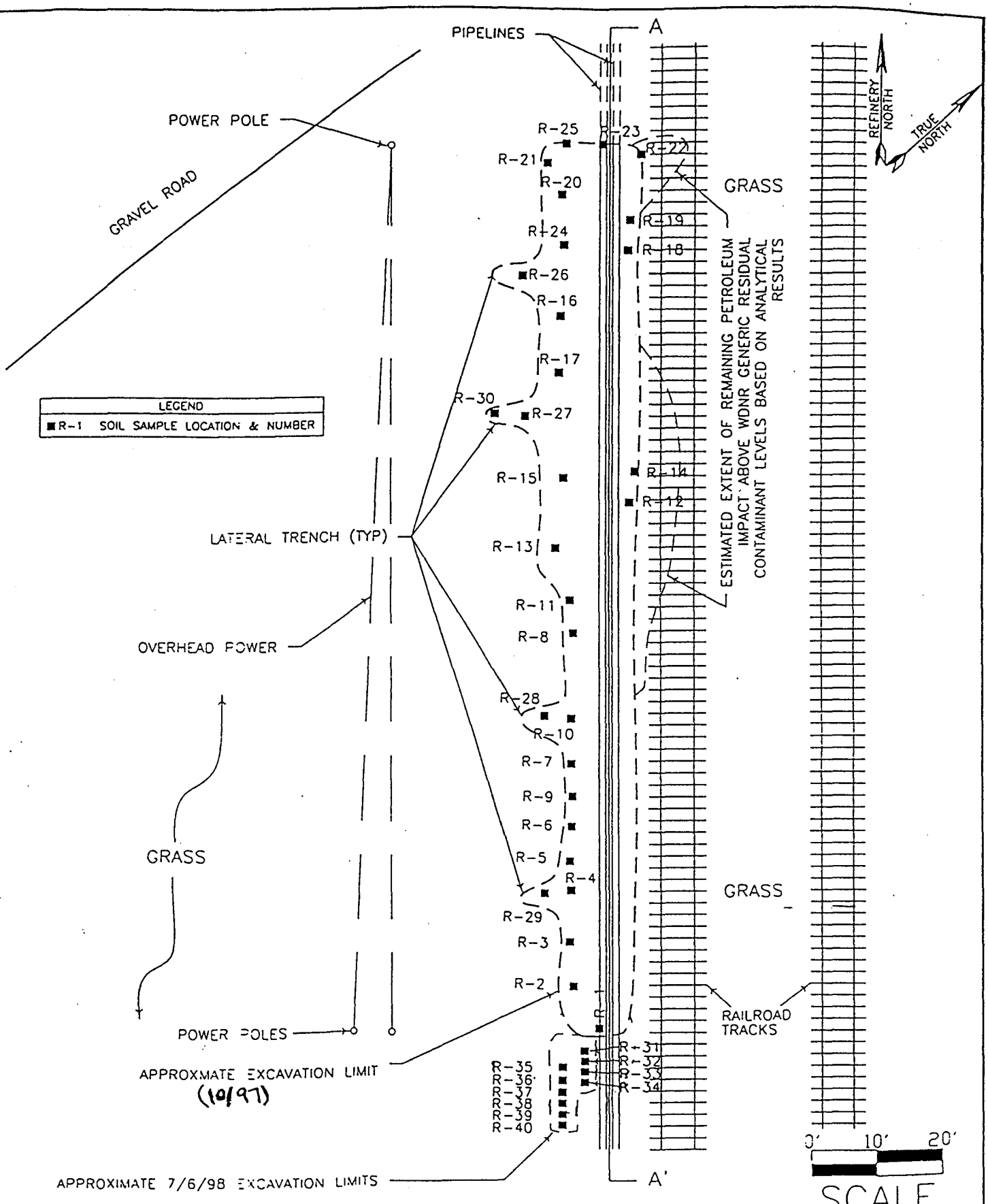


Twin Ports Testing

SITE LOCATION MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	ICM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	1

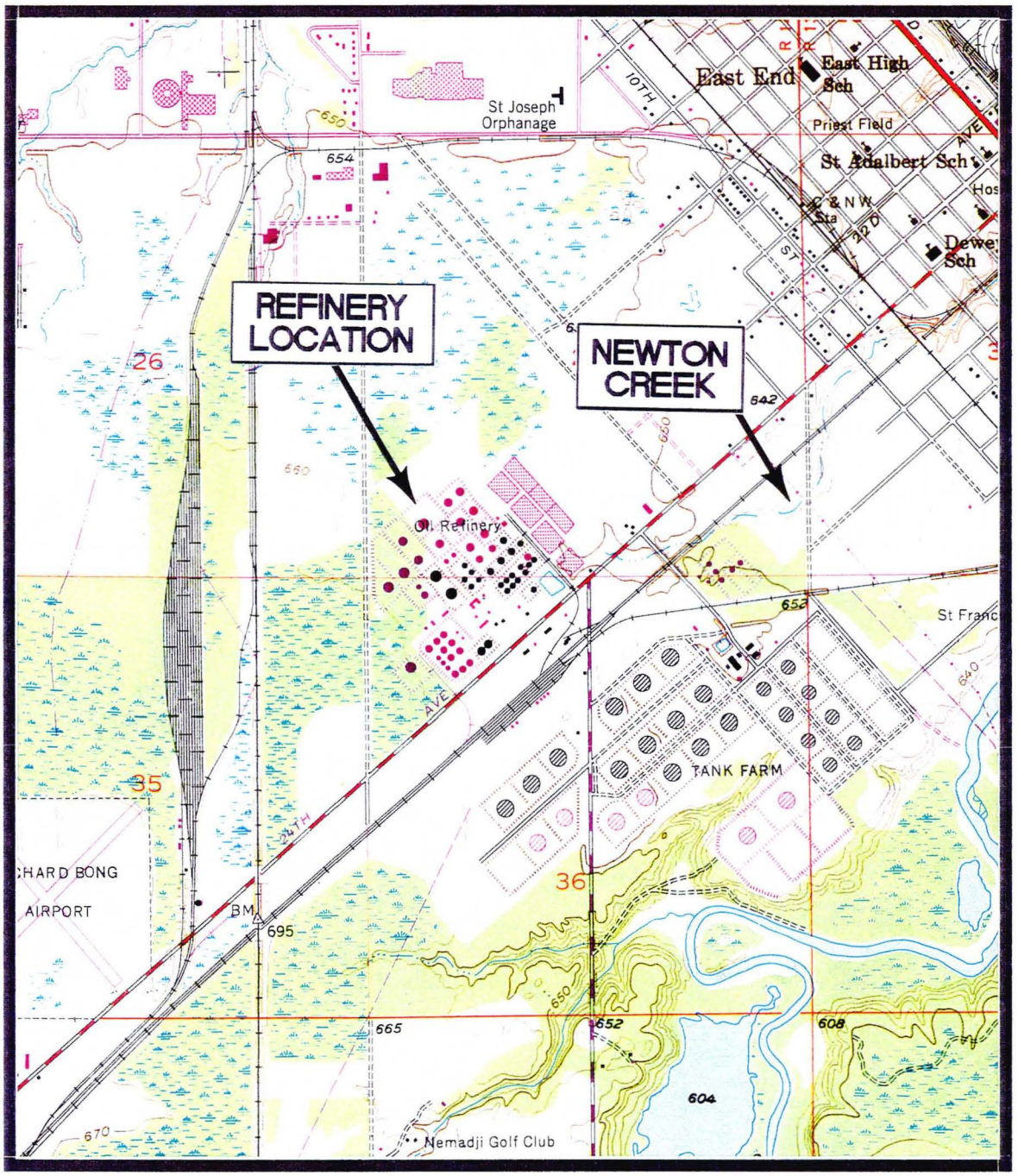


Twin Ports Testing

SITE MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	PJB
CHECKED BY	JCM
APPR BY	BEM
DATE	7/98
TPT NO.	786-97E



SCALE: 1 INCH = 2000 FEET

7.5 MIN TOPOGRAPHIC MAP
SUPERIOR, WISCONSIN
1954
PHOTOREVISED 1983

LOCATION MAP

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

070199
34265.000

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008
LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

MIDWEST ANALYTICAL SERVICES

LAKE SUPERIOR LABORATORIES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

205 WEST 2ND STREET
SUITE 105
DULUTH, MN 55802
LAB (218) 722-9884
FAX (218) 722-9964

Analytical Report

July 16, 1998

Irvin Mossberger
Twin Ports Testing
1301 North 3rd Street
Superior, WI 54880

Chain of Custody

Project ID: 786-97E
Chain of Custody: 23638
Date Received: 7/7/98 1:27:08 PM by Shelly Manke

Sample Information

SampleID	Description	Date	Matrix
31340	R-40 7.5'	7/6/98	Soil
31341	SP-2	7/6/98	Soil
31342	Field Blank	7/6/98	Other

Analytical results are listed on the following page(s).

Reviewed By

Scott Dawson
Organic Chemist

Date Analyzed: 07-13-98

PVOC	MDL	31340 R-40 7.5'	31341 SP-2	31342 Field Blank
MTBE (mg/kg)	0.008		0.792	BDL
Benzene (mg/kg)	0.013		1.05	BDL
Toluene (mg/kg)	0.010		6.54	BDL
Ethylbenzene (mg/kg)	0.010		1.79	BDL
Xylenes (mg/kg)	0.022		12.5	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.018		6.49	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.005		2.41	BDL
Total Hydrocarbons as GRO (mg/kg)	10.0		124	BDL
Total Hydrocarbons as DRO (mg/kg)	10.0	BDL	65	
Moisture Content (%)		22.6	20.9	

BDL = Below Detection Limit

MIDWEST ANALYTICAL SERVICES

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

CHAIN OF CUSTODY RECORD
AND
REQUEST FOR ANALYSIS
(Instructions on Back of Form)

23638

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

CLIENT: Twin Ports Testing
SAMPLER NAME: Irvin Mossberger
PROJECT I.D.: 786-97E
SAMPLER SIGNATURE: Irvin D. Mossberger
REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing, 1301 N. 3rd St. Superior, WI 54880
REMARKS: WI samples

NO. OF CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	SOIL	OTHER	SAMPLE IDENTIFICATION: SAMPLE	SAMPLE NO.	LABORATORY ID NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or CBOD	TSS	FCOL or TCOL	PRESERVATIVE: HCl	HNO3	H2SO4	ICE	OTHER
2		X	7/16/98	9:14		X		R-40 7.5'				X												X	
3		X	7/16/98	9:40		X		SP-2			X	X												X	X
1								Field Blank			X														

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	7/16/98				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time		Comments:		

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED:
☒ NORMAL ☐ RUSH
DATE REQUIRED: 5 days

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

EN CHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :

Project Number : 786-98E

Client: TWIN PORTS TESTING

WI DNR LAB ID : 816079330

Report Date : 8/4/98

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
780311-001	R-40A	7/31/98			
780311-002	FIELD BLANK	7/31/98			

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this final report is authorized by Laboratory management, as is verified by the following signature.

Thomas P. Hartnett 8-4-98

Approval Signature Date

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

ENCHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :

Project Number : 786-98E

Field ID : R-40A

Lab Sample Number : 780311-001

WI DNR LAB ID : 816079330

Client : TWIN PORTS TESTING

Report Date : 8/4/98

Collection Date : 7/31/98

Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Solids, percent	74.0				%		8/3/98	SM2540G	SM2540G	DJB

Organic Results

GASOLINE RANGE ORGANICS - SOIL/METHANOL Prep Method: Wi Mod GRO Prep Date: 8/3/98 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	< 3.4			3.4	mg/kg		8/4/98	WI Mod GRO
Blank Spike	100				%Recov		8/4/98	WI Mod GRO
Blank Spike Duplicate	100				%Recov		8/4/98	WI Mod GRO
GRO blank	< 2.5			2.5	mg/kg		8/4/98	WI Mod GRO

Organic Results

PVOC - METHANOL PRESERVED SOIL Prep Method: SW846 5030B Prep Date: 8/3/98 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	104				%Recov		8/4/98	MOD 8021B
Benzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Ethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Toluene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Xylenes, -m, -p	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Xylene, -o	< 25	25	60		ug/kg		8/4/98	MOD 8021B

All soil results are reported on a dry weight basis unless otherwise noted.

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

ENCHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :
Project Number : 786-98E
Field ID : FIELD BLANK
Lab Sample Number : 780311-002
WI DNR LAB ID : 816079330

Client : TWIN PORTS TESTING
Report Date : 8/4/98
Collection Date : 7/31/98
Matrix Type : METHANOL

Organic Results

PVOC - METHANOL — Prep Method: SW846 5030B — Prep Date: 8/3/98 — Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	105				%Recov		8/3/98	MOD 8021B
Benzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Ethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Toluene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Xylenes, -m, -p	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Xylene, -o	< 25	25	60		ug/kg		8/3/98	MOD 8021B

Company Name: Twin Parts (Log)
Branch or Location: Superior, WI
Project Contact: Irvin Mossberg
Telephone: 392-7114
Project Number: 786-98E
Project Name:
Project Location: Wisconsin
Sampled By (Print): Irvin G. Mossberg
Regulatory Program *(circle)*: (UST) RCRA CLP SDWA
NPDES/WPDES CAA NR_____ Other_____

EN CHEM INC. 2 Day

☐ 1241 Bellevue St., Suite 9, Green Bay, WI 54302, 414-469-2436 • 1-800-736-2436, FAX 414-469-8827

☒ 2231 Catlin Ave., Suite 420, Superior, WI 54880, 715-392-5844 • 1-800-837-8238, FAX 715-392-5843

CHAIN OF CUSTODY

NR720 Confirmation Analysis Required? Y
(En Chem will confirm unless otherwise instructed.)

Mail Report To: Irvin Mossberg
Company: TPT
Address: 1301 N. 3rd St
Superior WI 54880
Invoice To: Same
Company:
Address:
P.O. No.: Quote No.:

Field ID	Sample Description	Collection Date	Collection Time	Field Screen	Matrix	Filt'd Y/N	Preserv*	Analysis Requested	SHADED AREA FOR LABORATORY USE ONLY: Good Cond.	Total Bottles	Comments	Laboratory Number
R-40A		7/31/98	3:37	0	Soil	N	F	GRO/PVOC Quick turn				-001
Field Blank		7/31/98	3:50	—	MeOH	N	F	PVOC				-002

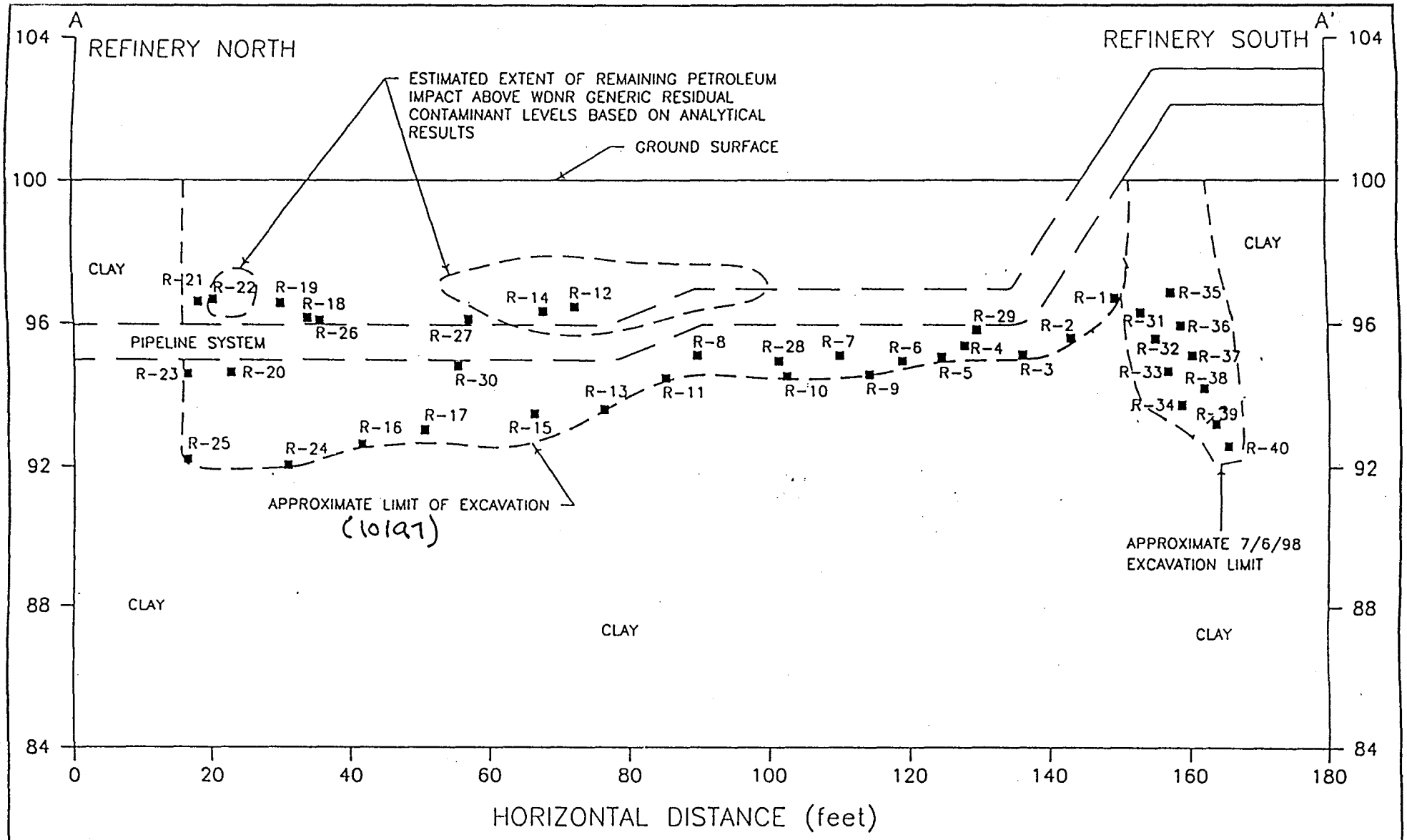
*Preservation Code
A=None B=HCL C=H2SO4
D=HN03 E=EnCore F=Methanol**
G=NaOH O=Other (Indicate)

**If not using En Chem's methanol, Indicate volume of methanol added and mark the appropriate samples.

Relinquished By:	Date/Time:	Received By:	En Chem Project No.
[signature]	7/31/98 5:26		780311
Relinquished By:	Date/Time:	Received By:	Sample Receipt Temp. (Must be rec'd at 4°C)
Relinquished By:	Date/Time:	Received By (En Chem): [signature] 7-31-98 5:26	8 QI

ATTACHMENT A

LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS FOR SOIL SAMPLES R-40, R-40A, AND SP-2



LEGEND
■R-1 SOIL SAMPLE LOCATION & NUMBER

Twin Ports Testing

CROSS SECTION

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	PJB
CHECKED BY	IGM
APPR BY	BEM
DATE	7/98
TPT NO.	786-97E
FIGURE	3

MURPHY OIL USA, INC.

SUPERIOR, WISCONSIN

TABLE 2

ANALYTICAL RESULTS FOR PIPELINE RELEASE

SOIL SAMPLES (JULY 6, 1998, EXCAVATION)

Parameter	Results (mg/kg)		NR 720 RCL (mg/kg)
	R-40 and R-40A Closure Samples at 7.5' Below Ground Surface	SP-2 Excavated Soil Stockpile Sample	
DRO	<10.0	65	250
GRO	<3.4	124	250
Benzene	<0.025	1.05	0.0055
Ethylbenzene	<0.025	1.79	2.90
Toluene	<0.025	6.54	1.50
Xylenes	<0.025	12.5	4.10
1,2,4-TMB	<0.025	6.49	NS
1,3,5-TMB	<0.025	2.41	NS
MTBE	<0.025	0.792	NS

NOTES:

Soil samples collected by Twin Ports Testing of Superior.

R-40 sample for DRO analysis and the SP-2 sample were collected on July 6, 1998, and analyzed by Midwest Analytical Services.

R-40A sample for all other analyses collected on July 31, 1998, and analyzed by EnChem.

NS = No standard.

MURPHY OIL USA, INC.

SUPERIOR, WISCONSIN

TABLE 1

FIELD-SCREENING (PID) RESULTS FOR

PIPELINE RELEASE SOIL SAMPLES (JULY 6, 1998, EXCAVATION)

Sample ID	Depth Below Ground Surface (ft)	Soil Type	Relative Moisture	PID Reading (ppm)
R-31	3.5	Clay (fractured, possible fill)	M	350
R-32	4.5	Clay (fractured, possible fill)	M	380
R-33	5.5	Clay (fractured, possible fill)	M	98
R-34	6.5	Clay (fractured, possible fill)	M	512
R-35	3.0	Clay (fractured, possible fill)	M	8.9
R-36	4.0	Clay (fractured, possible fill)	M	60
R-37	5.0	Clay (fractured, possible fill)	M	476
R-38	6.0	Clay, little sand	M	81
R-39	7.0	Clay (massive, native)	M	3.5
R-40 (L)	7.5	Clay (massive, native)	M	1.7
SP-2 (L)	NA	Clay	M	138

NOTES:

Field screening conducted by Twin Ports Testing of Superior.

PID = Photoionization detector

ppm = Parts per million

M = Moist

L = Sample sent to laboratory for chemical analysis

SP = Stockpile

NA = Not applicable

Soil from sample ID locations R-31 through R-39 excavated and stockpiled.

excavation, soil samples were collected for field-screening to guide the extent of the excavation. The area excavated is shown on Figure 2, and a cross sectional view of the area is shown on Figure 3. The field-screening results are listed in Table 1. As you can see from the field-screening results, elevated organic vapor levels were measured in the samples collected to a depth of 6 feet, the depth at which native clay soils were encountered. After that point, the organic vapor concentrations declined significantly. To confirm that the contaminated soil around R-1 had been excavated, samples were collected from the base of the final excavation at 7.5 feet below grade and laboratory-analyzed for DRO, GRO, and PVOCs. Those samples, designated as R-40 and R-40A, did not contain any petroleum-related compounds above method detection limits. The results are shown in Table 2.

A sample of the soil excavated on July 6, 1998, was also submitted for laboratory analysis. The results for this sample, SP-2, are also shown in Table 2. This soil is currently stockpiled next to the pipeline and covered with plastic. Murphy is making arrangements to have the soil thermally treated at Lakehead Blacktop. Documentation that the soil has been treated will be sent to you directly by Bill Gustafson of Murphy.

The laboratory reports and chain of custody records for samples R-40 R-40A, and SP-2 are enclosed as Attachment A.

We trust that the information provided in this letter will be sufficient for the WDNR to issue a closure letter for this site. If you have any questions, please call.

Sincerely,

Eder Associates, a Division of Gannett Fleming, Inc.

Dennis F. Kugle
Vice President

DFK/jec/Enc.

cc: Fred Green (Murphy/El Dorado)
Kevin Melnyk (Murphy/El Dorado)
Lee Vail (Murphy/El Dorado)
Jim Kowitz (Murphy/Superior)
Rick Lewandowski (DeWitt Ross & Stevens)
Mick Michaelson (WDNR/Spooner)
Linda Meyer (WDNR/Madison - LS/5)
Stan Druckenmiller (WDNR/Madison - AD/5)
Mark Stokstad (WDNR/Rhinelander)
Mark Giesfeldt (WDNR/Madison - RR/3)

eder associates
a division of Gannett Fleming

GANNETT FLEMING, INC.
8025 Excelsior Drive
Madison, WI 53717-1900
Office: (608) 836-1500
Fax: (608) 831-3337

August 10, 1998
File #34265.004 / 367-18.4

Mr. James A. Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

Re: Murphy Oil USA, Inc.
Second Request for Closure
Pipeline Release Site

Dear Mr. Hosch:

This letter responds to your April 20, 1998, letter to Mr. Mark Miller of Murphy Oil USA, Inc., which in turn responded to his March 2, 1998, request for closure (under NR 726.07 and pursuant to meeting the "no further response" criteria under NR 708.09) of the gasoline and diesel fuel products release from an underground pipeline at Murphy's Superior, Wisconsin, refinery. Figure 1 is a site map showing the refinery and the general location of the pipeline release site. In your letter, you stated that before closure of this site can be further considered, additional information was required.

At the June 29th meeting in Madison attended by you, other Wisconsin Department of Natural Resources (WDNR) representatives, Murphy representatives, and myself, we discussed the March 2, 1998, request for closure for the pipeline release site and your subsequent request for additional work. During our discussion, Murphy representatives explained that they had installed sheet piling, just south of the railroad tracks that run along the north side of the pipeline, to allow soil to be excavated, while at the same time maintaining the structural integrity of the adjacent railroad tracks. Additional soil could not be removed from this side of the excavation without removing the railroad tracks, which are vital to Murphy's refining operations. Excavating soils from under the railroad tracks is not practicable, nor does Murphy believe it is justified from an environmental protection standpoint, based on the presence of continuous red clay and the low concentrations of gasoline range organics (GRO), diesel range organics (DRO), and petroleum volatile organic compounds (PVOCs) measured in the samples that were analyzed by a laboratory.

At the June 29th meeting, you and other WDNR staff appeared to concur that removing additional soils from along the north side of the former excavation is not practicable or necessary, given the location of the adjacent railroad track, the low permeability of the native red clay in the areas excavated, and the low levels of GRO, DRO, and PVOCs remaining in the soil.

However, you did indicate in the meeting that further work near the location of sample R-1 would be required because the area is accessible. Based on that request, Twin Ports Testing directed the excavation of about 20 cubic yards of additional soils from this area on July 6, 1998. During the

Continued . . .

APPENDIX A

WELL RECORDS REQUEST FORM AND THE TWO WELL LOGS

WELL RECORDS REQUEST FORM - *FOR AN AREA*

(may be faxed or mailed)

Send to: Wisconsin Geological and Natural History Survey
3817 Mineral Point Road, Madison, WI 53705-5100

Fax: 608-262-8086 Telephone: 608-262-7430 Irene Lippelt | 608-263-7387 Roger Peters | 608-262-1705 Main Office

Date 4/21/99 **Page** 1 **of** 1

From: Name Jeff King
Company Gannett Fleming, Inc. (fna Eder Associates)
Mailing Address 8025 Excelsior Dr.
Madison, WI 53717

Telephone Number 608-836-1500 Fax Number 608-831-3337

Project number or billing code for order 34265.003

Note: Prepayment is required unless your company has an account with our map sales department.

Where should invoice be sent? to person ordering? X **OR to company's accounting department?** ____

If prepaying, Mastercard ___ **or Visa** ___ **#** _____ _____ _____ _____, **expires:** _____-_____

TYPE OF RECORDS REQUESTED: (PLEASE CHECK ALL THAT APPLY)

1. ***WELL CONSTRUCTOR'S REPORTS***: 1936-79 X 1980-89 X ≥1990 X
   If there are only a few reports (or none) in the area you requested, do you want us to expand the search area? __yes X no. If you are ordering less than an entire section, do you want reports that do not list a ¼ section included? X yes __no. If you are ordering ¼ ¼ section(s) do you want reports that list just one ¼ section included? X yes __no.
   Most reports (except in Milwaukee & Waukesha Counties) do NOT list more than one quarter section.
2. ***GEOLOGIC LOGS***: only within area requested X or up to ~1 mile away if few or none in area ____

AREA(S) FOR WHICH RECORDS ARE BEING REQUESTED:

Quarter Section(s) (please use "of" or "and")		Section	Township	Range (list E or W)	County
	of	36	49	14W	Douglas
SE and SW	of	25	49	14W	Douglas
SE	of	26	49	14W	Douglas
NE	of	35	49	14W	Douglas
	of				
	of				
	of				
	of				

Special Instructions (if any):

Please call when ready, We will pick-up

Note: **All orders are sent first class mail unless other arrangements are requested.**
If you need this material in an alternative format, please contact the Wisconsin Geological and Natural History Survey (608/262.1705) or the UWEX Affirmative Action Office.

WELL CONSTRUCTION REPO

WISCONSIN STATE BOARD OF HEALTH

WELL DRILLING DIVISION

AUG 28 1941

Note: Section 32 of the Wisconsin Well Drilling Sanitary Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner *William Hahle, 6* Driller *Mastrian Bros*

Street or RFD *Norman Raafaube* Post Office *Wentworth Wis*

Post Office *Superior* Date *Feb 27, 1941* Permit No. *232*

LOCATION OF PREMISES

~~*Bayfield*~~ *Douglas* *City of Superior*
County Town

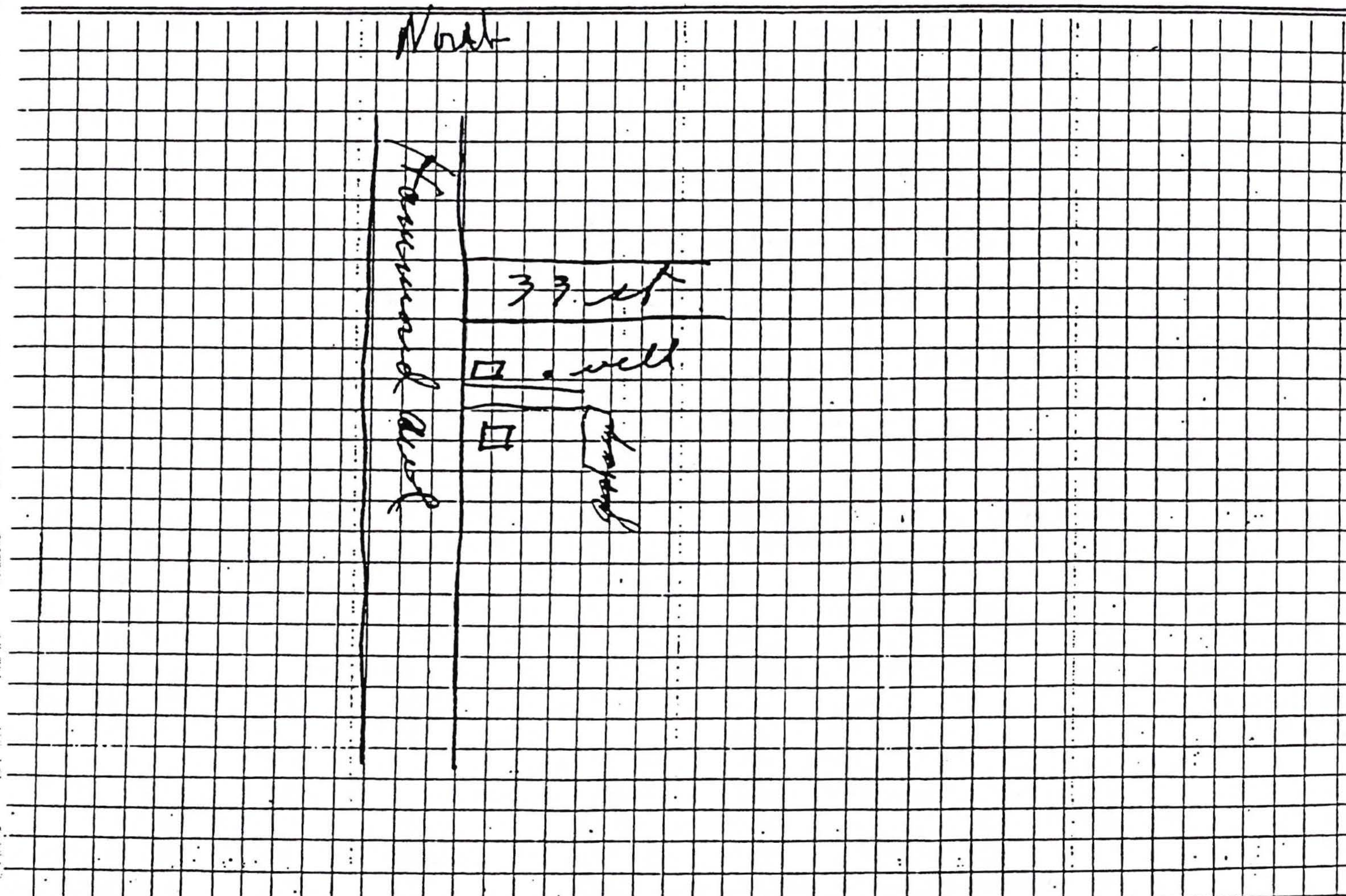
Blk 12 Hammond add Lot 27
Describe further by subdivision, plat, district, lake, lot,
S ½ of sec 28 *Sec 26?*
block, nearest principal highway, etc., whichever apply.

The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.

Sec. *28*
Twp. *49*
Range *14* {E / W}

DIAGRAM OF PREMISES

See discussion and illustration in Part III Well Drilling Code. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



Additional copies of this form may be obtained in lots of 12 for 25¢. Send remittance with order to State Board of Health, Well Drilling Division, Madison, Wis.

WELL LOG *and* REPORT

In this column indicate the kind of casing, liner, shoe and other accessories used.	WELL DIAGRAM Use a red line to show casing or liner pipe. Use black for drill or borehole.	In this column state the kind of formations penetrated, their thickness in feet and if water bearing.	Record of FINAL Pumping test

4 in special Well pipe

Drive shoe steel

Inches Diameter 2 3 4 5 6 8 10 12 14 16 18

Depth: 25, 50, 75, 100, 150, 200, 260, 275, 400, 800, 1200

Red clay

150 ft

Had pain Boulders

110 ft

Sand stone 15 ft

Casing to 260 ft.

rock 15

Draw the diagram to show the right half only

Duration of test Hours 24 hr

Pumping rate G.P.M. 3

Depth of pump in well. Ft. 108

Standing water-level (from surface) Ft. 43

Water-level when pumping Ft. 106

Water. End of test.
Clear ✓
Cloudy
Turbid

Was the well sterilized?
Yes ✓ No

To which laboratory was sample sent?
Imperial
Date Feb 29 41

Was the well sealed on completion?
Yes ✓ No

How high did you leave the casing-pipe above grade?
1 ft

Well was completed
Date Feb 27-41

Well Driller
M Mortensen
Signature

Sec 36?
T 49
R 14W

RECEIVED
JAN 14 1954
ENVIRONMENTAL SANITATION

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Douglas — Town ☐ Village ☐ City ☒ — Check one and give name

2. Location City of Superior Stinson and Bardon ave
   Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☐ Lake Head Pipe Line Co
   Name of individual, partnership or firm

4. Mail Address East End Superior Wis
   Complete address required

5. From well to nearest: Building ✓ ft; sewer ✓ ft; drain ✓ ft; septic tank ✓ ft;
   dry well or filter bed ✓ ft; abandoned well ✓ ft.

6. Well is intended to supply water for: Drinking

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4	standard	0	179

9. GROUT:

Kind	From (ft.)	To (ft.)

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Red clay	0	135
Hardpan	135	175
water gravel	175	179

Construction of the well was completed on: Oct 9 1953

The well is terminated 22 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No

Was the well sealed watertight upon completion? Yes ✓ No

11. MISCELLANEOUS DATA:

Yield test: 5 Hrs. at 7 GPM.

Depth from surface to water-level: ______ ft.

Water-level when pumping: same ft.

Water sample was sent to the state laboratory at: By owner on ______ 19__
City

Signature Wautron Bro — Registered Well Driller — Wentworth Wis — Complete Mail Address

Please do not write in space below

Rec'd ______ No. ______

Ans'd ______

Interpretation ______

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ______

APPENDIX B

COPY OF MURPHY'S MARCH 2, 1998, REQUEST FOR CLOSURE LETTER AND TWIN PORTS TESTING REPORT

DK

MURPHY
OIL USA, INC.

SUPERIOR REFINERY
P O BOX 2066
SUPERIOR WISCONSIN 54880

March 2, 1998

Mr. James Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

RE: Excavation Sampling Report for Pipe Line Release and Request for Site Closure

Dear Mr. Hosch:

Enclosed is a January 1998 report prepared by Twin Ports Testing, Inc. that documents the excavation and off-site treatment of approximately 310 cubic yards of petroleum-contaminated soil associated with the release of gasoline and diesel fuel products from an underground pipe line at our Superior Refinery. Included in the report are the analytical testing results for soil samples that were collected from the base and sidewalls of the final excavation to document the levels of diesel range organics, gasoline range organics, and petroleum volatile organic compounds (PVOCs) remaining in the soil.

Clay was the only type of soil encountered during the October 1997 excavation. Twin Ports used field screening and visual observations to guide the excavation activities, and fifteen confirmation soil samples were collected for laboratory analysis. The excavation extended a maximum of 3 feet below the pipe line, and only two of the fifteen confirmation samples contained PVOC levels above applicable NR 720 residual contaminant levels (RCLs). These two samples, which had benzene concentrations of 0.120 and 0.546 mg/kg, above the NR 720 generic RCL of 0.005 mg/kg, were collected from the side walls of the excavation at the same depth as the underground pipe line. None of the seven confirmation samples collected at the base of the excavation, 2 to 3 feet below the pipe line, contained concentrations of PVOCs above an applicable NR 720 RCL.

On February 28, 1998, Murphy submitted a report, *Request to the Wisconsin Department of Natural Resources for a Site-Specific Benzene Soil Cleanup Level,* to the WDNR. This report, which was prepared by Eder Associates, discusses the results of SESOIL modeling for soils at the Murphy site. The modeling predicted that detectable concentrations of benzene from a gasoline spill would not infiltrate more than 3.3 feet through the clay at the Murphy refinery if anaerobic degradation was included in the modeling inputs. The analytical results for the soil samples collected following remediation of the pipe line release, and discussed in the enclosed report, appear to verify the SESOIL modeling results.

Based on the modeling predictions discussed in Eder's report, Murphy has requested that the WDNR establish a site-specific benzene soil cleanup level that is well above the levels found in the two excavation side wall samples discussed above. By this letter and submittal of the Twin Ports Testing, Inc. report, Murphy is requesting site closure of the underground pipe line release, based on the benzene transport modeling results provided in Eder's February 1998 report.

We look forward to the WDNR's favorable response to Murphy's request for a site-specific benzene soil cleanup level and this request for closure of the underground pipe line release. If you have any questions or need additional information, please call.

Sincerely,

Mark H. Miller
Manager, Safety and Environmental Control

mm127

Enc.

cc w/o attachment: L. Vail (Murphy)
D. Kugle (Eder)
R. Lewandowski (DeWitt, Ross & Stevens)

SINCE 1972

TWIN PORTS TESTING INC.

EXCAVATION SAMPLING REPORT
MURPHY OIL PIPELINE RELEASE
2407 STINSON AVENUE
SUPERIOR, WISCONSIN
TPT #786-97E
JANUARY 1998

MURPHY OIL USA, INC.
2407 STINSON AVENUE
SUPERIOR, WISCONSIN 54880

ATTN: MR. WILLIAM GUSTAFSON

SINCE 1972

TWIN PORTS TESTING INC.

1301 NORTH THIRD STREET • SUPERIOR, WISCONSIN 54880
(715) 392-7114 • FAX (715) 392-7163

728 GARFIELD AVENUE • DULUTH, MINNESOTA 55802
(218) 722-1911 • FAX (218) 722-3295

8 INDUSTRIAL PARK ROAD • NEGAUNEE, MICHIGAN 49866
(906) 226-6653 • FAX (906) 226-3699

January 2, 1998

Mr. William Gustafson
Murphy Oil, U.S.A.
2407 Stinson Ave.
Superior, WI 54880

Re: Excavation Sampling Report
Pipeline Release
Murphy Oil Superior Refinery
TPT# 786-97E

Dear Mr. Gustafson:

Enclosed is an excavation sampling report for the referenced site for your review and approval. On October 9, 1997 Twin Ports Testing (TPT) directed the excavation of approximately 310 yds^3 of petroleum-impacted soil associated with a release of gasoline and diesel product from an underground pipeline. Soil samples were collected to investigate the extent and magnitude of impacted soil. Results of the investigation indicate that a limited amount of petroleum-impacted soil remains in place. The report recommends presenting *Site-specific Residual Contaminant Levels* to the Wisconsin Department of Natural Resources to attempt closure of the site. *Site-specific Residual Contaminant Levels* may be used when it is determined that it is not practicable to achieve *Generic Residual Contaminant Levels.* Murphy Oil may develop these levels using Wisconsin Administrative Code NR 720.19.

TPT appreciates the opportunity to assist with this project. If you have any questions, please contact me at (715) 392-7114.

Sincerely,
TWIN PORTS TESTING, INC.

Irvin Mossberger
Hydrogeologist

Encl.

IGM:igm:BEM

INTRODUCTION

This report summarizes the results of soil sampling conducted by Twin Ports Testing, Inc. (TPT) during remedial excavation activities at the Murphy Oil refinery in Superior, Wisconsin, and presents recommendations for further action at the site. The purpose of the sampling was to investigate the extent of petroleum impact associated with a release from an underground pipeline system in October, 1997.

TPT was authorized by Mr. William Gustafson of Murphy Oil USA, Inc. to provide the necessary labor and equipment to sample and analyze contaminated soil associated with the release. TPT's scope of services for the project included:

- Directing the excavation of petroleum-impacted soil associated with the release.
- Field-screening soil samples from the excavation to investigate the extent of the release.
- Collecting soil samples from the sidewalls and bottom of the excavation for laboratory analysis.
- Preparing and submitting an Application to Treat Petroleum Contaminated Soil and Groundwater (Wisconsin Department of Natural Resources (WDNR) form 4400-120), including collecting one soil sample for laboratory analysis from soil stockpiled during the excavation.
- Preparing a report including results and recommendations

BACKGROUND INFORMATION

Site Information

The site is located at 2407 Stinson Avenue in Superior, Wisconsin (Figure 1). The site is currently used as an oil refinery. The release occurred from a pipeline system composed of two pipes spaced approximately 1 foot apart which run parallel to railroad tracks on the northeast (i.e. refinery east) side of the site. The release occurred proximal to where the pipeline system enters the ground as it runs from (refinery) south to (refinery) north (Figure 2). The pipeline system was approximately 4-5 feet below ground surface in the excavation. The volume and duration of the release was unknown.

Regional Geology and Hydrogeology

The site lies in Quaternary age glaciolacustrine deposits consisting of primarily red clay commonly more than 250 feet thick that locally contains small amounts of silt and sand in thin discontinuous layers. Bedrock beneath the glacial deposits is Precambrian in age, and consists predominantly of sandstone, shales, and conglomerate (Hydrologic Investigation Atlas HA-524).

Regional groundwater flow in the vicinity of the site is toward the northeast. Groundwater has been encountered between 30 and 50 feet below ground surface, as indicated in logs of potable wells located within a three mile radius from the site (Appendix A, Well Constructors Reports).

METHODS

Excavation and investigation activities took place on October 9, 1997. Excavation and hauling of impacted soil was performed by J&D Enterprises, Inc. Impacted soil was thermally treated by Lakehead Blacktop and Materials of Superior, Wisconsin. TPT directed the excavation, including collection of soil samples for field-screening and laboratory analysis. Soil samples were analyzed by Midwest Analytical Services.

A TPT environmental scientist visually examined soil samples for apparent signs of petroleum impact, classified the samples according to ASTM D2488 (Standard Practice for Description and Identification of Soils, Visual Manual Procedure) and collected appropriate samples for field-screening. Soil samples were field-screened for Volatile Organic Compounds (VOCs) using the headspace method with a Thermo Environmental Instruments Model 580B portable photoionization detector (PID) equipped with a 10.6eV lamp. The samples were logged in a field notebook. Impacted soil was removed from the excavation to a temporary stockpile. Soil samples for laboratory analysis were collected in accordance with *Soil Sampling Requirements for LUST Site Investigations and Excavations* (WDNR PUBL-SW-127). Standard chain of custody procedures were used in shipment to the laboratory. The laboratory samples were analyzed for gasoline range organics (GRO), diesel range organics (DRO) and petroleum volatile organic compounds (PVOC).

RESULTS

A total of thirty (30) soil samples from throughout the excavation were field-screened to investigate the extent of petroleum impact. The results are presented in Table 1. Of those samples, fifteen (15) from the bottom and sidewalls of the excavation, and one (1) from the temporary stockpile, were

chosen to be submitted for laboratory analysis. Laboratory analytical results are presented in Appendix B.

The excavation reached approximate dimensions of 135 feet in length, 15 feet in width, and 8 feet in depth. The excavation proceeded until results of field-screening indicated the extent of petroleum impact had been adequately delineated or until it reached the railroad tracks to the (refinery) east or until the pipeline system impeded further digging. Trenches were dug in four (4) locations along the (refinery) west edge of the excavation to investigate the lateral extent of petroleum impact. Approximately 310 cubic yards (yds^3) of petroleum-impacted soil were removed from the excavation. The only soil type encountered in the excavation was clay. Groundwater was not encountered during excavation activities.

Results of field-screening indicated that the vertical and lateral extent of petroleum-impacted soil had been delineated. The trenches proceeded approximately 5 to 10 feet laterally away from the main part of the excavation (Figure 2). Laboratory analytical results indicated low-level petroleum compounds remaining in soil near the areas of R-1, R-5, R-14, R-19, R-22, R-26, R-28, and R-29. However, only soil in samples R-1 (1365 parts per million (ppm) DRO), R-14 (120 parts per billion (ppb) benzene) and R-22 (546 ppb benzene) contained petroleum compounds above WDNR *Generic Residual Contaminant Levels* (NR 720.09).

Stockpiled soil was transported for thermal treatment to Lakehead Blacktop and Materials in Superior. Form 4400-120 was submitted to WDNR on November 3, 1997 (Appendix C). Stockpile sample SP-1 was used in the emissions calculations for the form.

CONCLUSIONS

Results of the investigation indicate that the extent and magnitude of petroleum impact has been sufficiently delineated. Soil samples R-1, R-14, and R-22, sidewall samples from the (refinery) south and east sides of the excavation, contained compounds above WDNR *Generic Residual Contaminant Levels*. It is estimated that approximately one (1) cubic yard of petroleum-impacted soil remains in the vicinity of soil sample R-1. Additional petroleum-impacted soil remains in the vicinity of R-14 and R-22 on the (refinery) east side of the excavation. The presence of the pipeline system and railroad tracks in this area impedes further excavation of soil. The clay soil in the area makes other remedial actions difficult. The maximum depth of petroleum-impacted soil appears to be approximately eight feet (Figure 3). Groundwater appears not to be impacted by the release.

It appears that the site meets the criteria for classification as a simple site as defined in NR 700.09 (1).

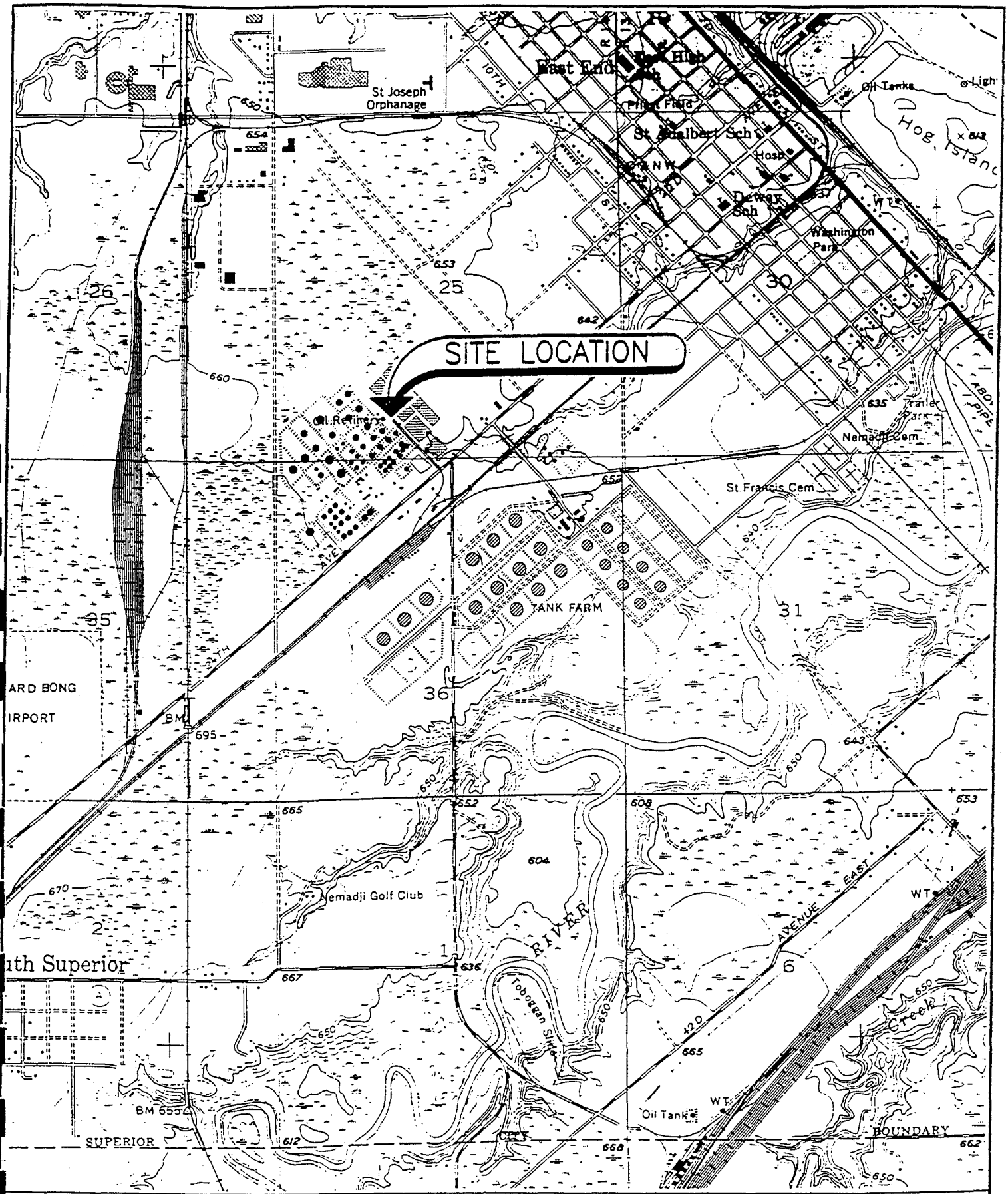
RECOMMENDATIONS

Analytical results indicate that a small amount of petroleum-impacted soil, above WDNR *Generic Residual Contaminant Levels*, remains at the site. However, based on TPT's experience with determining *Site-specific Residual Contaminant Levels* (NR 720.19), for similar petroleum impacts and in similar hydrogeologic settings (i.e. in Superior, Wisconsin), TPT recommends no further action for the site. Murphy Oil USA should submit a letter of compliance and a final report for a simple site as per NR 700.11 (b), which should include information required by chs. NR 700 to 726. The report should present *Site-specific Residual Contaminant Levels.*

LIMITATIONS OF INVESTIGATION AND REPORT

We have based the analysis and recommendations submitted within this report in part on the data obtained from the excavation field activities, and chemical analysis of the collected soil samples. The exact nature and extent of geologic variations and levels of contamination at the site may not be evident.

Conclusions and recommendations contained herein are based on the applicable standards of our profession at the time this report was prepared. This warranty is in lieu of all other warranties either expressed or implied.

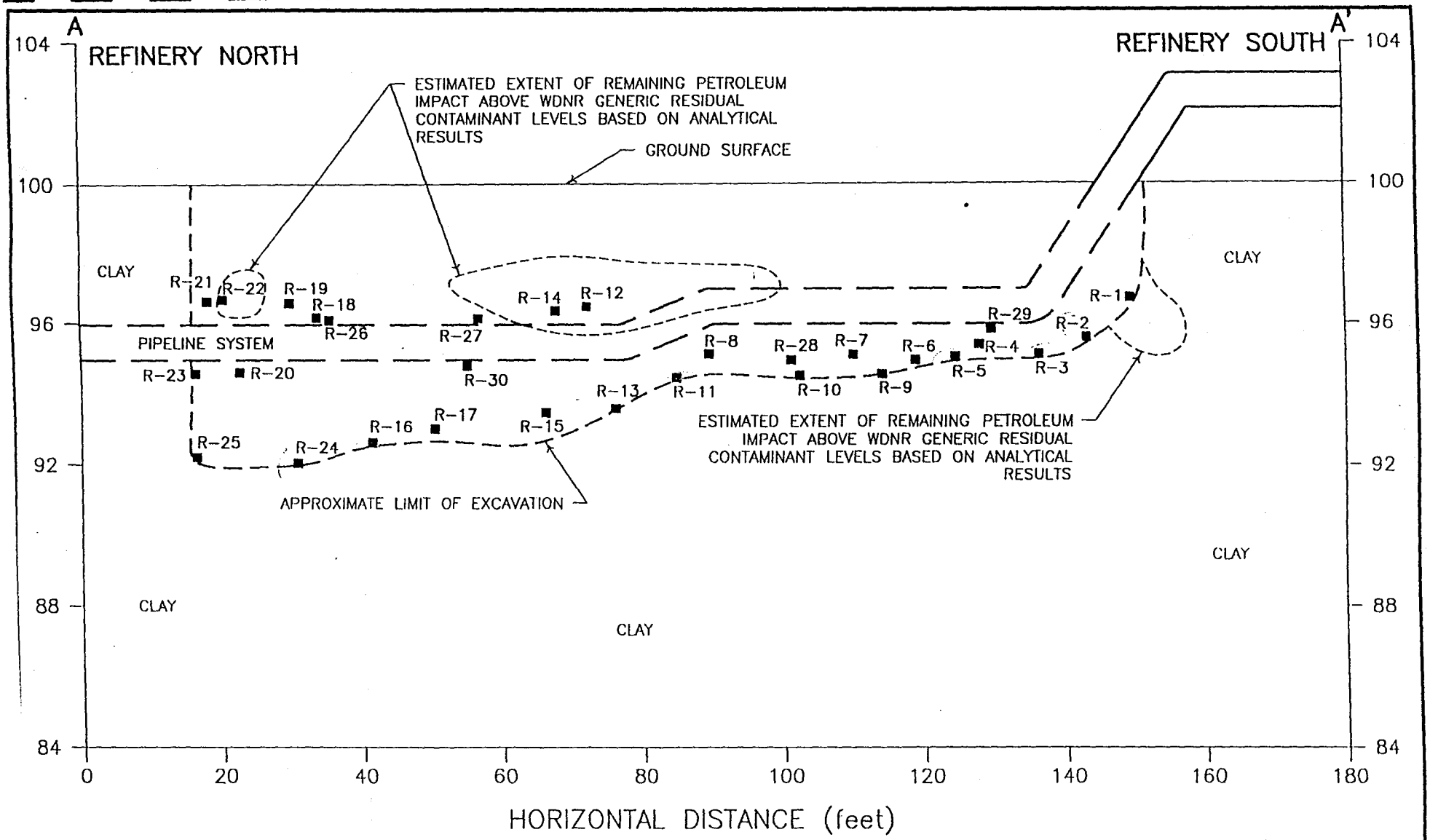


Twin Ports Testing

SITE LOCATION MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	1

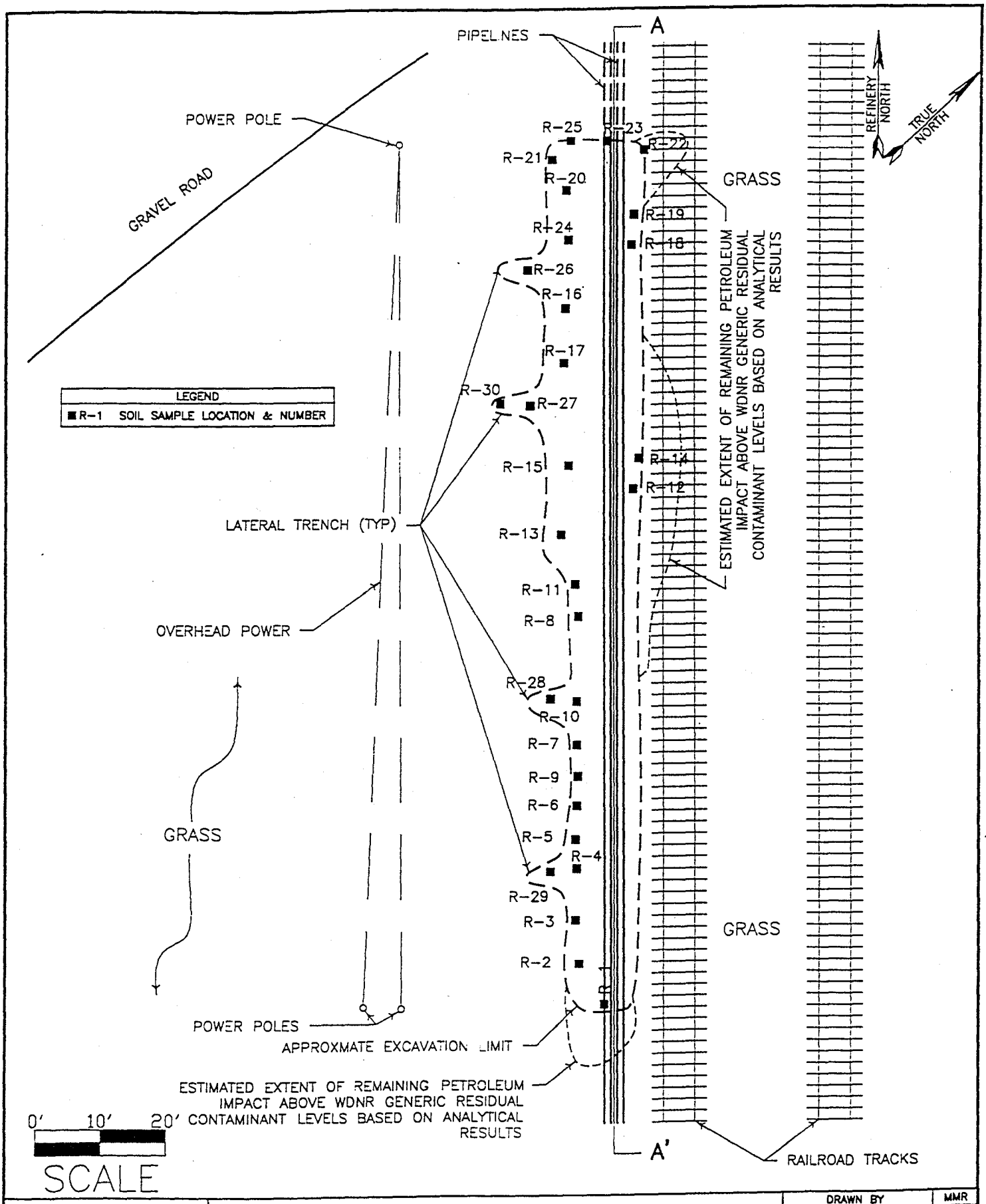


Twin Ports Testing

CROSS SECTION

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	3



Twin Ports Testing

SITE MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	2

TABLE 1
MURPHY OIL PIPELINE RELEASE
FIELD-SCREENING (PID) RESULTS

SAMPLE #	DEPTH (feet)	SOIL TYPE	RELATIVE MOISTURE	PID READING(ppm)
R-1(L) ✓	3.5 BASE	clay	D/M	6
R-2(L) ✓	4.5 BASE	clay	W	4
R-3(L) ✓	5.0 BASE	clay	M	4
R-4	4.5	clay	M	337
R-5(L) ✓	5.0 BASE	clay	D/M	19
R-6	5.0	clay	M/W	152
R-7	5.0	clay	M/W	168
R-8	5.0	clay	W	164
R-9	5.5	clay	D/M	8.8
R-10	5.5	clay	D/M	0
R-11(L) ✓	5.5 BASE	clay	D/M	0
R-12	3.5	clay	M/W	308
R-13	6.5	clay	M	0
R-14(L)	3.75	clay	D/M	212
R-15	6.5	clay	M	375
R-16(L) ✓	7.5 BASE	clay	M	46
R-17	7.0	clay	M	60
R-18	4.0	clay	W	345
R-19(L)	3.5	clay	D/M	125
R-20	5.5	clay	D/M	376
R-21	3.5	clay	D/M	327
R-22(L)	3.5	clay	D/M	253
R-23(L)	5.5	clay	D/M	7.6
R-24(L) ✓	8.0 BASE	clay	D/M	0
R-25	8.0	clay	D/M	2.9
R-26(L)	4.0 SIDEWALL	clay	D/M	3.9
R-27	4.0	clay	D/M	52
R-28(L)	5.0 SIDEWALL	clay	D/M	3.5
R-29(L)	4.0 SIDEWALL	clay	D/M	22
R-30(L)	5.0 SIDEWALL	clay	D/M	11
SP-1(L)	NA SIDEWALL	clay	D/M	175

Notes: PID = photoionization detector. ppm = parts per million. L = sample was sent to laboratory for chemical analysis. NA = Not Applicable. D = dry. M = moist. W = wet. R = removed. SP = stockpile.

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

SPEED MEMO SPOTCHECK

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 2-79

OCT 28 1983

1. COUNTY: Douglas
CHECK (✓) ONE: ☐ Town ☐ Village ☒ City
Name: Superior

2. LOCATION: ¼ Section or Govt. Lot: SE-SE | Section: 22 | Township: 49N | Range: 14W
OR – Grid or Street No. | Street or Road Name:
AND – If available subdivision name, lot & block No.:

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓ ONE): Brian Schumacher
ADDRESS:
POST OFFICE: Superior, Wis
ZIP CODE:

4. Distance in feet from well to nearest: (Record answer in appropriate blank)

Buildings	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. C.I.	Storm Bldg. Other
30'	—	—	—	25'	—	—	—	—	—	—

Street Sewer: San.	Street Sewer: Storm	Other Sewers: C.I.	Other Sewers: Other	Foundation Drain Connected to: Sewer	Foundation Drain Connected to: Clearwater Dr.	Sewage Sump	Clearwater Sump	Sewage Sump: C.I.	Sewage Sump: Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Sewage Absorption Unit: Seepage Bed	Sewage Absorption Unit: Seepage Trench	Manure Hopper Retention or Pneumatic Tank
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well	Pit: Nonconforming Existing: Pump	Pit: Nonconforming Existing: Tank	Subsurface Pumproom: Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yards	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit	Earthen Manure P
—	—	—	—	—	—	—	—	—	—	—	—	—	—

Temporary Manure Stack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Manure Storage Basin: Concrete Floor Only	Manure Storage Basin: Concrete Floor and Partial Concrete Walls	Other (Describe): Time of drillin
—	—	—	—	—	—	—	—

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8 3/4	Surface	267			
6	267	270			

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification

Dia. (in.)	Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	New Steel Pipe	Surface	267
	plain end		
	Wall Thick .280		
	ASTM 53		

GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Drill Cuttings	Surface	267

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	220
Hard Pan	220	267
Sand stone	267	270

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool
☒ Rotary w/drilling mud
☐ Rotary w/drilling mud
☐ Rotary-hammer w/drilling mud & air
☐ Rotary-hammer & air
☐ Reverse Rotary
☐ Jetting with: ☐ Air ☐ water

Well construction completed on 10-4 19 83

11. MISCELLANEOUS DATA
Yield Test: 2 Hrs. at 10 GPM
Depth from surface to normal water level 30' Ft.
Depth of water level when pumping 50' Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Will be sent at Pump inst. laboratory on 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, streams, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Larry Lund Registered Well Driller

Business Name and Complete Mailing Address: Lund Well Drilling, Maple, Wis

STATE OF WISCONSIN

DEPARTMENT OF RESOURCE DEVELOPMENT

WELL CONSTRUCTOR'S REPORT — Wel

COUNTY: Douglas
CHECK ONE: ☒ Town ☐ Village ☐ City — NAME: Superior

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
T 49 N ~~R~~ [R14W] Sec 14 N E Corner of N E Part

OWNER AT TIME OF DRILLING: Donald Soderberg

OWNER'S COMPLETE MAIL ADDRESS: 1318 91st Ave W. Duluth Minn.

Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C.I.	SANITARY SEWER TILE	FLOOR DRAIN C.I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C.I.	WASTE WATER DRAIN TILE
30'	50'		45'			—	45'	

CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	100'			125'	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)
Lake 250'

Well is intended to supply water for: Home

DRILLHOLE Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
	Surface	40	4"	150	305
	40	150'			

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Red Clay	Surface	20
sand & Gravel (dry)	20	40
Clay & silt	40	150
Red Clay	150	290
Hard Pan	290	300
Gravel	300	305

CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std 6" New 19.45 PE ~~20# to ft~~	Surface	150
4	Std 4" 10.59 PE 11# to ft	150	305

GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Puddled Clay	Surface	40'

MISCELLANEOUS DATA

Yield test: 8 Hrs. at 10 GPM

Depth from surface to normal water level 50 ft.

Depth to water level when pumping 60 ft.

Water sample sent to Madison laboratory on: 11/12 1968

Well construction completed on Sept 3 1968

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: N. H. Long — Registered Well Driller

COMPLETE MAIL ADDRESS: Poplar, Wis.

Please do not write in space below

TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
see letter drillers file	4/14/69			

SW, SW, NE, sec. 14, T49N, R14W   DS-4-U

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

County Douglas   Town ☐ Village ☐ City ☒ Superior
Check one and give name

Location 714 N. 8th St Superior Wis
Name of street and number of premises or Section, Town and Range numbers

RECEIVED JAN 4 1955 SANITATION

Owner ☐ or Agent ☐ Webster Nelson
Name of individual, partnership or firm

Mail Address Superior Wis
Complete address required

From well to nearest: Building 8 ft; sewer ___ ft; drain 40 ft; septic tank ✓ ft; dry well or filter bed ✓ ft; abandoned well ✓ ft.

Well is intended to supply water for: Wash water + Cooling

DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8"	0	140	6"	0	600

CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
8"	Std Blk Pipe	0	140
6"	Std Blk Pipe	0	269
6"	Sandstone	269	600

GROUT:

Kind	From (ft.)	To (ft.)

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay Red	0	25
Sandy Silt	25	70
Clay Red	70	105
Silt	105	130
Clay Red	130	155
Dirty Sandy Silt	155	182
Hard pan & small rock	182	269
Sandstone	269	600

11. MISCELLANEOUS DATA:

Yield test: 35 Hrs. at 20 GPM.

Depth from surface to water-level: 40 ft.

Water-level when pumping: 200 ft.

Water sample was sent to the state laboratory at: By owner 19___
City

Construction of the well was completed on: March 15 1954

The well is terminated 18 inches ☐ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No ___

Was the well sealed watertight upon completion? Yes ✓ No ___

Signature Madrian Bros — Registered Well Driller   Westboro Wis — Complete Mail Address

Please do not write in space below

			10 ml	10 ml	10 ml	10 ml	10 ml
___ No. ___	Gas—24 hrs.						
Rec'd ___	48 hrs.						
Interpretation ___	Confirm						
	B. Coli						
	Examiner ___						

MIDWEST ANALYTICAL SERVICES

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

CHAIN OF CUSTODY RECORD
AND
REQUEST FOR ANALYSIS
(Instructions on Back of Form)

№ 21955

LAB (612) 689-217
METRO (612) 444-927
FAX (612) 689-366

CLIENT: Twin Ports Testing
SAMPLER NAME: Irvin Mossberger
PROJECT ID: 786-97E
SAMPLER SIGNATURE: Irvin D. Mossberger
REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing
REMARKS: WI samples

SHADED AREAS FOR LAB USE ONLY

NO. OF CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX: OTHER	SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (DISS. OR TOTAL)	RCRA 8 METALS	BOD OR CBOD	TSS	FCOL OR TCOL	PVOC	PRESERVATIVE: HCl	HNO3	H2SO4	ICE	OTHER
3		X	10/9/97	1125		X		SP-1		9178	X	X									X					
								Trip Blank		9179																

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Irvin D. Mossberger	10/10/97 1:05	Dorothy A. Bird	Dorothy A. Bird		
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by (Sig	Date / Time	Received for Laboratory by: (Signature)	Date / Time	ts Temperature:	Comments:

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED:
☐ NORMAL ☐ RUSH
REQU

[illegible] ANALYTICAL SERVICES — CHAIN OF CUSTODY RECORD

AND

REQUEST FOR ANALYSIS

(Instructions on Back of Form)

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

CLIENT: Twin Ports Testing

PROJECT I.D.: 786-97E

REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing, 1301 N. 3rd St. Superior WI 54880

SAMPLER NAME: Irvin Mossberger

SAMPLER SIGNATURE: Irvin (W.) Mossberger

REMARKS: WI Samples

CONTAINERS	COMP.	GRAB	DATE	TIME	WATER	SOIL	OTHER	SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or CBOD	TSS	Fcol or Tcol	PVOC						HCl	HNO₃	H₂SO₄	ICE	OTHER
		X	10/4/97	9:07		X		R-1 3.5'		21766	X	X									X										
				12:15				R-23 5.5'		21767																					
				2:22				R-26 4.0'		21768																					
				2:33				R-28 5.0'		21769																					
				2:40				R-29 4.0'		21770																					
				2:46				R-30 5.0'		21771																					
				10:05				R-14 3.75'		21772																					
				12:27				R-19 3.5'		21773																					
				12:40				R-22 3.5'		21774																					
				9:09				R-2 4.5'		21775																					
				9:15				R-3 5.0'		21776																					
				9:21				R-5 5.0'		21777																					
				9:47				R-11 5.5'		21778																					
				11:30				R-16 7.5'		21779																					
				2:00				R-24 8.0'		21780																					

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Irvin (W.) Mossberger	10/4/97 7:05	Timothy A. Beal	Timothy A. Beal		

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Samples Temperature:	Comments:
		John DellaVecchia	10/10/97		

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED: ☐ NORMAL ☐ RUSH

DATE REQUIRED:

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

MIDWEST ANALYTICAL SERVICES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

REC'D NOV 3 1997

October 27, 1997

Irvin Mossberger
Twin Ports Testing
1301 North 3rd Street
Superior, WI 54880

Project ID:	786-97E
Chain of Custody:	22507/21955
Date Sampled:	10-09-97
Date Received:	10-10-97
Date Analyzed:	10-14-97
Matrix:	Soil

Sample Identification:

Lab ID:		
21766	R-1	3.5'
21767	R-23	5.5'
21768	R-26	4.0'
21769	R-28	5.0'
21770	R-29	4.0'
21771	R-30	5.0'
21772	R-14	3.75'
21773	R-19	3.5'
21774	R-22	3.5'
21775	R-2	4.5'
21776	R-3	5.0'
21777	R-5	5.0'
21778	R-11	5.5'
21779	R-16	7.5'
21780	R-24	8.0'
21781	SP-1	
21782	Trip Blank	

Samples were analyzed for GRO and DRO by the Wisconsin Modified GRO and DRO procedures. The results are reported on the following page.

Sincerely,

Lon Jones 10/28

Lon Jones
Organic/Bio Group Leader

PVOC	MDL (mg/kg)	BASE 21766 R-1 3.5'	SIDEWALL 21767 R-23 5.5'	SIDEWALL 21768 R-26 4.0'	SIDEWALL 21769 R-28 5.0'
MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Toluene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.068	BDL	BDL	BDL
Xylenes (mg/kg)	0.105	BDL	BDL	BDL	BDL
GRO (mg/kg)	10.0	10.8	BDL	31.4	BDL*
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.094	BDL	0.158	0.066
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.068	BDL	0.431	BDL
DRO (mg/kg)	10.0	1365	BDL*	26.5	BDL*
Moisture Content (%)		26.9	28.5	21.4	20.6

PVOC	MDL (mg/kg)	SIDEWALL 21770 R-29 4.0'	SIDEWALL 21771 R-30 5.0'	SIDEWALL 21772 R-14 3.75'	SIDEWALL 21773 R-19 3.5'
MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	0.120	BDL
Toluene (mg/kg)	0.050	BDL	BDL	0.217	0.474
Ethylbenzene (mg/kg)	0.050	0.585	BDL	0.746	0.288
Xylenes (mg/kg)	0.105	0.816	BDL	0.649	1.29
GRO (mg/kg)	10.0	59.3	BDL*	53.6	18.1
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.721	BDL	0.341	0.436
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.639	BDL	0.499	0.663
DRO (mg/kg)	10.0	32.2	BDL*	157	BDL*
Moisture Content (%)		25.6	23.4	22.0	28.4

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

PVOC	MDL (mg/kg)	21774 R-22 3.5' (SIDEWALL)	21775 R-2 4.5' (BASE)	21776 R-3 5.0' (BASE)
MTBE (mg/kg)	0.500	BDL	BDL	BDL
Benzene (mg/kg)	0.050	0.546	BDL	BDL
Toluene (mg/kg)	0.050	0.682	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.084	BDL	BDL
Xylenes (mg/kg)	0.105	0.492	BDL	BDL
GRO (mg/kg)	10.0	BDL	BDL	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.184	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.172	BDL	BDL
DRO (mg/kg)	10.0	79.4	BDL*	BDL*
Moisture Content (%)		24.4	28.0	23.4

PVOC	MDL (mg/kg)	21777 R-5 5.0' (BASE)	21778 R-11 5.5' (BASE)	21779 R-16 7.5' (BASE)
MTBE (mg/kg)	0.500	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	BDL
Toluene (mg/kg)	0.050	0.080	BDL	0.073
Ethylbenzene (mg/kg)	0.050	0.050	BDL	BDL
Xylenes (mg/kg)	0.105	0.382	BDL	BDL
GRO (mg/kg)	10.0	BDL*	BDL	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.311	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.090	BDL	BDL
DRO (mg/kg)	10.0	BDL*	BDL*	BDL*
Moisture Content (%)		25.6	28.9	31.7

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

BASE STOCKPILE

PVOC	MDL (mg/kg)	21780 R-24 8.0'	21781 SP-1	21782 Trip Blank
MTBE (mg/kg)	0.500	BDL	< 2.50	BDL
Benzene (mg/kg)	0.050	BDL	2.12	BDL
Toluene (mg/kg)	0.050	BDL	11.1	BDL
Ethylbenzene (mg/kg)	0.050	BDL	3.19	BDL
Xylenes (mg/kg)	0.105	BDL	19.1	BDL
GRO (mg/kg)	10.0	BDL*	229	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	BDL	9.87	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	BDL	9.90	BDL
DRO (mg/kg)	10.0	BDL	65.8	BDL
Moisture Content (%)		23.4	25.1	

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

EMISSION CALCULATIONS
CONTAMINATED SOIL EXCAVATED FROM
PIPELINE RELEASE AT
MURPHY OIL USA
SUPERIOR, WISCONSIN

GRO CALCULATION:

SP-1 = 229 ppm for GRO

$$\frac{229 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 198.772 \text{ lbs. of GRO}$$

DRO CALCULATION:

SP-1 = 65.8 ppm for DRO

$$\frac{65.8 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 57.1144 \text{ lbs. of DRO}$$

BENZENE CALCULATION:

SP-1 = 2.12 ppm for benzene

$$\frac{2.12 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 1.84016 \text{ lbs. of benzene}$$

THE SOIL VAPOR READING FOR SOIL SAMPLE SP-1 WAS 175 PPM USING A MODEL 580 OVM EQUIPPED WITH A 10.6 eV LAMP.

PART III - TREATMENT OR DISPOSAL FACILITY INFORMATION

Treatment/Disposal Facility Name & Address: Lakehead Blacktop & Materials 5800 Albany Ave. Superior, WI 54880	Facility ID: 816037640
	Air Pollution Control Permit #: 93-BAB-802
Facility Contact: Bob Patterson Telephone #: (715) 392-3844	Facility Located in 10-county Area in Southeast Wisconsin: No Distance to Nearest Residence or Business: ~5,000 ft.
Headquarter Address: 6327 Tower Ave, Superior, WI 54880	Portable Sources Only: Has a Portable Source Relocation Notification (Form 4500-25) Been Submitted for this Location: ☐ YES ☐ NO N/A

PART III - SOIL VACUUM EXTRACTION OR GROUNDWATER REMEDIATION

Site Contact & Telephone #:	Proposed Operations (Attach Calculations) Anticipated Start-Up Date: Estimated Project Duration:
Is Site Located in the 10-county Area in Southeastern WI	# of Wells:
Distance to Nearest Residence or Business:	# of Emission Points:
Pilot Test/Soil Venting Only (Attach Lab Reports and Calculations) Date of Test:	Stack Height: Maximum Equipment Flow Rate (scfm or gpm):
Flow Rate (scfm):	Total VOC Emission Rate (lb/hr):
Total Withdrawal of Air (scf):	Benzene Emission Rate (lb/hr):
Total VOC Emission Rate (lb/hr):	Benzene Emission Rate (lb/yr):
Benzene Emission Rate (lb/hr):	

PART III - OTHER REMEDIATION METHODS

Proposing Other Remediation Method: ☐ YES Method Name: _____

Attach a project description for other remediation methods including landspreading, passive aeration and bioremediation. At a minimum, the information submitted should include the following items (with any supporting lab reports and calculations):

✓ Address/Location of Remediation Site - Indicate if this location is in the 10-county area in Southeast Wisconsin and the distance to the nearest residence or business. Include a map or site plan if appropriate.
✓ Description of Remediation Method
✓ Project Contact & Telephone #
✓ Anticipated Start-Up and Estimated Project Duration
✓ Highest Estimated Hourly VOC Emissions
✓ Highest Estimated Hourly and Annual Benzene Emissions
✓ Emission Testing Methodology
✓ Final Destination of Soil

Department of Natural Resources

PETROLEUM CONTAMINATED SOIL & WATER

Rev.

This form is required by the Department of Natural Resources (DNR) to ensure that the remediation of petroleum contaminated soil and water i compliance with NR 500-540, NR 158, NR 419 and NR 445, Wis. Adm. Code. Failure to comply with applicable statutes and administrative rules may l to violations of subchapters III and IV of Ch. 144, Wis. Stats. and may result in forfeitures of not less than $10 or more than $25,000 for each violat pursuant to ss. 144.426(1), 144.74(1), 144.99, Wis. Stats., or fines of not less than $100 or more than $150,000 or imprisonment for not more than 10 ye or both, pursuant to s. 144.74(2), Wis. Stats. Each day of a continuing violation constitutes a separate violation. Except for the remediation of vir petroleum spills, this form needs to be submitted to the DNR 10 business days prior to the commencement of the remediation.

DIRECTIONS: 1) Complete both sides of the form. 2) Have the responsible party sign the form. This signature certifies that the information on t form and in all supporting documents is accurate. 3) Submit the form with supporting documentation, lab reports and any maps to the appropriate Dis Air Management Program at least 10 business days prior to the commencement of remediation. 4) Submit a copy of this form to the DNR project mana and retain a copy for your records.

PART I - GENERAL INFORMATION

Site Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	Date of Form Completion: 11/3/97
Site #: Propane Area	Do Other Remediation Systems Exist at This Site? ☐ YES ☐ NO
County: Douglas	Site Type: ☐ LUST ☒ ERP ☐ CERCLA ☐ Other, Explain:
Responsible Party Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	Responsible Party Signature: Irwin Mossberger for Bill Gustafson Telephone #: (715) 398-8217
Consulting Firm Name & Address: Twin Ports Testing Inc. 1301 N. 3rd St. Superior, WI 54880	Consulting Firm Contact: Irwin Mossberger Telephone #: (715) 392-7114

PART II - SOIL AND WATER DATA (Attach Lab Reports and Calculations)

Type of Contamination: ☒ Gasoline ☒ Diesel ☐ Fuel Oil ☐ Waste Oil

☐ Chlorinated Organics ☐ Other: ______

Soil Concentration:

GRO:	229	mg/kg/10⁶	x 2,800 lb/yd³	x	310	yd³	= 198,772	lb
DRO:	65.8	mg/kg/10⁶	x 2,800 lb/yd³	x	310	yd³	= 57.114	lb
Benzene:	2.12	mg/kg/10⁶	x 2,800 lb/yd³	x	310	yd³	= 1.8406	lb
Chlorinated Organics:		mg/kg/10⁶	x 2,800 lb/yd³	x		yd³	=	lb
Other:		mg/kg/10⁶	x 2,800 lb/yd³	x		yd³	=	lb

Benzene = 2.12 x 2800 X 310 yds = 1.8402 Lbs
1,000,000 - Less - 9990 Factor w/Afterburner 0.0184 Lbs

Water Concentration: GRO: ______ mg/L DRO: ______ mg/L Benzene: ______ mg/L

Chlorinated Organics: ______ mg/L Other: ______ mg/L

eder associates
a division of Gannett Fleming

GANNETT FLEMING, INC.
8025 Excelsior Drive
Madison, WI 53717-1900
Office: (608) 836-1500
Fax: (608) 831-3337

July 29, 1999
File #34265.004

Ms. Janet Kazda
Program Assistant
Wisconsin Department of Natural Resources
Rhinelander Office
107 Sutliff Avenue
P.O. Box 818
Rhinelander, WI 54501

Re: Murphy Oil USA, Inc., Superior
Request for Closure of Underground Pipeline Release Site
BRRTS #: 02-16-221811

Dear Ms. Kazda:

On behalf of Murphy Oil USA, Inc., Gannett Fleming, Inc. (fka Eder Associates) is requesting closure from the Wisconsin Department of Natural Resources (WDNR) for an underground pipeline release site at Murphy's Superior refinery. Soil that was adjacent to and under the pipeline and which was affected by the October 1997 release of gasoline and diesel fuel products, has been removed to the extent practical. In total, about 330 yd^3 of soil have been excavated. The excavated soil was transported off site and thermally treated at Lakehead Blacktop and Materials in Superior.

Soil was initially excavated in October 1997. Field-screening and visual observations were used to guide the work, and about 310 yd^3 of soil were excavated. Fifteen confirmation soil samples were collected for laboratory analysis, but only two of the fifteen confirmation samples contained levels of petroleum volatile organic compounds (PVOCs) above applicable NR 720 residual contaminant levels (RCLs). One confirmation sample also contained diesel range organics (DRO) above the NR 720 RCL of 250 mg/kg.

The WDNR reviewed the initial confirmation sampling results and requested that additional soils be excavated from the area where the elevated DRO level was measured because the area was accessible. The two areas where samples with PVOCs above NR 720 standards were obtained could not be removed because of adjacent railroad tracks. In July 1998, about 20 yd^3 of additional soil were excavated from the area with elevated DRO levels. When the excavation was complete, a confirmation sample was collected, and no detectable levels of gasoline range organics (GRO), DRO, or PVOCs were measured.

Continued . . .

Ms. Janet Kazda
Wisconsin Department of Natural Resources
July 29, 1999

In summary, post-excavation soil sampling results show that all soil containing GRO, DRO, or PVOCs above NR 720 RCLs has been removed to the extent practical because of the adjacent railroad tracks. In addition, there are no levels of PVOCs remaining that exceed or even come close to the proposed COMM 46 and NR 746 direct-contact standards. Based on this information, we believe that this site does not pose a threat to public health, safety, and welfare or to the environment.

Enclosed with this report are a WDNR case closure request form 4400-202 and a check for $750.00 to cover the WDNR's review fee.

Site Conditions

Figure 1 is a USGS map showing the location of the refinery, and Figure 2 is a refinery site plan. The site of the underground pipeline release is on relatively flat land in the east-central part of the refinery, as shown on Figure 2. The closest surface water to the release site is Newton Creek, located about 1,200 feet to the southeast. The creek is shown on both Figures 1 and 2. The surrounding land is also owned by Murphy and is part of the refinery. The ground surface in the area of the pipeline is unpaved but consists of low-permeability clay.

Access to the refinery property, which is zoned industrial, is restricted to Murphy employees and subcontractors. The entire property is fenced and uses 24-hour security guards. Any work done on refinery property requires a "safe work permit" that is issued by trained Murphy personnel. This permit must be reissued daily and is updated if conditions warrant. The work permits detail the type of work to be performed, who will be doing the work, the equipment/machinery to be used, the type of personal protective equipment that is required, and the monitoring (i.e., field screening, air monitoring) that is required. In those circumstances where contaminated soil is encountered, only HAZWOPER-trained personnel are allowed to do the work.

These institutional controls prevent exposure to the general public and minimize the likelihood of any workers being exposed to potentially harmful levels of petroleum-related constituents. This level of control goes far beyond the typical fence in a remote or unused industrial area. Further, there is no chance of real or potential impact to other off-site receptors of concern, such as humans, plants, and animals; water supply wells; basements; or water and sewer utility lines.

Continued . . .

The potable and process water supply for the refinery and the area around the refinery is provided by the City of Superior, which obtains its water from Lake Superior. On April 21, 1999, we requested a well records search of the area around the refinery from the Wisconsin Geological & Natural History Survey. Only two private wells were located: One is about one mile northwest of the refinery and was installed in 1941, and the other is less than a quarter-mile southeast of the refinery at Lakehead Pipeline and was installed in 1953. Murphy contacted Lakehead Pipeline to inquire about the status of this well. The well is no longer in service, and Lakehead now obtains its water from the City of Superior. Copies of the well records request form and the two well logs are included as Appendix A. There are no active private or public water supply wells at or in the area around the refinery.

The site is underlain by 300 feet of clay, as documented by a boring done on refinery property, meaning there is no developable groundwater available. There is moist clay at about 3 to 5 feet below grade across the site. This has been confirmed by measuring water levels in monitoring wells on refinery property. Given the results of physical parameter testing of soil throughout the refinery, the moist clay meets the definition of low-permeability material, as defined in proposed COMM 46. This conclusion is confirmed by the fact that it typically takes weeks for the water table wells to recover after they are purged.

Background Information on Release

On September 29, 1997, Murphy discovered petroleum product on the ground surface adjacent to the spot where two underground pipelines exit the ground and start running aboveground. The underground pipelines carry gasoline and diesel fuel products. Neither the volume of the release nor its duration could be determined. The two pipes run 4 to 5 feet below the ground surface.

Excavation of Soils

On October 9, 1997, Twin Ports Testing (TPT) directed the excavation of about 310 yd^3 of soil affected by the underground pipeline release. TPT used field-screening and visual observations to guide the excavation and collected fifteen confirmation soil samples for laboratory analysis. The excavation extended a maximum of 3 feet below the pipeline. All fifteen samples were analyzed for

Continued . . .

GRO, DRO, and PVOCs. On March 2, 1998, Murphy sent the excavation sampling report prepared by TPT dated January 1998, and a formal request for closure to Mr. Jim Hosch in the WDNR's Superior office. Copies of Murphy's letter and the TPT report are attached as Appendix B.

In an April 20, 1998, WDNR letter to Murphy, Mr. Hosch stated that before closure could be considered, further definition of the horizontal and vertical extent and degree of contamination was required in the three areas where benzene or DRO were above NR 720 RCLs. In a June 29th meeting in Madison attended by Mr. Hosch and other WDNR representatives, Murphy representatives, and Gannett Fleming representatives, we discussed the March 2, 1998, request for closure and the WDNR's subsequent request for additional work. During that meeting, it was agreed that removing additional soils from along the east side of the excavation was not practical or necessary, given the location of the adjacent railroad track, the low permeability of the clay soils in the area excavated, and the low levels of GRO, DRO, and PVOCs remaining in the soil. However, the WDNR insisted that further work near the location of TPT's sample R-1 would be required because the area was accessible. Based on that request, TPT supervised the excavation about 20 yd^3 of additional soils from this area on July 6, 1998. The results of the confirmation sample collected following those excavation activities show that no detectable levels of GRO, DRO, or PVOCs remained. The results of that additional excavation work were sent to Mr. Hosch as a second request for closure on August 10, 1998. A copy of this second request is included in Appendix C.

Request for Closure

Analytical results for the sixteen confirmation soil samples collected from the excavation associated with the cleanup of the pipeline release show that only two samples contained any PVOCs above an applicable NR 720 RCL. These two samples, both collected from the sidewall of the excavation that ran parallel and immediately adjacent to a set of railroad tracks, contained 0.120 and 0.546 mg/kg of benzene, above the NR 720 RCL of 0.055 mg/kg. However, these benzene levels are far below the proposed COMM 46 and NR 746 direct-contact standard of 1.1 mg/kg. These data document that Murphy's efforts to remove the soil affected by the release from the underground pipeline was very effective, especially considering the site conditions. We believe that the WDNR would agree that site conditions (i.e., adjacent railroad tracks) make it impractical to achieve generic NR 720 RCLs at all locations. In actuality, the two samples cited above were collected almost from under the railroad

Continued . . .

Ms. Janet Kazda
Wisconsin Department of Natural Resources
July 29, 1999

tracks. These data show that the low levels of petroleum-related compounds remaining in the soils where the pipeline release occurred are unlikely to ever affect groundwater, considering the relatively impermeable nature of the clay soils throughout the area.

Based on information included with this closure request, we believe that the pipeline site has been cleaned up to the extent practicable and does not pose a threat to public health, safety, and welfare or to the environment. For these reasons, we are requesting closure of the pipeline release site from the WDNR. We look forward to your favorable response to this request, and if you have any questions or need additional information, please contact us.

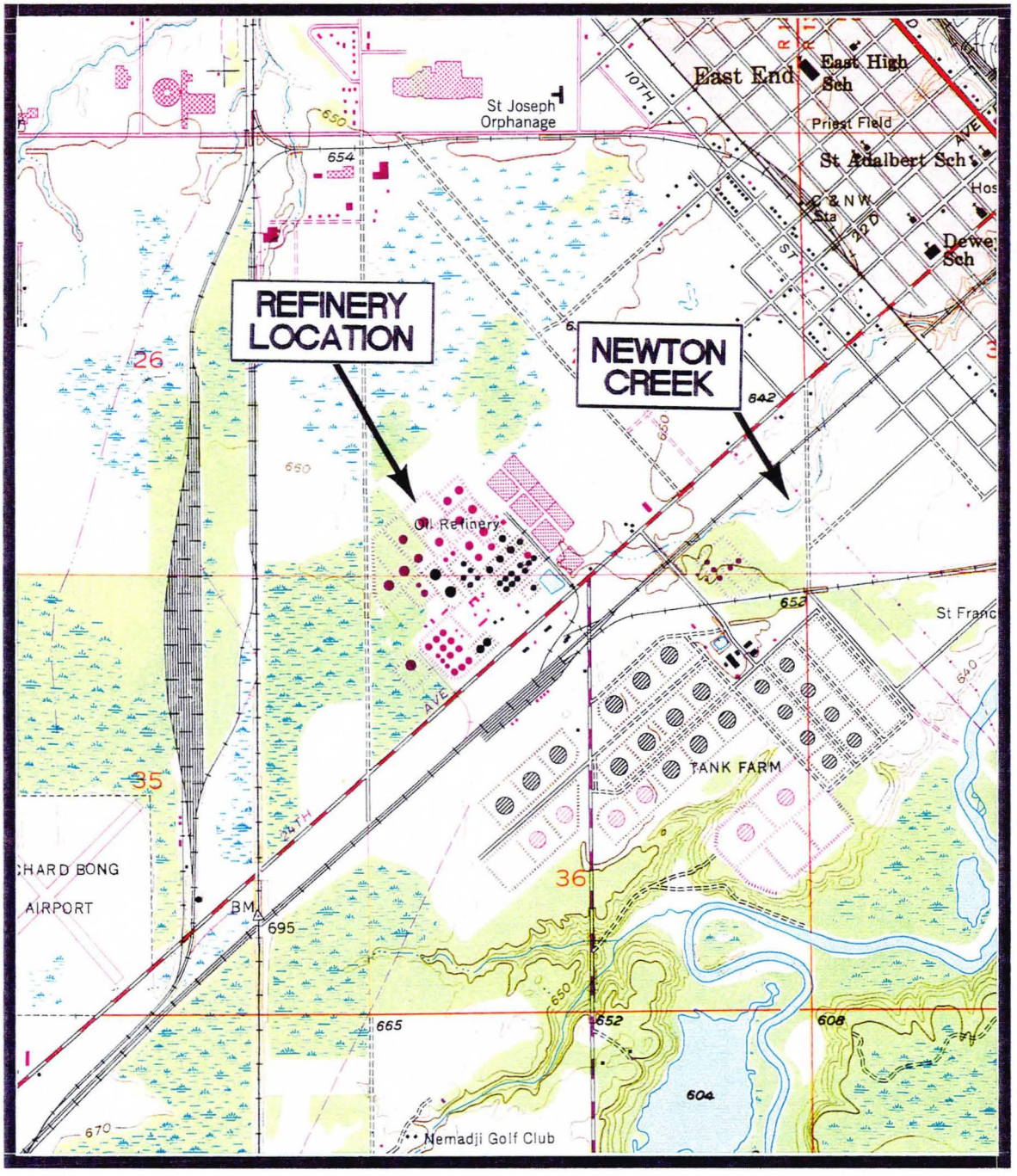
Sincerely,

GANNETT FLEMING, INC.

Dennis F. Kugle
Vice President

DFK/jec
Enc.

cc: Lee Vail (Murphy/New Orleans)
Liz Lundmark (Murphy/Superior)
Kevin Melnyk (Murphy/El Dorado)
Greg Neve (Murphy/Superior)
James Hosch (WDNR/Superior)
Richard Lewandowski (DeWitt, Ross & Stevens)



SCALE: 1 INCH = 2000 FEET

7.5 MIN TOPOGRAPHIC MAP
SUPERIOR, WISCONSIN
1954
PHOTOREVISED 1983

LOCATION MAP

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

070199
34265.000

Gannett Fleming

FIGURE 2

GENERAL DIRECTION OF GROUNDWATER FLOW

LEGEND

- Monitoring Well Location
- Monitoring Well Nest Location
- (65) Former Tank Location
- Liner

HILL AVENUE

MW-6
MW-4
MW-5
MW-7
MW-8
MW-1/T29
MW-2/T59
MW-1&PZ-1/T59
MW-1/T31
MW-5/T66
MW-1/T67
MW-6/T66
MW-2/T67
MW-1&PZ-1/T66
PZ-2/T66
PZ-3/T66
MW-2/T66
MW-3/T66
MW-1/T8
MW-2/T8
MW-1/PP
PZ-1/PP
MW-2/PP
MW-4&PZ-4/T66
MW-7/T66
MW-1
MW-2
MW-3B
MW-9
MW-10
MW-11
MW-12
MW-13
MW-14

Flare
Warehouse
Maintenance Shop
Process Area
Process Area
Process Area
Fire House
Boiler House
Loading Area
Railcar Loading Area
Propane/ Butane Loading Area
Fire Water Pond No. 2
Fire Water Pond No. 3
Fire Water Pond No. 5
Storm Water Collection Pond No. 4
Pond 1 (Closed)
Pond 6 (Closed)
Pond 7 Aeration Pond
Pond 8 Settling Pond
20'x150' Soil Excavated 10/97 And 7/98 (WDNR Closure Request Pending)
100'ø Equalization Tank
30'ø Primary Clarifer
Treatment Plant Building
Storage
Lab
Office
Marketing
STINSON AVENUE
BARDON AVENUE
Impoundment Area
NEWTON CREEK

NOTE

Monitoring Well Locations Are Based On Field Sketches From The Field Investigation Reports And Are Approximate.

0 300

Approximate Scale In Feet

072799
34265WBE

SITE PLAN

MURPHY OIL USA, INC

SUPERIOR, WISCONSIN

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CASE SUMMARY AND CLOSE OUT FORM

Form 4400-202
5-98

NOTE: Use of this form is required by the Department for any case close out application filed pursuant to ch. 292, Wis. Stats. and ch. NR 726, Wis. Adm. Code. Completion of this form is mandatory for applications for case closure. The Department will not consider or act upon your application unless you complete and submit this application form. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than reviewing close out requests and determining the need for additional response action.

I certify that, to the best of my knowledge, the information presented on and attached to this form is true and accurate. This recommendation for case closure is based upon all available data as of July 21, 99 (date). I have read the Case Summary and Close Out Form Instructions and all required information has been included.

Form Completed By: Dennis Kugle 7/21/99
(Signature) (Date)

Printed Name: Dennis Kugle Company Name: Gannett Fleming

If not site owner, relationship to site owner: Consultant

Address: 8025 Excelsior Drive Madison 53717

Telephone Number: (608) 836-1500 FAX Number: (608) 831-7337

Environmental Consultant (if different then above):

Address:

Telephone Number: ( ) FAX Number: ( )

FOR DEPARTMENT USE ONLY

Type of Case: LUST Spill ER Land Recycling Other DNR Reviewer:

WDNR Site Name: Murphy Oil USA, Inc.

Complete Site Address: 2400 Stinson Ave, Superior

WDNR BRRTS Case #: 02-16-221811 FID #:

PECFA Claim #: NA

Responsible Party Name: Murphy Oil USA, Inc.

Complete Responsible Party Address: 2407 Stinson Ave. Superior WI 54880

Site Legal Description : 1/4, NE 1/4, NW 1/4, Sec 36, T 49 N, R 14 (E/W) Town: Superior

County: Douglas Latitude: 46° 41' 26.0" Longitude: 92° 04' 08.0"

Type Of Closure Requested:

Soil
- ___ < NR 720.09/720.11 Generic RCLs
- ___ NR 720.19(2) Soil Performance Stds.
- ___ NR 720.19(3) Site Specific Stds.
- X < Comm 46 Direct Contact Standards

Groundwater
- ___ < NR 140.10 Table 1 & Table 2 Values
- ___ NR 140.28(2) PAL Exemption
- ___ NR 726.05(2)(b) Natural Attenuation

Contaminant Type(s): Gasoline & Diesel Fuel Products Quantity Released: Unknown

Date of Incident/Discovery: _____ Zoning of Property: Industrial

Enforcement Actions Closed Out? ____Yes ____No X NA Permits Closed Out? ____Yes ____No X NA

Form 4 Pending? ____Yes ____No X NA Date Closure Submitted to DNR: 7/29/99

WDNR BRRTS Case #: 02-16-221811 WDNR Site Name: _____

1. **CASE HISTORY AND JUSTIFICATION FOR CLOSURE ATTACHED?** X Yes ___No

2. **SOIL PRE-REMEDIATION OR INVESTIGATION ANALYTICAL RESULTS**

Extent Defined? X Yes ___No Soil Type(s): clay Depth to Bedrock: > 300 feet

Potential Receptors for Direct Contact (i.e. vapor migration, contaminated soil left in place): None

Tables of Pre-remedial Analytical Results Attached? X Yes ___No Maps of Pre-remedial Sample Locations Attached? X Yes __No

3. **SOIL POST REMEDIATION ANALYTICAL RESULTS**

Remedial Action Completed? X Yes ___No 720.19 Analysis? ___Yes X No (If yes, attach supporting documentation)

Were Soils Excavated? X Yes ____No Quantity: 330 yd^3 Disposal Method: Thermal Treatment

Final Confirmation Sampling Methods: Grab samples from excavation

Soil Disposal Form Attached? ____Yes X No Final Disposal Location: Lakehead Blacktop

Estimated volume of insitu soils exceeding NR 720 RCLs: Not possible because of adjacent RR tracks

Tables for Post Remedial Analytical Results Attached? X Yes__No Maps of Post Remedial Sample Locations Attached? X Yes_No

Brief Description of Remedial Action Taken: Soil excavation, see attached report for details

4. **GROUNDWATER ANALYTICAL RESULTS**

Potential Receptors for Groundwater Migration Pathway: None

Extent of Contamination Defined? ____Yes ____No X NA Remedial Action Completed? ____Yes ____No ____NA

# of Sample Rounds: ____ Depth(s) to Groundwater/Flow Direction(s): _____

Field Analyses? ____Yes ____No Lab Analyses? ____Yes ____No # of Sampling Points: _____

NR 141 Monitoring Wells Sampled: _____ # Temporary Groundwater Sampling Points Sampled: _____

Recovery Sumps Sampled: _____ # Municipal Wells Sampled: _____ # Private Wells Sampled: _____

Has DNR Been Notified of Substances in Groundwater w/o Standards? ___Yes ___No

Any Potable Wells Within 1200 Feet of Site? ___Yes ___No If Yes, How Many? _____

Have They Been Sampled? ___Yes ___No Have Well Owners/Occupants Been Notified of Results? ___Yes___No

Preventive Action Limit Exceeded? ____Yes ____No (If Yes, identify location(s) _____

Enforcement Standard Exceeded? ____Yes ____No (If Yes, identify location(s) _____

Tables of Analytical Results Attached? ___Yes ___No Map of Groundwater Sample Locations Attached? ___Yes___No

Brief Description of Remedial Action Taken:

WDNR BRRTS Case #: 02-16-221811 WDNR Site Name: Pipeline Release Site

FOR DEPARTMENT USE ONLY

FIRST REVIEW DATE:_____ **[ ] Approved [ ] Denied**

_____ (Signature) _____ (Signature) _____ (Signature) _____ (Signature)

SECOND REVIEW DATE:_____ **[ ] Approved [ ] Denied**

_____ (Signature) _____ (Signature) _____ (Signature) _____ (Signature)

COMMITTEE RECOMMENDATION:

_____ **Closure Approved Per:**
- _____ No Restrictions
- _____ Groundwater Use Restriction
- _____ Zoning Verification
- _____ Deed Restriction
- _____ Deed Affidavit
- _____ Site Specific Close Out Letter Necessary
- _____ Well Abandonment Documentation
- _____ Soil Disposal Documentation
- _____ Public Notice Needed
- _____ NR 140 Exemption For:_____

_____ Specific Comments:_____

_____

_____

_____

_____ **Closure Denied, Needs More:**
- _____ Investigation
- _____ Groundwater Monitoring
- _____ Soil Remediation
- _____ Groundwater Remediation
- _____ Documentation Of Soil Landspreading Or Biopile Destiny
- _____ Specific Comments:_____

_____

_____

_____

WISCONSIN DEPARTMENT OF NATURAL RESOURCES **Form 4400 -202**
Case Summary and Close Out Form Instructions **5/98**

The Case Summary and Close Out Form and attached instructions have been designed by staff in the Bureau for Remediation and Redevelopment to provide responsible parties, environmental consultants, Department staff, and other interested parties with a checklist of information that must be evaluated prior to case closure. The closure of a case means that the Department has determined that no further response is required at that time. Various closure options are available within Department codes. Responsible parties and their consultants should specify the options sought for closure for the soils and groundwater at their site. Groundwater quality standards found in NR 140 and soil standards found in NR 720 must generally be met. However, some closure options allow closure where groundwater or soil standards are not met provided that deed or groundwater use restrictions are imposed on the subject property. A previously closed case may be reopened by the Department if information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety or welfare or the environment.

In order to expedite the closure process for your case, you should submit a complete and accurate submittal according to the following instructions. Submit the Case Summary and Close Out Form and required attachments as a stand alone document and **please do not** submit the close out request in a bound report. The information supplied should succinctly summarize the chronological history of the entire case and should reinforce the justification for closure. Submission of tabulated analytical results from previous reports are acceptable (i.e. it is not necessary to create new tables). However, do not submit previously submitted reports themselves as attachments. **Submittals with incomplete forms and/or documentation will be returned.** The following should be included in the order shown:

√ **(A) Case Summary and Close Out Form** must be complete. A brief, **written** case history, justification for case closure and description of the remedial action taken must be included. The type of closure requested for both the soil and groundwater must be indicated.

IN REPORT **(B) Site Map**, per NR 716.15(2)(d)5-6, to scale showing the layout of the buildings, roads, tank and/or discharge locations, utilities, receptors, monitoring and potable wells, property lines and other relevant features of the site. If possible, the scale should be 1 inch = 10 or 20 feet.

DONE DONE **(C) Pre-Remedial Soil Analytical Results Table(s)** which show the analytical results and sample depths of all of the pre-remedial soil samples (i.e. tank pull, site investigation, etc.). If more than one table, please put them in chronological order. Highlight those results which exceed the NR 720 soil standards. Provide the level of detection for results which are below the detection level (i.e. don't just list as ND). Identify the depth of the water table. All data must be in table format as identified in NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets)

NA **(D) Pre-Remedial Soil Sample Location Map(s)** which show the locations of the items from B, above, and the soil sample locations from C, above. Highlight those sample locations which exceed NR 720. Maps should be prepared according to the applicable portions of NR 716.15(2)(h)1. You may submit more than one map.

NA **(E) Pre-Remedial Geologic Cross Section(s)** including source location(s), extent of soil and groundwater contamination, soil sample locations, water table elevation, and bedrock elevation, if encountered. Maps should be prepared according to NR 716.15(2)(g)5-8 and NR 716.15(2)(h)1-2.

IN REPORT **(F) Post-Remedial Soil Analytical Results Table(s)** which show the analytical results and sample depths of all of the post-remedial soil samples. Highlight the analyses which exceed NR 720 soil standards. Provide the level of detection for analytical results which are below the detection level (i.e. don't just list as ND). Identify the depth of the water table. All data must be in table format as identified in NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets).

IN REPORT **(G) Post-Remedial Soil Sample Location Map(s)** which show the locations of items from B, above, and the soil sample locations from F, above. Highlight those sample locations which exceed NR 720. Maps should be prepared according to the applicable portions of NR 716.15(2)(h)1. You may submit more than one map.

NA **(H) Post-Remedial Geologic Cross Section(s)** including former source location(s), remaining soil contamination, soil sample locations, extent of excavation, water table elevation, and bedrock elevation, if encountered. Maps should be prepared according to NR 716.15(2)(g)5-8 and NR 716.15(2)(h)1-2.

NA **(I) Groundwater Analytical Results Table(s)** showing all of the site's historical groundwater analytical results in chronological order. Highlight those results which exceeded NR 140 (differentiate between PAL and ES exceedances). All data must be in table format as identified in NR 716.15(2)(g)3 and 716.15(2)(h)3, (i.e. do not submit lab data sheets). Differentiate between pre-remedial, remedial and post-remedial samples (i.e. identify when the groundwater remediation system was active/inactive).

In GW Mon
Sampling Done

NA **(J) Groundwater Sample Location Map(s)** which show the locations of the items from B, above, and all of the monitoring wells/sumps/extraction wells/potable wells. Highlight those wells which have PAL or ES exceedances (in the most recent round of sampling, differentiate between PAL and ES). Maps should be prepared according to the applicable portions of NR 716.15(2)(h)1. You may submit more than one map.

NA **(K) Groundwater Contour Map(s)** which show the historical changes in direction, elevation and/or gradient. Provide one map if data is consistent. Maps should be prepared according to the applicable portions of NR 716.15(2)(g)5-8 and NR 716.15(2)(h)1-2.

APPENDIX A

WELL RECORDS REQUEST FORM AND THE TWO WELL LOGS

WELL RECORDS REQUEST FORM - *FOR AN AREA*

(may be faxed or mailed)

Send to: Wisconsin Geological and Natural History Survey
3817 Mineral Point Road, Madison, WI 53705-5100

Fax: 608-262-8086 Telephone: 608-262-7430 Irene Lippelt | 608-263-7387 Roger Peters | 608-262-1705 Main Office

Date 4/21/99 **Page** 1 **of** 1

From: Name Jeff King

Company Gannett Fleming, Inc. (fna Eder Associates)

Mailing Address 8025 Excelsior Dr.
Madison, WI 53717

Telephone Number 608-836-1500 Fax Number 608-831-3337

Project number or billing code for order 34265.003

Note: Prepayment is required unless your company has an account with our map sales department.

Where should invoice be sent? to person ordering? X **OR to company's accounting department?** ____

If prepaying, Mastercard ___ **or Visa** ___ **#** _____ _____ _____ _____, **expires:** _____-_____

TYPE OF RECORDS REQUESTED: (PLEASE CHECK ALL THAT APPLY)

1. ***WELL CONSTRUCTOR'S REPORTS***: 1936-79 X 1980-89 X ≥1990 X
   If there are only a few reports (or none) in the area you requested, do you want us to expand the search area? ___yes X no. If you are ordering less than an entire section, do you want reports that do not list a ¼ section included? X yes ___no. If you are ordering ¼ ¼ section(s) do you want reports that list just one ¼ section included? X yes ___no.
   Most reports (except in Milwaukee & Waukesha Counties) do NOT list more than one quarter section.
2. ***GEOLOGIC LOGS***: only within area requested X or up to ~1 mile away if few or none in area ___

AREA(S) FOR WHICH RECORDS ARE BEING REQUESTED:

Quarter Section(s) (please use "of" or "and")		Section	Township	Range (list E or W)	County
	of	36	49	14W	Douglas
SE and SW	of	25	49	14W	Douglas
SE	of	26	49	14W	Douglas
NE	of	35	49	14W	Douglas
	of				
	of				
	of				
	of				

Special Instructions (if any):

Please call when ready, We will pick-up

Note: **All orders are sent first class mail unless other arrangements are requested.**
If you need this material in an alternative format, please contact the Wisconsin Geological and Natural History Survey (608/262.1705) or the UWEX Affirmative Action Office.

WELL CONSTRUCTION REPO

WISCONSIN STATE BOARD OF HEALTH

WELL DRILLING DIVISION

AUG 28 1941

Note: Section 32 of the Wisconsin Well Drilling Sanitary Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner William Hakke | Driller Mastrian Bros

Street or RFD Norman Roadfaube | Post Office Wentworth Wis

Post Office Superior | Date Feb 27, 1941 | Permit No. 232

LOCATION OF PREMISES

~~Bayfield~~ Douglas City of Superior

County — Town

Blk 12 Hammond add Lot 27

Describe further by subdivision, plat, district, lake, lot,

S ½ of Sec 28 Sec 26?

block, nearest principal highway, etc., whichever apply.

The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.

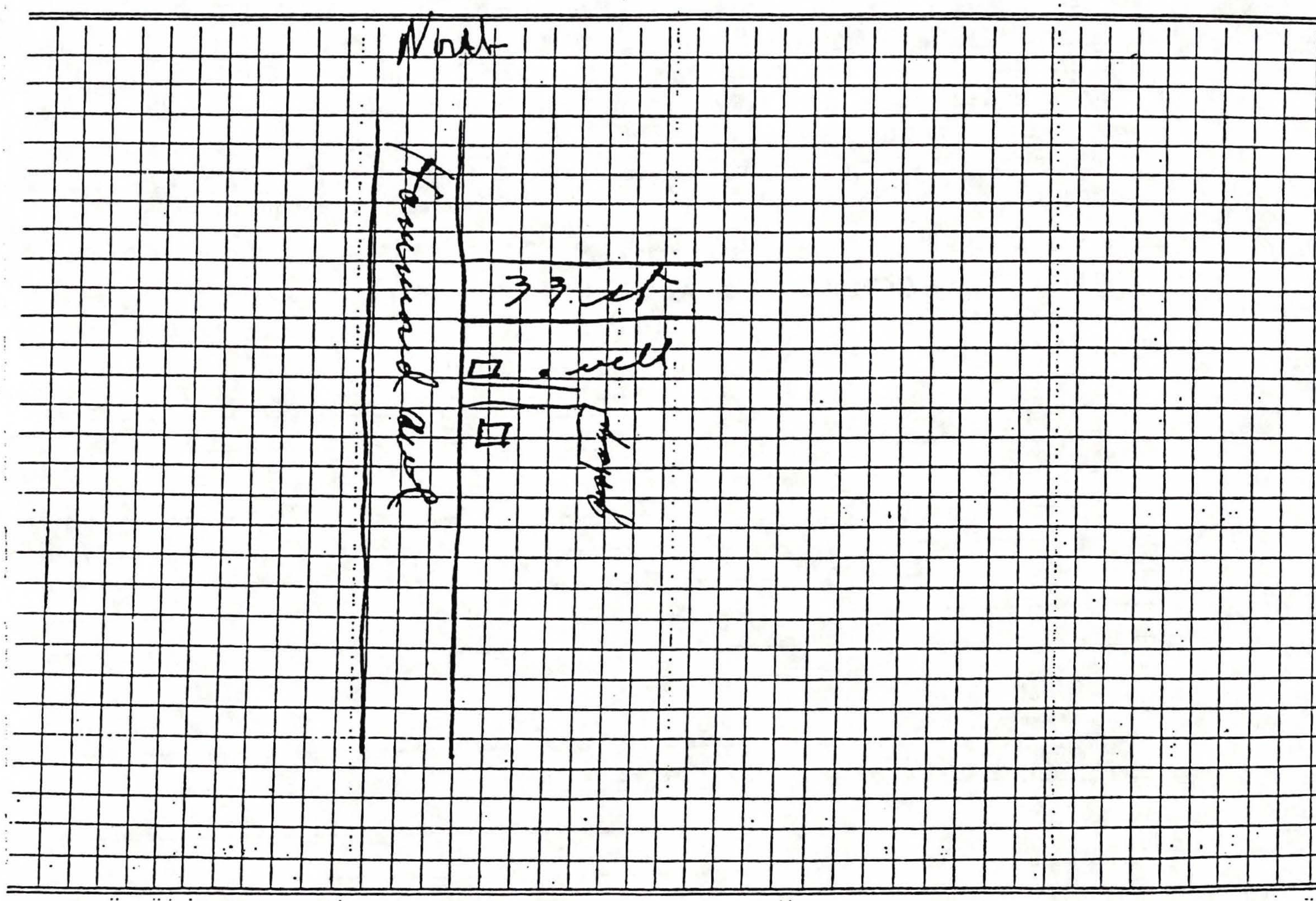
Sec. 28 21

Twp. 49

Range 14 W

DIAGRAM OF PREMISES

See discussion and illustration in Part III Well Drilling Code. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



Additional copies of this form may be obtained in lots of 12 for 25¢. Send remittance with order to State Board of Health, Well Drilling Division, Madison, Wis.

WELL LOG *and* REPORT

In this column indicate the kind of casing, liner, shoe and other accessories used.	WELL DIAGRAM Use a red line to show casing or liner pipe. Use black for drill or borehole.	In this column state the kind of formations penetrated, their thickness in feet and if water bearing.	Record of FINAL Pumping test
4 in special Well pipe Drive shoe steel Casing to 260 ft. rock 15	Inches Diameter 2 3 4 5 6 8 10 12 14 16 18 Depth: 25, 50, 75, 100, 150, 200, 260, 275, 400, 800, 1200	Red Clay 150 ft Hard pan Boulders 110 ft Sand stone 15 ft	Duration of test Hours 24 hr Pumping rate G.P.M. 5 Depth of pump in well. Ft. 108 Standing water-level (from surface) Ft. 43 Water-level when pumping Ft. 106 Water. End of test. Clear ✓ Cloudy ___ Turbid ___ Was the well sterilized? Yes ✓ No ___ To which laboratory was sample sent? Laporte Date Feb 28 41 Was the well sealed on completion? Yes ✓ No ___ How high did you leave the casing-pipe above grade? 1 ft Well ~~was~~ completed Date Feb 27-41 Well Driller Signature

Draw the diagram to show the right half only

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH
See Instructions on Reverse Side

RECEIVED JAN 14 1954 ENVIRONMENTAL SANITATION

Sec 36? T49 R14W

1. County Douglas — Town ☐ Village ☐ City ☒ — Check one and give name

2. Location City of Superior Stinson and Bolden ave
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☐ Lake Head Pipe Line Co
Name of individual, partnership or firm

4. Mail Address East End Superior Wis
Complete address required

5. From well to nearest: Building ✓ ft; sewer ✓ ft; drain ✓ ft; septic tank ✓ ft;

dry well or filter bed ✓ ft; abandoned well — ft.

6. Well is intended to supply water for: Drinking

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4	standard	0	179

9. GROUT:

Kind	From (ft.)	To (ft.)

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Red clay	0	135
Hardpan	135	175
water gravel	175	179

Construction of the well was completed on: Oct 9 1953

The well is terminated 22 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No

Was the well sealed watertight upon completion? Yes ✓ No

11. MISCELLANEOUS DATA:

Yield test: 5 Hrs. at 7 GPM.

Depth from surface to water-level: ______ ft.

Water-level when pumping: same ft.

Water sample was sent to the state laboratory at: By owner on ______ 19__
City

Signature Mattson Bros — Registered Well Driller

Wentworth Wis — Complete Mail Address

Please do not write in space below

Rec'd ______ No. ______

Ans'd ______

Interpretation ______

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ______

APPENDIX B

COPY OF MURPHY'S MARCH 2, 1998, REQUEST FOR CLOSURE LETTER AND TWIN PORTS TESTING REPORT

DK

MURPHY
OIL USA, INC.

SUPERIOR REFINERY
P O BOX 2066
SUPERIOR WISCONSIN 54880

March 2, 1998

Mr. James Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

RE: Excavation Sampling Report for Pipe Line Release and Request for Site Closure

Dear Mr. Hosch:

Enclosed is a January 1998 report prepared by Twin Ports Testing, Inc. that documents the excavation and off-site treatment of approximately 310 cubic yards of petroleum-contaminated soil associated with the release of gasoline and diesel fuel products from an underground pipe line at our Superior Refinery. Included in the report are the analytical testing results for soil samples that were collected from the base and sidewalls of the final excavation to document the levels of diesel range organics, gasoline range organics, and petroleum volatile organic compounds (PVOCs) remaining in the soil.

Clay was the only type of soil encountered during the October 1997 excavation. Twin Ports used field screening and visual observations to guide the excavation activities, and fifteen confirmation soil samples were collected for laboratory analysis. The excavation extended a maximum of 3 feet below the pipe line, and only two of the fifteen confirmation samples contained PVOC levels above applicable NR 720 residual contaminant levels (RCLs). These two samples, which had benzene concentrations of 0.120 and 0.546 mg/kg, above the NR 720 generic RCL of 0.005 mg/kg, were collected from the side walls of the excavation at the same depth as the underground pipe line. None of the seven confirmation samples collected at the base of the excavation, 2 to 3 feet below the pipe line, contained concentrations of PVOCs above an applicable NR 720 RCL.

SPUR

On February 28, 1998, Murphy submitted a report, *Request to the Wisconsin Department of Natural Resources for a Site-Specific Benzene Soil Cleanup Level,* to the WDNR. This report, which was prepared by Eder Associates, discusses the results of SESOIL modeling for soils at the Murphy site. The modeling predicted that detectable concentrations of benzene from a gasoline spill would not infiltrate more than 3.3 feet through the clay at the Murphy refinery if anaerobic degradation was included in the modeling inputs. The analytical results for the soil samples collected following remediation of the pipe line release, and discussed in the enclosed report, appear to verify the SESOIL modeling results.

Based on the modeling predictions discussed in Eder's report, Murphy has requested that the WDNR establish a site-specific benzene soil cleanup level that is well above the levels found in the two excavation side wall samples discussed above. By this letter and submittal of the Twin Ports Testing, Inc. report, Murphy is requesting site closure of the underground pipe line release, based on the benzene transport modeling results provided in Eder's February 1998 report.

We look forward to the WDNR's favorable response to Murphy's request for a site-specific benzene soil cleanup level and this request for closure of the underground pipe line release. If you have any questions or need additional information, please call.

Sincerely,

Mark H. Miller
Manager, Safety and Environmental Control

mm127

Enc.

cc w/o attachment: L. Vail (Murphy)
D. Kugle (Eder)
R. Lewandowski (DeWitt, Ross & Stevens)

SINCE 1972

TWIN PORTS TESTING INC.

EXCAVATION SAMPLING REPORT
MURPHY OIL PIPELINE RELEASE
2407 STINSON AVENUE
SUPERIOR, WISCONSIN
TPT #786-97E
JANUARY 1998

MURPHY OIL USA, INC.
2407 STINSON AVENUE
SUPERIOR, WISCONSIN 54880

ATTN: MR. WILLIAM GUSTAFSON

SINCE 1972

TWIN PORTS TESTING INC.

1301 NORTH THIRD STREET • SUPERIOR, WISCONSIN 54880
(715) 392-7114 • FAX (715) 392-7163

728 GARFIELD AVENUE • DULUTH, MINNESOTA 55802
(218) 722-1911 • FAX (218) 722-3295

8 INDUSTRIAL PARK ROAD • NEGAUNEE, MICHIGAN 49866
(906) 226-6653 • FAX (906) 226-3699

January 2, 1998

Mr. William Gustafson
Murphy Oil, U.S.A.
2407 Stinson Ave.
Superior, WI 54880

Re: Excavation Sampling Report
Pipeline Release
Murphy Oil Superior Refinery
TPT# 786-97E

Dear Mr. Gustafson:

Enclosed is an excavation sampling report for the referenced site for your review and approval. On October 9, 1997 Twin Ports Testing (TPT) directed the excavation of approximately 310 yds^3 of petroleum-impacted soil associated with a release of gasoline and diesel product from an underground pipeline. Soil samples were collected to investigate the extent and magnitude of impacted soil. Results of the investigation indicate that a limited amount of petroleum-impacted soil remains in place. The report recommends presenting *Site-specific Residual Contaminant Levels* to the Wisconsin Department of Natural Resources to attempt closure of the site. *Site-specific Residual Contaminant Levels* may be used when it is determined that it is not practicable to achieve *Generic Residual Contaminant Levels.* Murphy Oil may develop these levels using Wisconsin Administrative Code NR 720.19.

TPT appreciates the opportunity to assist with this project. If you have any questions, please contact me at (715) 392-7114.

Sincerely,
TWIN PORTS TESTING, INC.

Irvin Mossberger
Hydrogeologist

Encl.

IGM:igm:BEM

INTRODUCTION

This report summarizes the results of soil sampling conducted by Twin Ports Testing, Inc. (TPT) during remedial excavation activities at the Murphy Oil refinery in Superior, Wisconsin, and presents recommendations for further action at the site. The purpose of the sampling was to investigate the extent of petroleum impact associated with a release from an underground pipeline system in October, 1997.

TPT was authorized by Mr. William Gustafson of Murphy Oil USA, Inc. to provide the necessary labor and equipment to sample and analyze contaminated soil associated with the release. TPT's scope of services for the project included:

- Directing the excavation of petroleum-impacted soil associated with the release.
- Field-screening soil samples from the excavation to investigate the extent of the release.
- Collecting soil samples from the sidewalls and bottom of the excavation for laboratory analysis.
- Preparing and submitting an Application to Treat Petroleum Contaminated Soil and Groundwater (Wisconsin Department of Natural Resources (WDNR) form 4400-120), including collecting one soil sample for laboratory analysis from soil stockpiled during the excavation.
- Preparing a report including results and recommendations

BACKGROUND INFORMATION

Site Information

The site is located at 2407 Stinson Avenue in Superior, Wisconsin (Figure 1). The site is currently used as an oil refinery. The release occurred from a pipeline system composed of two pipes spaced approximately 1 foot apart which run parallel to railroad tracks on the northeast (i.e. refinery east) side of the site. The release occurred proximal to where the pipeline system enters the ground as it runs from (refinery) south to (refinery) north (Figure 2). The pipeline system was approximately 4-5 feet below ground surface in the excavation. The volume and duration of the release was unknown.

Regional Geology and Hydrogeology

The site lies in Quaternary age glaciolacustrine deposits consisting of primarily red clay commonly more than 250 feet thick that locally contains small amounts of silt and sand in thin discontinuous layers. Bedrock beneath the glacial deposits is Precambrian in age, and consists predominantly of sandstone, shales, and conglomerate (Hydrologic Investigation Atlas HA-524).

Regional groundwater flow in the vicinity of the site is toward the northeast. Groundwater has been encountered between 30 and 50 feet below ground surface, as indicated in logs of potable wells located within a three mile radius from the site (Appendix A, Well Constructors Reports).

METHODS

Excavation and investigation activities took place on October 9, 1997. Excavation and hauling of impacted soil was performed by J&D Enterprises, Inc. Impacted soil was thermally treated by Lakehead Blacktop and Materials of Superior, Wisconsin. TPT directed the excavation, including collection of soil samples for field-screening and laboratory analysis. Soil samples were analyzed by Midwest Analytical Services.

A TPT environmental scientist visually examined soil samples for apparent signs of petroleum impact, classified the samples according to ASTM D2488 (Standard Practice for Description and Identification of Soils, Visual Manual Procedure) and collected appropriate samples for field-screening. Soil samples were field-screened for Volatile Organic Compounds (VOCs) using the headspace method with a Thermo Environmental Instruments Model 580B portable photoionization detector (PID) equipped with a 10.6eV lamp. The samples were logged in a field notebook. Impacted soil was removed from the excavation to a temporary stockpile. Soil samples for laboratory analysis were collected in accordance with *Soil Sampling Requirements for LUST Site Investigations and Excavations* (WDNR PUBL-SW-127). Standard chain of custody procedures were used in shipment to the laboratory. The laboratory samples were analyzed for gasoline range organics (GRO), diesel range organics (DRO) and petroleum volatile organic compounds (PVOC).

RESULTS

A total of thirty (30) soil samples from throughout the excavation were field-screened to investigate the extent of petroleum impact. The results are presented in Table 1. Of those samples, fifteen (15) from the bottom and sidewalls of the excavation, and one (1) from the temporary stockpile, were

chosen to be submitted for laboratory analysis. Laboratory analytical results are presented in Appendix B.

The excavation reached approximate dimensions of 135 feet in length, 15 feet in width, and 8 feet in depth. The excavation proceeded until results of field-screening indicated the extent of petroleum impact had been adequately delineated or until it reached the railroad tracks to the (refinery) east or until the pipeline system impeded further digging. Trenches were dug in four (4) locations along the (refinery) west edge of the excavation to investigate the lateral extent of petroleum impact. Approximately 310 cubic yards (yds^3) of petroleum-impacted soil were removed from the excavation. The only soil type encountered in the excavation was clay. Groundwater was not encountered during excavation activities.

Results of field-screening indicated that the vertical and lateral extent of petroleum-impacted soil had been delineated. The trenches proceeded approximately 5 to 10 feet laterally away from the main part of the excavation (Figure 2). Laboratory analytical results indicated low-level petroleum compounds remaining in soil near the areas of R-1, R-5, R-14, R-19, R-22, R-26, R-28, and R-29. However, only soil in samples R-1 (1365 parts per million (ppm) DRO), R-14 (120 parts per billion (ppb) benzene) and R-22 (546 ppb benzene) contained petroleum compounds above WDNR *Generic Residual Contaminant Levels* (NR 720.09).

Stockpiled soil was transported for thermal treatment to Lakehead Blacktop and Materials in Superior. Form 4400-120 was submitted to WDNR on November 3, 1997 (Appendix C). Stockpile sample SP-1 was used in the emissions calculations for the form.

CONCLUSIONS

Results of the investigation indicate that the extent and magnitude of petroleum impact has been sufficiently delineated. Soil samples R-1, R-14, and R-22, sidewall samples from the (refinery) south and east sides of the excavation, contained compounds above WDNR *Generic Residual Contaminant Levels*. It is estimated that approximately one (1) cubic yard of petroleum-impacted soil remains in the vicinity of soil sample R-1. Additional petroleum-impacted soil remains in the vicinity of R-14 and R-22 on the (refinery) east side of the excavation. The presence of the pipeline system and railroad tracks in this area impedes further excavation of soil. The clay soil in the area makes other remedial actions difficult. The maximum depth of petroleum-impacted soil appears to be approximately eight feet (Figure 3). Groundwater appears not to be impacted by the release.

It appears that the site meets the criteria for classification as a simple site as defined in NR 700.09 (1).

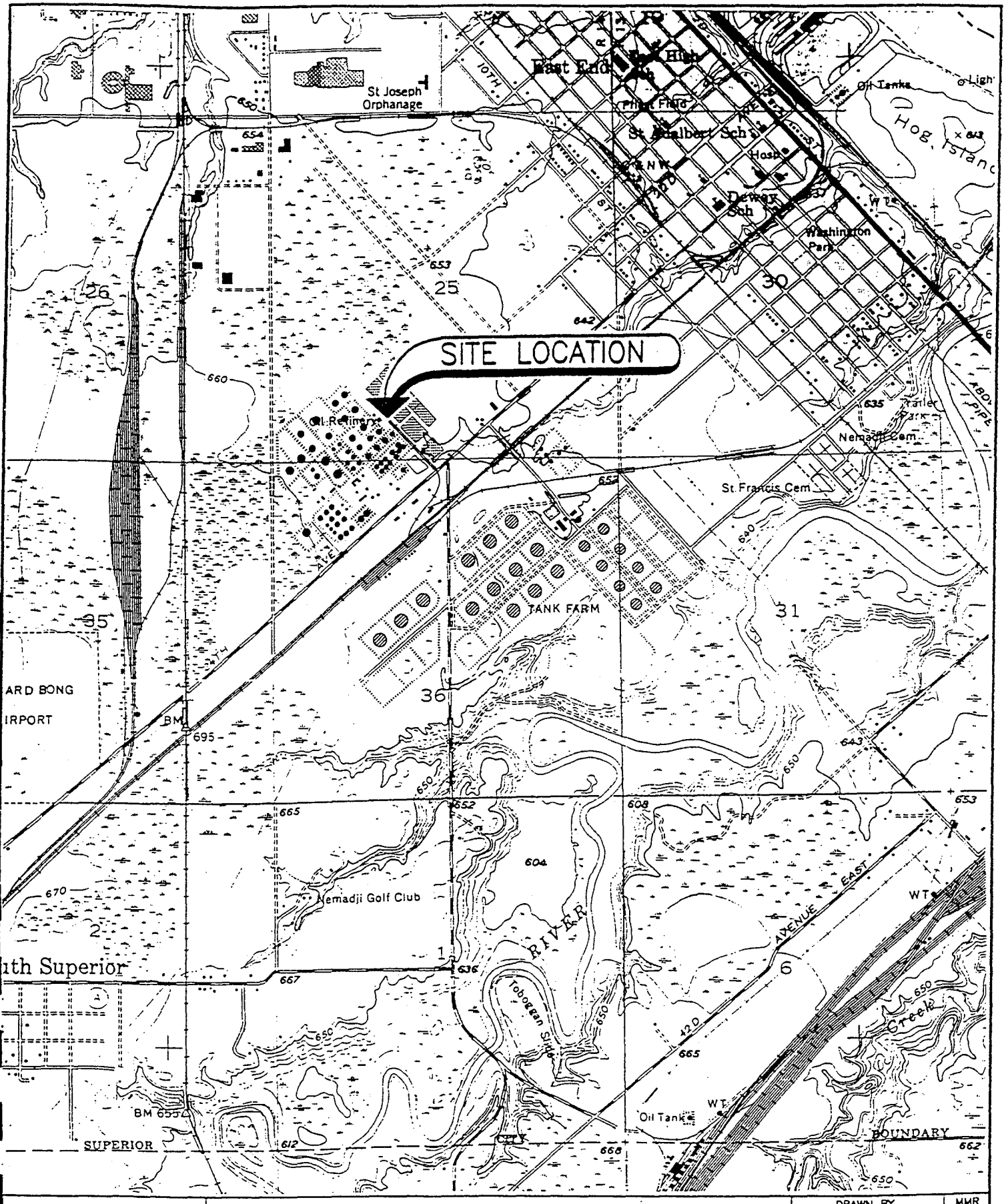
RECOMMENDATIONS

Analytical results indicate that a small amount of petroleum-impacted soil, above WDNR *Generic Residual Contaminant Levels*, remains at the site. However, based on TPT's experience with determining *Site-specific Residual Contaminant Levels* (NR 720.19), for similar petroleum impacts and in similar hydrogeologic settings (i.e. in Superior, Wisconsin), TPT recommends no further action for the site. Murphy Oil USA should submit a letter of compliance and a final report for a simple site as per NR 700.11 (b), which should include information required by chs. NR 700 to 726. The report should present *Site-specific Residual Contaminant Levels.*

LIMITATIONS OF INVESTIGATION AND REPORT

We have based the analysis and recommendations submitted within this report in part on the data obtained from the excavation field activities, and chemical analysis of the collected soil samples. The exact nature and extent of geologic variations and levels of contamination at the site may not be evident.

Conclusions and recommendations contained herein are based on the applicable standards of our profession at the time this report was prepared. This warranty is in lieu of all other warranties either expressed or implied.

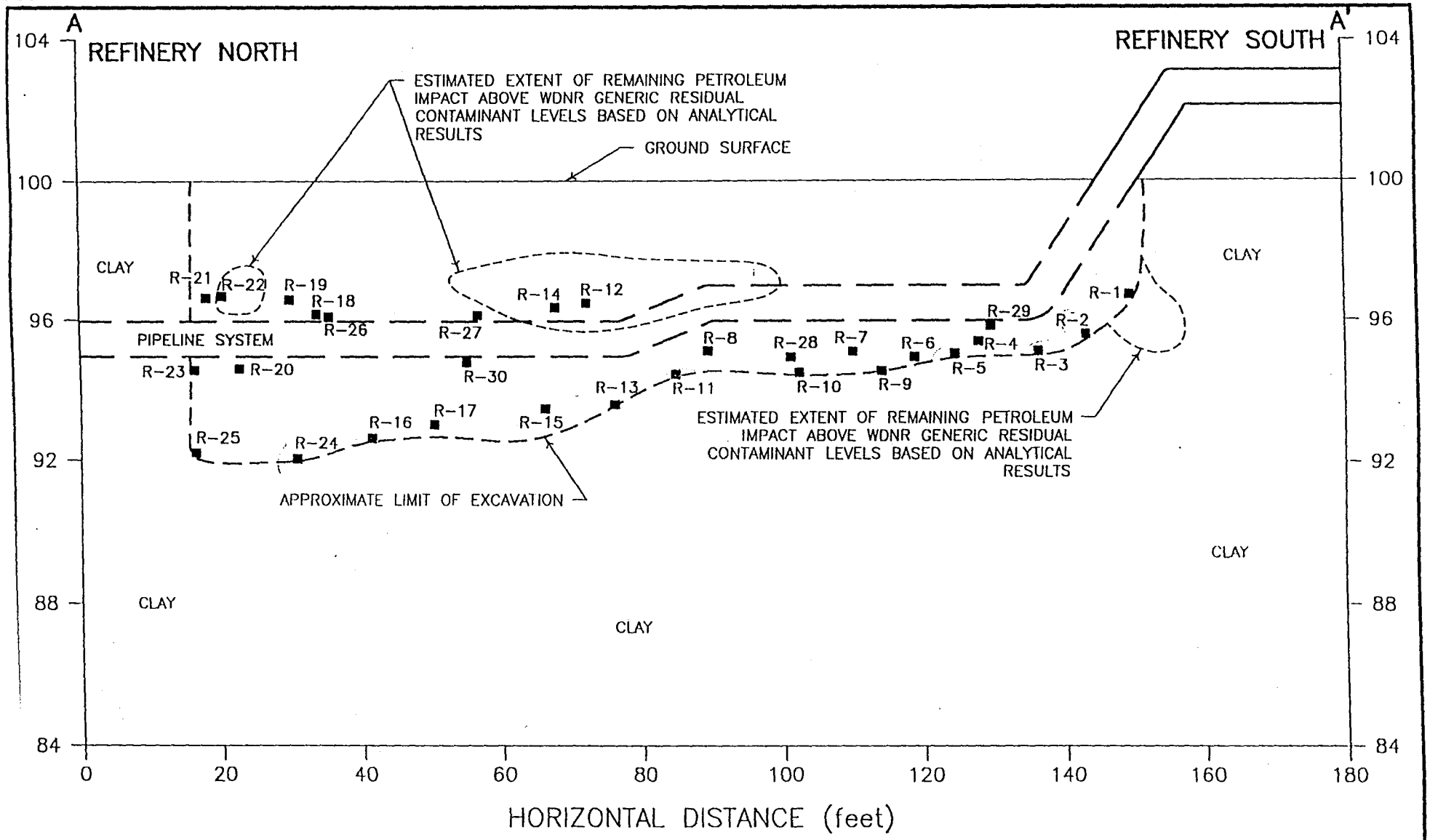


Twin Ports Testing

SITE LOCATION MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	785-97E
FIGURE	1

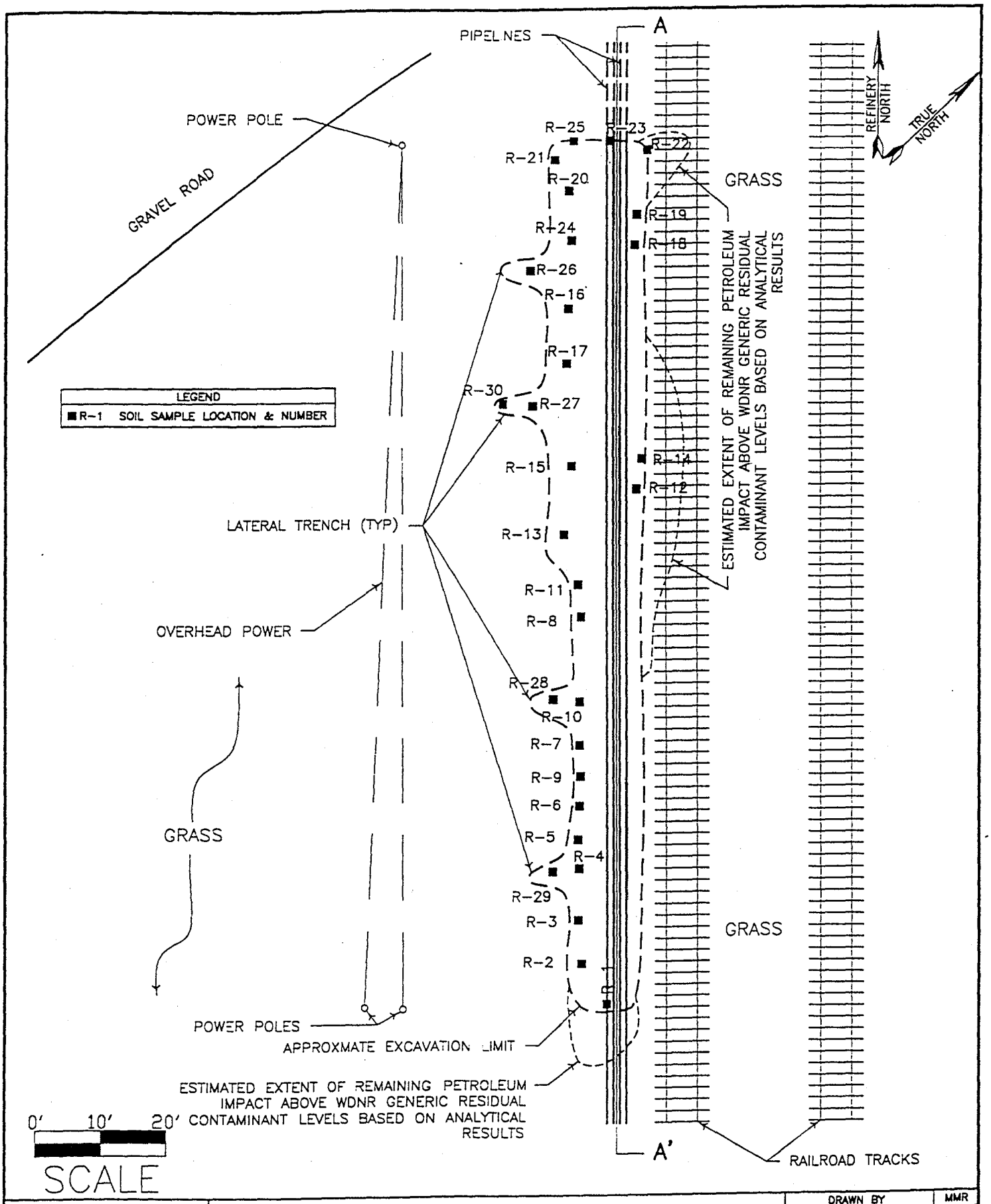


Twin Ports Testing

CROSS SECTION

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	3



Twin Ports Testing

SITE MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	2

TABLE 1
MURPHY OIL PIPELINE RELEASE
FIELD-SCREENING (PID) RESULTS

SAMPLE #	DEPTH (feet)	SOIL TYPE	RELATIVE MOISTURE	PID READING(ppm)
R-1(L) ✓	3.5 BASE	clay	D/M	6
R-2(L) ✓	4.5 BASE	clay	W	4
R-3(L) ✓	5.0 BASE	clay	M	4
R-4	4.5	clay	M	337
R-5(L) ✓	5.0 BASE	clay	D/M	19
R-6	5.0	clay	M/W	152
R-7	5.0	clay	M/W	168
R-8	5.0	clay	W	164
R-9	5.5	clay	D/M	8.8
R-10	5.5	clay	D/M	0
R-11(L) ✓	5.5 BASE	clay	D/M	0
R-12	3.5	clay	M/W	308
R-13	6.5	clay	M	0
R-14(L)	3.75	clay	D/M	212
R-15	6.5	clay	M	375
R-16(L) ✓	7.5 BASE	clay	M	46
R-17	7.0	clay	M	60
R-18	4.0	clay	W	345
R-19(L)	3.5	clay	D/M	125
R-20	5.5	clay	D/M	376
R-21	3.5	clay	D/M	327
R-22(L)	3.5	clay	D/M	253
R-23(L)	5.5	clay	D/M	7.6
R-24(L) ✓	8.0 BASE	clay	D/M	0
R-25	8.0	clay	D/M	2.9
R-26(L)	4.0 SIDEWALL	clay	D/M	3.9
R-27	4.0	clay	D/M	52
R-28(L)	5.0 SIDEWALL	clay	D/M	3.5
R-29(L)	4.0 SIDEWALL	clay	D/M	22
R-30(L)	5.0 SIDEWALL	clay	D/M	11
SP-1(L)	NA SIDEWALL	clay	D/M	175

Notes: PID = photoionization detector. ppm = parts per million. L = sample was sent to laboratory for chemical analysis. NA = Not Applicable. D = dry. M = moist. W = wet. R = removed. SP = stockpile.

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

SPEED MEMO SPOTCHECK

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 2-79

OCT 28 1983

1. COUNTY: Douglas
CHECK (✓) ONE: ☐ Town ☐ Village ☒ City
Name: Superior

2. LOCATION: ¼ Section or Govt. Lot: SE-SE | Section: 22 | Township: 49N | Range: 14W
OR – Grid or Street No. | Street or Road Name
AND – If available subdivision name, lot & block No.

3. NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓ ONE): Brian Schumacher
ADDRESS
POST OFFICE: Superior, Wis
ZIP CODE

4. Distance in feet from well to nearest: (Record answer in appropriate blank)

Buildings	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. C.I.	Storm Bldg. Other
30'	—	—	—	25'	—	—	—	—	—	—

Street Sewer: San.	Street Sewer: Storm	Other Sewers: C.I.	Other Sewers: Other	Foundation Drain Connected to: Sewage Sump	Foundation Drain Connected to: Clearwater Sump	Sewage Sump: C.I.	Sewage Sump: Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit	Sewage Absorption Unit: Seepage Bed	Sewage Absorption Unit: Seepage Trench	Manure Hopper Retention or Pneumatic Tank
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well	Pit: Nonconforming Existing: Pump	Pit: Nonconforming Existing: Tank	Subsurface Pumproom: Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yards	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit	Earthen Manure P
—	—	—	—	—	—	—	—	—	—	—	—	—	—

Temporary Manure Stack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Manure Storage Basin	Concrete Floor Only	Concrete Floor and Partial Concrete Walls	Other (Describe)
—	—	—	—	—	—	—	—	None Time of drilling

5. Well is intended to supply water for: Home

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8 3/4	Surface	267			
6	267	270			

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification

Dia. (in.)	Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	New Steel Pipe	Surface	267
	plain end		
	Wall Thick .280		
	Astm 53		

GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Drill Cuttings	Surface	267

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	220
Hard Pan	220	267
Sand stone	267	270

10. TYPE OF DRILLING MACHINE USED
☐ Cable Tool ☒ Rotary w/drilling mud ☐ Rotary w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with Air ☐ water

Well construction completed on 10-4 19 83

11. MISCELLANEOUS DATA
Yield Test: 2 Hrs. at 10 GPM
Depth from surface to normal water level 30' Ft.
Depth of water level when pumping 50' Ft. Stabilized ☒ Yes ☐ No

Well is terminated 12 inches ☒ above ☐ below final grade
Well disinfected upon completion ☒ Yes ☐ No
Well sealed watertight upon completion ☒ Yes ☐ No

Water sample sent to Will be sent at Pump inst. laboratory on 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, streams, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Larry Lind Registered Well Driller

Business Name and Complete Mailing Address: Lind Well Drilling, Maple, Wis

STATE OF WISCONSIN

DEPARTMENT OF RESOURCE DEVELOPMENT

CONSTRUCTOR'S REPORT

Wel

COUNTY	CHECK ONE	NAME
Douglas	☒ Town ☐ Village ☐ City	Superior

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

T 49 N R14W Sec 14 N E Corner of N E Part

OWNER AT TIME OF DRILLING

Donald Soderberg

OWNER'S COMPLETE MAIL ADDRESS

1318 91st Ave W. Duluth Minn.

Distance in feet from well to nearest: (Record answer in appropriate block)	BUILDING	SANITARY SEWER C.I.	SANITARY SEWER TILE	FLOOR DRAIN C.I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C.I.	WASTE WATER DRAIN TILE
	30'	50'		45'			—	45'	

CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
—	100'			125'	—	—	—	—

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

Lake 250'

Well is intended to supply water for: Home

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
	Surface	40	4"	150	305
	40	150'			

CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
	Std 6" New 19.45 P.E ~~20# to ft~~	Surface	150
	Std 4" 10.89 - PE ~~11#~~ to ft.	150	305

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Red Clay	Surface	20
sand & Gravel (dry)	20	40
Clay & silt	40	150
Red Clay	150	290
Hard Pan	290	300
Gravel	300	305

GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Puddled Clay	Surface	40'

Well construction completed on Sept 3 1968

MISCELLANEOUS DATA

Test: 8 Hrs. at 10 GPM

Well is terminated 8 inches ~~above~~ below final grade

From surface to normal water level 50 ft.

Well disinfected upon completion ~~☐ Yes~~ ☐ No

Depth to water level when pumping 60 ft.

Well sealed watertight upon completion ~~☐ Yes~~ ☐ No

Water sample sent to Madison laboratory on: 11/12 1968

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub-surface pumprooms, access pits, etc., should be given on reverse side.

Dept. Nat. Res.

SIGNATURE		COMPLETE MAIL ADDRESS
N H Long	Registered Well Driller	Poplar, Wis.

Please do not write in space below

TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
see letter drillers file	4/18/69			

SW, SW, NE, sec. 14, T49N, R14W DS-4-U

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

County Douglas Town ☐ Village ☐ City ☒ Superior (Check one and give name)

Location 714 N. 8th St Superior Wis (Name of street and number of premise or Section, Town and Range number)

RECEIVED JAN 1955 SANITATION

Owner ☐ or Agent ☐ Victor Nelson (Name of individual, partnership or firm)

Mail Address Superior Wis (Complete address required)

From well to nearest: Building 8 ft; sewer ____ ft; drain 40 ft; septic tank ✓ ft; ____

dry well or filter bed ✓ ft; abandoned well ✓ ft. ____

Well is intended to supply water for: Wash water + Cooling

. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8"	0	140	6"	0	600

CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
8"	Std Blk Pipe	0	140
6"	Std Blk Pipe	0	269
6"	Sandstone	269	600

GROUT:

Kind	From (ft.)	To (ft.)

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay Red	0	25
Sandy Silt	25	70
Clay Red	70	105
Silt	105	130
Clay Red	130	155
Dirty Sandy silt	155	182
Hard pan & small rock	182	269
Sand stone	269	600

Construction of the well was completed on:

March 15 1954

The well is terminated 18 inches

☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ✓ No ____

Was the well sealed watertight upon completion?

Yes ✓ No ____

11. MISCELLANEOUS DATA:

[Yield] test: 35 Hrs. at 20 GPM.

Depth from surface to water-level: 40 ft.

Water-level when pumping: 200 ft.

Water sample was sent to the state laboratory at:

By owner (City) 19____

Signature Madrian Bros (Registered Well Driller) Wentworth Wis (Complete Mail Address)

Please do not write in space below

[illegible] ____	No. ____
[Ans]'d ____	
[Inter]pretation ____	

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ____

MIDWEST ANALYTICAL SERVICES

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

CHAIN OF CUSTODY RECORD
AND
REQUEST FOR ANALYSIS
(Instructions on Back of Form)

№ 21955

LAB (612) 689-217
METRO (612) 444-927
FAX (612) 689-366

CLIENT: Twin Ports Testing
SAMPLER NAME: Irvin Mossberger
PROJECT ID: 286-97E
SAMPLER SIGNATURE: Irvin D Mossberger
REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing
REMARKS: WI samples

SHADED AREAS ONLY

NO. OF CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX: OTHER	SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or cBOD	TSS	FCOL or TCOL	PVOC	PRESERVATIVE: HCl	HNO3	H2SO4	ICE	OTHER
3		X	10/9/97	1125		X		SP-1		9198	X	X									X					
								Trip Blank		9199																

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Irvin D Mossberger	10/10/97 7:05	Timothy A. Bird	Timothy A. Bird		

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED:
☐ NORMAL ☐ RUSH

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Temperature:	Comments:
			10/14 2:5		

AND
REQUEST FOR ANALYSIS
(Instructions on Back of Form)

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

CLIENT: Twin Ports Testing
PROJECT I.D.: 786-97E
REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing, 1301 N. 3rd St. Superior WI 54880

SAMPLER NAME: Irvin Mossberger
SAMPLER SIGNATURE: Irvin M. Mossberger
REMARKS: WI Samples

CONTAINERS	COMP.	GRAB	DATE	TIME	WATER	SOIL	OTHER	SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or CBOD	TSS	Fcol or Tcol	PVOC	HCl	HNO_3	H_2SO_4	ICE	OTHER
		X	10/9/97	9:07		X		R-1 3.5'		21766	X	X									X					
				12:15				R-23 5.5'		21767																
				2:22				R-26 4.0'		21768																
				2:33				R-28 5.0'		21769																
				2:40				R-29 4.0'		21770																
				2:46				R-30 5.0'		21771																
				10:05				R-14 3.75'		21772																
				12:27				R-19 3.5'		21773																
				12:40				R-22 3.5'		21774																
				9:09				R-2 4.5'		21775																
				9:15				R-3 5.0'		21776																
				9:21				R-5 5.0'		21777																
				9:47				R-11 5.5'		21778																
				11:30				R-16 7.5'		21779																
				2:00				R-24 8.0'		21780																

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Irvin M. Mossberger	10/9/97 7:05	Timothy A. Bost	Timothy A. Bost		
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Contents Temperature:	Comments:
		John DellaCounty	10/10/97		

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED: ☐ NORMAL ☐ RUSH

DATE REQUIRED:

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

MIDWEST ANALYTICAL SERVICES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

REC'D NOV 3 1997

October 27, 1997

Irvin Mossberger
Twin Ports Testing
1301 North 3rd Street
Superior, WI 54880

Project ID:	786-97E		
Chain of Custody:	22507/21955		
Date Sampled:	10-09-97		
Date Received:	10-10-97		
Date Analyzed:	10-14-97		
Matrix:	Soil		
Sample Identification:			
Lab ID:	21766	R-1	3.5'
	21767	R-23	5.5'
	21768	R-26	4.0'
	21769	R-28	5.0'
	21770	R-29	4.0'
	21771	R-30	5.0'
	21772	R-14	3.75'
	21773	R-19	3.5'
	21774	R-22	3.5'
	21775	R-2	4.5'
	21776	R-3	5.0'
	21777	R-5	5.0'
	21778	R-11	5.5'
	21779	R-16	7.5'
	21780	R-24	8.0'
	21781	SP-1	
	21782	Trip Blank	

Samples were analyzed for GRO and DRO by the Wisconsin Modified GRO and DRO procedures. The results are reported on the following page.

Sincerely,

Lon Jones 10/28

Lon Jones
Organic/Bio Group Leader

PVOC	MDL (mg/kg)	BASE 21766 R-1 3.5'	SIDEWALL 21767 R-23 5.5'	SIDEWALL 21768 R-26 4.0'	SIDEWALL 21769 R-28 5.0'
MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Toluene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.068	BDL	BDL	BDL
Xylenes (mg/kg)	0.105	BDL	BDL	BDL	BDL
GRO (mg/kg)	10.0	10.8	BDL	31.4	BDL*
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.094	BDL	0.158	0.066
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.068	BDL	0.431	BDL
DRO (mg/kg)	10.0	1365	BDL*	26.5	BDL*
Moisture Content (%)		26.9	28.5	21.4	20.6

PVOC	MDL (mg/kg)	SIDEWALL 21770 R-29 4.0'	SIDEWALL 21771 R-30 5.0'	SIDEWALL 21772 R-14 3.75'	SIDEWALL 21773 R-19 3.5'
MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	0.120	BDL
Toluene (mg/kg)	0.050	BDL	BDL	0.217	0.474
Ethylbenzene (mg/kg)	0.050	0.585	BDL	0.746	0.288
Xylenes (mg/kg)	0.105	0.816	BDL	0.649	1.29
GRO (mg/kg)	10.0	59.3	BDL*	53.6	18.1
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.721	BDL	0.341	0.436
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.639	BDL	0.499	0.663
DRO (mg/kg)	10.0	32.2	BDL*	157	BDL*
Moisture Content (%)		25.6	23.4	22.0	28.4

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

PVOC	MDL (mg/kg)	21774 R-22 3.5' SIDEWALL	21775 R-2 4.5' BASE	21776 R-3 5.0' BASE
MTBE (mg/kg)	0.500	BDL	BDL	BDL
Benzene (mg/kg)	0.050	0.546	BDL	BDL
Toluene (mg/kg)	0.050	0.682	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.084	BDL	BDL
Xylenes (mg/kg)	0.105	0.492	BDL	BDL
GRO (mg/kg)	10.0	BDL	BDL	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.184	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.172	BDL	BDL
DRO (mg/kg)	10.0	79.4	BDL*	BDL*
Moisture Content (%)		24.4	28.0	23.4

PVOC	MDL (mg/kg)	21777 R-5 5.0' BASE	21778 R-11 5.5' BASE	21779 R-16 7.5' BASE
MTBE (mg/kg)	0.500	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	BDL
Toluene (mg/kg)	0.050	0.080	BDL	0.073
Ethylbenzene (mg/kg)	0.050	0.050	BDL	BDL
Xylenes (mg/kg)	0.105	0.382	BDL	BDL
GRO (mg/kg)	10.0	BDL*	BDL	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.311	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.090	BDL	BDL
DRO (mg/kg)	10.0	BDL*	BDL*	BDL*
Moisture Content (%)		25.6	28.9	31.7

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

PVOC	MDL (mg/kg)	21780 R-24 8.0' (BASE)	21781 SP-1 (STOCKPILE)	21782 Trip Blank
MTBE (mg/kg)	0.500	BDL	< 2.50	BDL
Benzene (mg/kg)	0.050	BDL	2.12	BDL
Toluene (mg/kg)	0.050	BDL	11.1	BDL
Ethylbenzene (mg/kg)	0.050	BDL	3.19	BDL
Xylenes (mg/kg)	0.105	BDL	19.1	BDL
GRO (mg/kg)	10.0	BDL*	229	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	BDL	9.87	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	BDL	9.90	BDL
DRO (mg/kg)	10.0	BDL	65.8	BDL
Moisture Content (%)		23.4	25.1	

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

EMISSION CALCULATIONS
CONTAMINATED SOIL EXCAVATED FROM
PIPELINE RELEASE AT
MURPHY OIL USA
SUPERIOR, WISCONSIN

GRO CALCULATION:

SP-1 = 229 ppm for GRO

$$\frac{229 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 198.772 \text{ lbs. of GRO}$$

DRO CALCULATION:

SP-1 = 65.8 ppm for DRO

$$\frac{65.8 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 57.1144 \text{ lbs. of DRO}$$

BENZENE CALCULATION:

SP-1 = 2.12 ppm for benzene

$$\frac{2.12 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 1.84016 \text{ lbs. of benzene}$$

THE SOIL VAPOR READING FOR SOIL SAMPLE SP-1 WAS 175 PPM USING A MODEL 580 OVM EQUIPPED WITH A 10.6 eV LAMP.

PART III - TREATMENT OR DISPOSAL FACILITY INFORMATION

Treatment/Disposal Facility Name & Address: Lakehead Blacktop & Materials 5800 Albany Ave. Superior, WI 54880	Facility ID: 816037640
	Air Pollution Control Permit #: 93-BAB-802
Facility Contact: Bob Patterson	Facility Located in 10-county Area in Southeast Wisconsin: No
Telephone #: (715) 392-3844	Distance to Nearest Residence or Business: ~5,000 ft
Headquarter Address: 6327 Tower Ave, Superior, WI 54880	Portable Sources Only: Has a Portable Source Relocation Notification (Form 4500-25) Been Submitted for this Location: ☐ YES ☐ NO N/A

PART III - SOIL VACUUM EXTRACTION OR GROUNDWATER REMEDIATION

Site Contact & Telephone #:	Proposed Operations (Attach Calculations)
Is Site Located in the 10-county Area in Southeastern WI	Anticipated Start-Up Date:
Distance to Nearest Residence or Business:	Estimated Project Duration:
Pilot Test/Soil Venting Only	# of Wells:
(Attach Lab Reports and Calculations)	# of Emission Points:
Date of Test:	Stack Height:
Flow Rate (scfm):	Maximum Equipment Flow Rate (scfm or gpm):
Total Withdrawal of Air (scf):	Total VOC Emission Rate (lb/hr):
Total VOC Emission Rate (lb/hr):	Benzene Emission Rate (lb/hr):
Benzene Emission Rate (lb/hr):	Benzene Emission Rate (lb/yr):

PART III - OTHER REMEDIATION METHODS

Proposing Other Remediation Method: ☐ YES Method Name: _____

Attach a project description for other remediation methods including landspreading, passive aeration and bioremediation. At a minimum, the information submitted should include the following items (with any supporting lab reports and calculations):

✓ Address/Location of Remediation Site - Indicate if this location is in the 10-county area in Southeast Wisconsin and the distance to the nearest residence or business. Include a map or site plan if appropriate.
✓ Description of Remediation Method
✓ Project Contact & Telephone #
✓ Anticipated Start-Up and Estimated Project Duration
✓ Highest Estimated Hourly VOC Emissions
✓ Highest Estimated Hourly and Annual Benzene Emissions
✓ Emission Testing Methodology
✓ Final Destination of Soil

Department of Natural Resources

PETROLEUM CONTAMINATED SOIL & WATER

Rev.

This form is required by the Department of Natural Resources (DNR) to ensure that the remediation of petroleum contaminated soil and water ... compliance with NR 500-540, NR 158, NR 419 and NR 445, Wis. Adm. Code. Failure to comply with applicable statutes and administrative rules may ... to violations of subchapters III and IV of Ch. 144, Wis. Stats. and may result in forfeitures of not less than $10 or more than $25,000 for each violat... pursuant to ss. 144.426(1), 144.74(1), 144.99, Wis. Stats., or fines of not less than $100 or more than $150,000 or imprisonment for not more than 10 ye... or both, pursuant to s. 144.74(2), Wis. Stats. Each day of a continuing violation constitutes a separate violation. Except for the remediation of vir... petroleum spills, this form needs to be submitted to the DNR 10 business days prior to the commencement of the remediation.

DIRECTIONS: 1) Complete both sides of the form. 2) Have the responsible party sign the form. This signature certifies that the information on t... form and in all supporting documents is accurate. 3) Submit the form with supporting documentation, lab reports and any maps to the appropriate Dis... Air Management Program at least 10 business days prior to the commencement of remediation. 4) Submit a copy of this form to the DNR project mana... and retain a copy for your records.

PART I - GENERAL INFORMATION

Site Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	Date of Form Completion: 11/3/97
Site #: Propane Area	Do Other Remediation Systems Exist at This Site? ☐ YES ☐ NO
County: Douglas	Site Type: ☐ LUST ☒ ERP ☐ CERCLA ☐ Other, Explain:
Responsible Party Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	Responsible Party Signature: Irvin Mossberger for Bill Gustafson Telephone #: (715) 398-8217
Consulting Firm Name & Address: Twin Ports Testing Inc. 1301 N. 3rd St. Superior, WI 54880	Consulting Firm Contact: Irvin Mossberger Telephone #: (715) 392-7114

PART II - SOIL AND WATER DATA (Attach Lab Reports and Calculations)

Type of Contamination: ☒ Gasoline ☒ Diesel ☐ Fuel Oil ☐ Waste Oil ☐ Chlorinated Organics ☐ Other: ______

Soil Concentration:

GRO:	229	mg/kg/10⁶	x 2,800 lb/yd³	x	310	yd³	= 198,772	lb
DRO:	65.8	mg/kg/10⁶	x 2,800 lb/yd³	x	310	yd³	= 57.114	lb
Benzene:	2.12	mg/kg/10⁶	x 2,800 lb/yd³	x	310	yd³	= 1.84016	lb
Chlorinated Organics:	______	mg/kg/10⁶	x 2,800 lb/yd³	x	______	yd³	= ______	lb
Other:	______	mg/kg/10⁶	x 2,800 lb/yd³	x	______	yd³	= ______	lb

Benzene = 2.12 x 2800 X 310 yds = 1.8402 Lbs
1,000,000 = Lbs - 99.90 Factor w/Attachment 0.0184 Lbs

Water Concentration: GRO: ______ mg/L DRO: ______ mg/L Benzene: ______ mg/L

Chlorinated Organics: ______ mg/L Other: ______ mg/L

APPENDIX C

COPY OF AUGUST 10, 1998, SECOND REQUEST FOR CLOSURE

eder associates
a division of Gannett Fleming

GANNETT FLEMING, INC.
8025 Excelsior Drive
Madison, WI 53717-1900
Office: (608) 836-1500
Fax: (608) 831-3337

August 10, 1998
File #34265.004 / 367-18.4

Mr. James A. Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

Re: Murphy Oil USA, Inc.
Second Request for Closure
Pipeline Release Site

Dear Mr. Hosch:

This letter responds to your April 20, 1998, letter to Mr. Mark Miller of Murphy Oil USA, Inc., which in turn responded to his March 2, 1998, request for closure (under NR 726.07 and pursuant to meeting the "no further response" criteria under NR 708.09) of the gasoline and diesel fuel products release from an underground pipeline at Murphy's Superior, Wisconsin, refinery. Figure 1 is a site map showing the refinery and the general location of the pipeline release site. In your letter, you stated that before closure of this site can be further considered, additional information was required.

At the June 29th meeting in Madison attended by you, other Wisconsin Department of Natural Resources (WDNR) representatives, Murphy representatives, and myself, we discussed the March 2, 1998, request for closure for the pipeline release site and your subsequent request for additional work. During our discussion, Murphy representatives explained that they had installed sheet piling, just south of the railroad tracks that run along the north side of the pipeline, to allow soil to be excavated, while at the same time maintaining the structural integrity of the adjacent railroad tracks. Additional soil could not be removed from this side of the excavation without removing the railroad tracks, which are vital to Murphy's refining operations. Excavating soils from under the railroad tracks is not practicable, nor does Murphy believe it is justified from an environmental protection standpoint, based on the presence of continuous red clay and the low concentrations of gasoline range organics (GRO), diesel range organics (DRO), and petroleum volatile organic compounds (PVOCs) measured in the samples that were analyzed by a laboratory.

At the June 29th meeting, you and other WDNR staff appeared to concur that removing additional soils from along the north side of the former excavation is not practicable or necessary, given the location of the adjacent railroad track, the low permeability of the native red clay in the areas excavated, and the low levels of GRO, DRO, and PVOCs remaining in the soil.

However, you did indicate in the meeting that further work near the location of sample R-1 would be required because the area is accessible. Based on that request, Twin Ports Testing directed the excavation of about 20 cubic yards of additional soils from this area on July 6, 1998. During the

Continued . . .

excavation, soil samples were collected for field-screening to guide the extent of the excavation. The area excavated is shown on Figure 2, and a cross sectional view of the area is shown on Figure 3. The field-screening results are listed in Table 1. As you can see from the field-screening results, elevated organic vapor levels were measured in the samples collected to a depth of 6 feet, the depth at which native clay soils were encountered. After that point, the organic vapor concentrations declined significantly. To confirm that the contaminated soil around R-1 had been excavated, samples were collected from the base of the final excavation at 7.5 feet below grade and laboratory-analyzed for DRO, GRO, and PVOCs. Those samples, designated as R-40 and R-40A, did not contain any petroleum-related compounds above method detection limits. The results are shown in Table 2.

A sample of the soil excavated on July 6, 1998, was also submitted for laboratory analysis. The results for this sample, SP-2, are also shown in Table 2. This soil is currently stockpiled next to the pipeline and covered with plastic. Murphy is making arrangements to have the soil thermally treated at Lakehead Blacktop. Documentation that the soil has been treated will be sent to you directly by Bill Gustafson of Murphy.

The laboratory reports and chain of custody records for samples R-40 R-40A, and SP-2 are enclosed as Attachment A.

We trust that the information provided in this letter will be sufficient for the WDNR to issue a closure letter for this site. If you have any questions, please call.

Sincerely,

Eder Associates, a Division of Gannett Fleming, Inc.

Dennis F. Kugle
Vice President

DFK/jec/Enc.

cc: Fred Green (Murphy/El Dorado)
Kevin Melnyk (Murphy/El Dorado)
Lee Vail (Murphy/El Dorado)
Jim Kowitz (Murphy/Superior)
Rick Lewandowski (DeWitt Ross & Stevens)
Mick Michaelson (WDNR/Spooner)
Linda Meyer (WDNR/Madison - LS/5)
Stan Druckenmiller (WDNR/Madison - AD/5)
Mark Stokstad (WDNR/Rhinelander)
Mark Giesfeldt (WDNR/Madison - RR/3)

MURPHY OIL USA, INC.

SUPERIOR, WISCONSIN

TABLE 1

FIELD-SCREENING (PID) RESULTS FOR

PIPELINE RELEASE SOIL SAMPLES (JULY 6, 1998, EXCAVATION)

Sample ID	Depth Below Ground Surface (ft)	Soil Type	Relative Moisture	PID Reading (ppm)
R-31	3.5	Clay (fractured, possible fill)	M	350
R-32	4.5	Clay (fractured, possible fill)	M	380
R-33	5.5	Clay (fractured, possible fill)	M	98
R-34	6.5	Clay (fractured, possible fill)	M	512
R-35	3.0	Clay (fractured, possible fill)	M	8.9
R-36	4.0	Clay (fractured, possible fill)	M	60
R-37	5.0	Clay (fractured, possible fill)	M	476
R-38	6.0	Clay, little sand	M	81
R-39	7.0	Clay (massive, native)	M	3.5
R-40 (L)	7.5	Clay (massive, native)	M	1.7
SP-2 (L)	NA	Clay	M	138

NOTES:

Field screening conducted by Twin Ports Testing of Superior.

PID = Photoionization detector

ppm = Parts per million

M = Moist

L = Sample sent to laboratory for chemical analysis

SP = Stockpile

NA = Not applicable

Soil from sample ID locations R-31 through R-39 excavated and stockpiled.

MURPHY OIL USA, INC.

SUPERIOR, WISCONSIN

TABLE 2

ANALYTICAL RESULTS FOR PIPELINE RELEASE

SOIL SAMPLES (JULY 6, 1998, EXCAVATION)

Parameter	Results (mg/kg)		NR 720 RCL (mg/kg)
	R-40 and R-40A Closure Samples at 7.5' Below Ground Surface	SP-2 Excavated Soil Stockpile Sample	
DRO	<10.0	65	250
GRO	<3.4	124	250
Benzene	<0.025	1.05	0.0055
Ethylbenzene	<0.025	1.79	2.90
Toluene	<0.025	6.54	1.50
Xylenes	<0.025	12.5	4.10
1,2,4-TMB	<0.025	6.49	NS
1,3,5-TMB	<0.025	2.41	NS
MTBE	<0.025	0.792	NS

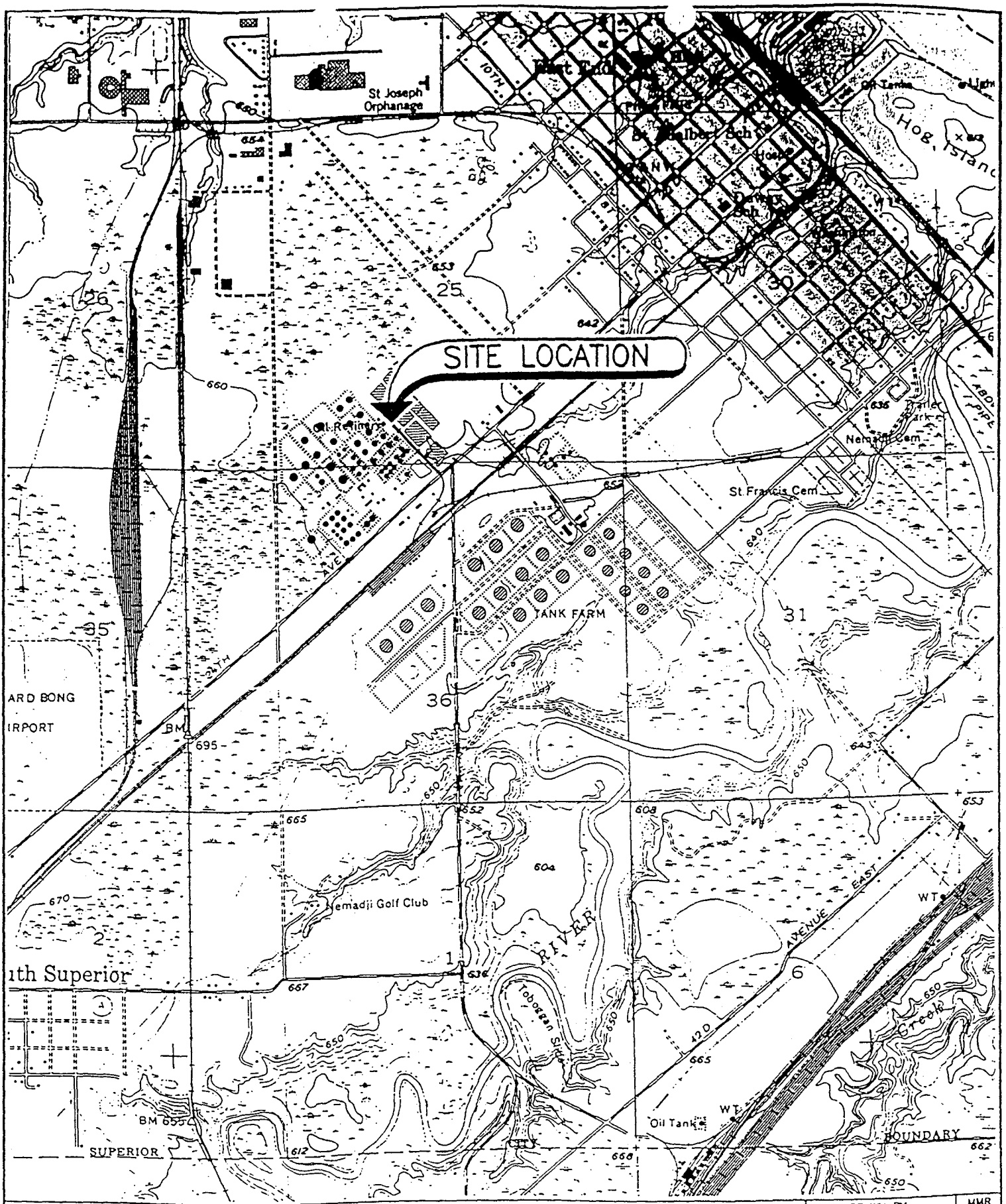
NOTES:

Soil samples collected by Twin Ports Testing of Superior.

R-40 sample for DRO analysis and the SP-2 sample were collected on July 6, 1998, and analyzed by Midwest Analytical Services.

R-40A sample for all other analyses collected on July 31, 1998, and analyzed by EnChem.

NS = No standard.

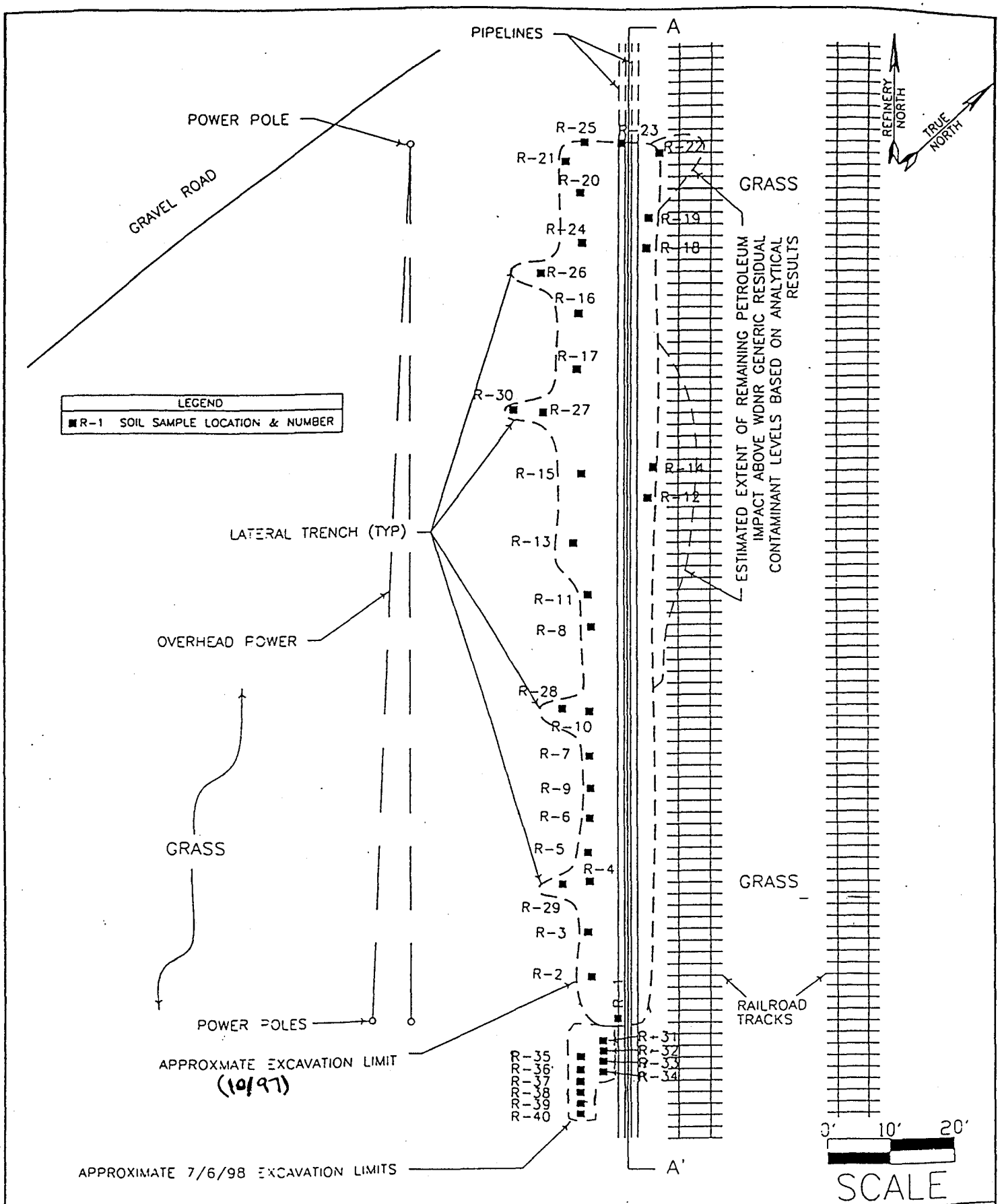


Twin Ports Testing

SITE LOCATION MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	1

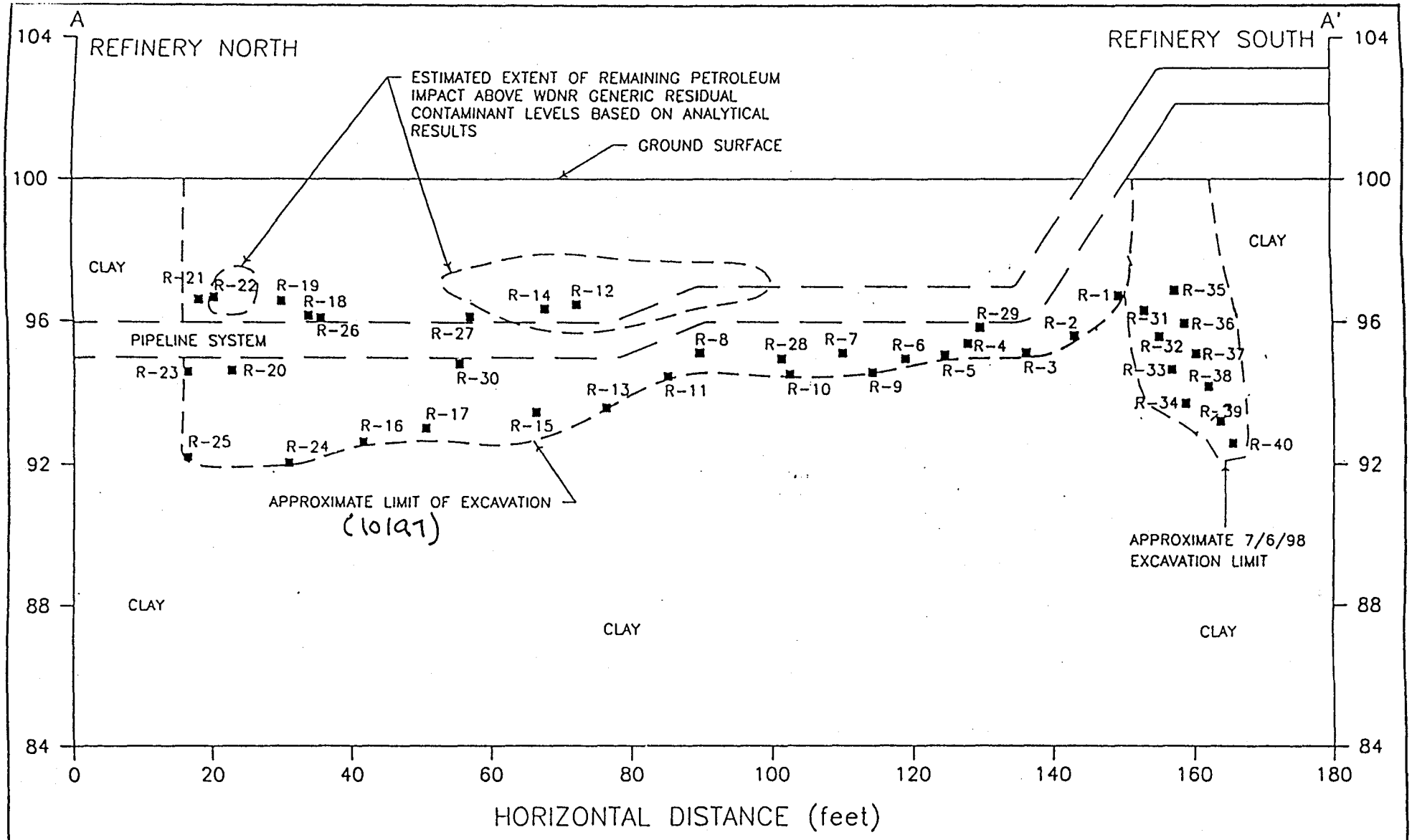


Twin Ports Testing

SITE MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	PJB
CHECKED BY	ICM
APPR BY	BEM
DATE	7/98
TPT NO.	786-97E



LEGEND
■R-1 SOIL SAMPLE LOCATION & NUMBER

Twin Ports Testing

CROSS SECTION

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	PJB
CHECKED BY	IGM
APPR BY	BEM
DATE	7/98
TPT NO.	786-97E
FIGURE	3

ATTACHMENT A

LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS FOR SOIL SAMPLES R-40, R-40A, AND SP-2

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008
LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

MIDWEST ANALYTICAL SERVICES

LAKE SUPERIOR LABORATORIES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

205 WEST 2ND STREET
SUITE 105
DULUTH, MN 55802
LAB (218) 722-9884
FAX (218) 722-9964

Analytical Report

July 16, 1998

Irvin Mossberger
Twin Ports Testing
1301 North 3rd Street
Superior, WI 54880

Chain of Custody

Project ID: 786-97E
Chain of Custody: 23638
Date Received: 7/7/98 1:27:08 PM by Shelly Manke

Sample Information

SampleID	Description	Date	Matrix
31340	R-40 7.5'	7/6/98	Soil
31341	SP-2	7/6/98	Soil
31342	Field Blank	7/6/98	Other

Analytical results are listed on the following page(s).

Reviewed By

Scott Dawson
Organic Chemist

Date Analyzed: 07-13-98

PVOC	MDL	31340 R-40 7.5'	31341 SP-2	31342 Field Blank
MTBE (mg/kg)	0.008		0.792	BDL
Benzene (mg/kg)	0.013		1.05	BDL
Toluene (mg/kg)	0.010		6.54	BDL
Ethylbenzene (mg/kg)	0.010		1.79	BDL
Xylenes (mg/kg)	0.022		12.5	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.018		6.49	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.005		2.41	BDL
Total Hydrocarbons as GRO (mg/kg)	10.0		124	BDL
Total Hydrocarbons as DRO (mg/kg)	10.0	BDL	65	
Moisture Content (%)		22.6	20.9	

BDL = Below Detection Limit

MIDWEST ANALYTICAL SERVICES

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

CHAIN OF CUSTODY RECORD
AND
REQUEST FOR ANALYSIS
(Instructions on Back of Form)

23638

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

CLIENT: Twin Ports Testing
SAMPLER NAME: Irvin Mossberger
PROJECT I.D.: 786-97E
SAMPLER SIGNATURE: Irvin D. Mossberger
REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing, 1301 N. 3rd St. Superior, WI 54880
REMARKS: WI Samples

NO. OF CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	SOIL	OTHER	SAMPLE IDENTIFICATION: SAMPLE	SAMPLE NO.	LABORATORY USE ONLY	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or CBOD	TSS	FCOL or TCOL	PRESERVATIVE: HCl	HNO3	H2SO4	ICE	OTHER
2		X	7/6/98	9:14		X		R-40 7.5'				X												X	
3		X	7/6/98	9:40		X		SP-2			X	X												X	X
1								Field Blank			X														

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Irvin D. Mossberger	7/6/98				

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED:
☒ NORMAL ☐ RUSH
DATE REQUIRED: 5 days

Comments:

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

ENCHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :

Project Number : 786-98E

Client: TWIN PORTS TESTING

WI DNR LAB ID : 816079330

Report Date : 8/4/98

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
780311-001	R-40A	7/31/98			
780311-002	FIELD BLANK	7/31/98			

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this final report is authorized by Laboratory management, as is verified by the following signature.

Thomas P. Gauthier 8-4-98

Approval Signature Date

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

ENCHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :
Project Number : 786-98E
Field ID : R-40A
Lab Sample Number : 780311-001
WI DNR LAB ID : 816079330

Client : TWIN PORTS TESTING
Report Date : 8/4/98
Collection Date : 7/31/98
Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Solids, percent	74.0				%		8/3/98	SM2540G	SM2540G	DJB

Organic Results

GASOLINE RANGE ORGANICS - SOIL/METHANOL Prep Method: Wi Mod GRO Prep Date: 8/3/98 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	< 3.4			3.4	mg/kg		8/4/98	WI Mod GRO
Blank Spike	100				%Recov		8/4/98	WI Mod GRO
Blank Spike Duplicate	100				%Recov		8/4/98	WI Mod GRO
GRO blank	< 2.5			2.5	mg/kg		8/4/98	WI Mod GRO

Organic Results

PVOC - METHANOL PRESERVED SOIL Prep Method: SW846 5030B Prep Date: 8/3/98 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	104				%Recov		8/4/98	MOD 8021B
Benzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Ethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Toluene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Xylenes, -m, -p	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Xylene, -o	< 25	25	60		ug/kg		8/4/98	MOD 8021B

All soil results are reported on a dry weight basis unless otherwise noted.

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

ENCHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :

Project Number : 786-98E
Client : TWIN PORTS TESTING

Field ID : FIELD BLANK
Report Date : 8/4/98

Lab Sample Number : 780311-002
Collection Date : 7/31/98

WI DNR LAB ID : 816079330
Matrix Type : METHANOL

Organic Results

PVOC - METHANOL — Prep Method: SW846 5030B — Prep Date: 8/3/98 — Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	105				%Recov		8/3/98	MOD 8021B
Benzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Ethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Toluene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Xylenes, -m, -p	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Xylene, -o	< 25	25	60		ug/kg		8/3/98	MOD 8021B

Company Name: Twin Ports Oil

Branch or Location: Superior, WI

Project Contact: Irvin Mossberg

Telephone: 392-7114

Project Number: 786-98E

Project Name:

Project Location: Wisconsin

Sampled By (Print): Irvin G. Mossberg

Regulatory Program *(circle)*: (UST) RCRA CLP SDWA

NPDES/WPDES CAA NR_____ Other_____

EN CHEM INC. 2 Day

☐ 1241 Bellevue St., Suite 9
Green Bay, WI 54302
414-469-2436 • 1-800-736-2436
FAX 414-469-8827

☒ 2231 Catlin Ave., Suite 420
Superior, WI 54880
715-392-5844 • 1-800-837-8238
FAX 715-392-5843

CHAIN OF CUSTODY

NR720 Confirmation Analysis Required? Y

(En Chem will confirm unless otherwise instructed.)

Mail Report To: Irvin Mossberg

Company: TPT

Address: 1301 N. 3rd St
Superior WI 54880

Invoice To: Same

Company:

Address:

P.O. No.: Quote No.:

Field ID	Sample Description	Collection Date	Collection Time	Field Screen	Matrix	Filt'd Y/N	Preserv*	Analysis Requested	SHADED AREA FOR LABORATORY USE ONLY: Good Cond.	Total Bottles	Comments	Laboratory Number
R-40A		7/31/98	3:57	0	Soil	N	F	GRO/PVOC Quick turn				-001
Field Blank		7/31/98	3:50	—	MeOH	N	F	PVOC				-002

*Preservation Code
A=None B=HCL C=H2SO4
D=HN03 E=EnCore F=Methanol**
G=NaOH O=Other (Indicate)

**If not using En Chem's methanol, indicate volume of methanol added and mark the appropriate samples.

Relinquished By:	Date/Time:	Received By:	En Chem Project No.
[signature]	7/31/98 5:26		780311
Relinquished By:	Date/Time:	Received By:	Sample Receipt Temp. *(Must be rec'd at 4°C)*
Relinquished By:	Date/Time:	Received By (En Chem): [signature] 7-31-98 5:26	RQI

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: August 14, 1998 FILE REF:

TO: Murphy Oil Refinery File - October 97 Pipeline Release

FROM: James A. Hosch

SUBJECT: Phone call 8/14/98 w/Dennis Kugle

Hosch called Kugle regarding closure submittal. Hosch stated that he would submit site to closure committee provided that Murphy submitted a map where the spill was in relation to the rest of the refinery. In addition, Hosch requested a decision from Murphy on whether they would like a deed affidavit or similar, or if they would like to wait until a site specific residual contaminant level was calculated.

eder associates
a division of Gannett Fleming

GANNETT FLEMING, INC.
8025 Excelsior Drive
Madison, WI 53717-1900
Office: (608) 836-1500
Fax: (608) 831-3337

August 10, 1998
File #34265.004 / 367-18.4

Mr. James A. Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

Re: Murphy Oil USA, Inc.
Second Request for Closure
Pipeline Release Site

Dear Mr. Hosch:

This letter responds to your April 20, 1998, letter to Mr. Mark Miller of Murphy Oil USA, Inc., which in turn responded to his March 2, 1998, request for closure (under NR 726.07 and pursuant to meeting the "no further response" criteria under NR 708.09) of the gasoline and diesel fuel products release from an underground pipeline at Murphy's Superior, Wisconsin, refinery. Figure 1 is a site map showing the refinery and the general location of the pipeline release site. In your letter, you stated that before closure of this site can be further considered, additional information was required.

At the June 29th meeting in Madison attended by you, other Wisconsin Department of Natural Resources (WDNR) representatives, Murphy representatives, and myself, we discussed the March 2, 1998, request for closure for the pipeline release site and your subsequent request for additional work. During our discussion, Murphy representatives explained that they had installed sheet piling, just south of the railroad tracks that run along the north side of the pipeline, to allow soil to be excavated, while at the same time maintaining the structural integrity of the adjacent railroad tracks. Additional soil could not be removed from this side of the excavation without removing the railroad tracks, which are vital to Murphy's refining operations. Excavating soils from under the railroad tracks is not practicable, nor does Murphy believe it is justified from an environmental protection standpoint, based on the presence of continuous red clay and the low concentrations of gasoline range organics (GRO), diesel range organics (DRO), and petroleum volatile organic compounds (PVOCs) measured in the samples that were analyzed by a laboratory.

At the June 29th meeting, you and other WDNR staff appeared to concur that removing additional soils from along the north side of the former excavation is not practicable or necessary, given the location of the adjacent railroad track, the low permeability of the native red clay in the areas excavated, and the low levels of GRO, DRO, and PVOCs remaining in the soil.

However, you did indicate in the meeting that further work near the location of sample R-1 would be required because the area is accessible. Based on that request, Twin Ports Testing directed the excavation of about 20 cubic yards of additional soils from this area on July 6, 1998. During the

Continued . . .

excavation, soil samples were collected for field-screening to guide the extent of the excavation. The area excavated is shown on Figure 2, and a cross sectional view of the area is shown on Figure 3. The field-screening results are listed in Table 1. As you can see from the field-screening results, elevated organic vapor levels were measured in the samples collected to a depth of 6 feet, the depth at which native clay soils were encountered. After that point, the organic vapor concentrations declined significantly. To confirm that the contaminated soil around R-1 had been excavated, samples were collected from the base of the final excavation at 7.5 feet below grade and laboratory-analyzed for DRO, GRO, and PVOCs. Those samples, designated as R-40 and R-40A, did not contain any petroleum-related compounds above method detection limits. The results are shown in Table 2.

A sample of the soil excavated on July 6, 1998, was also submitted for laboratory analysis. The results for this sample, SP-2, are also shown in Table 2. This soil is currently stockpiled next to the pipeline and covered with plastic. Murphy is making arrangements to have the soil thermally treated at Lakehead Blacktop. Documentation that the soil has been treated will be sent to you directly by Bill Gustafson of Murphy.

The laboratory reports and chain of custody records for samples R-40 R-40A, and SP-2 are enclosed as Attachment A.

We trust that the information provided in this letter will be sufficient for the WDNR to issue a closure letter for this site. If you have any questions, please call.

Sincerely,

Eder Associates, a Division of Gannett Fleming, Inc.

Dennis F. Kugle
Vice President

DFK/jec/Enc.

cc: Fred Green (Murphy/El Dorado)
Kevin Melnyk (Murphy/El Dorado)
Lee Vail (Murphy/El Dorado)
Jim Kowitz (Murphy/Superior)
Rick Lewandowski (DeWitt Ross & Stevens)
Mick Michaelson (WDNR/Spooner)
Linda Meyer (WDNR/Madison - LS/5)
Stan Druckenmiller (WDNR/Madison - AD/5)
Mark Stokstad (WDNR/Rhinelander)
Mark Giesfeldt (WDNR/Madison - RR/3)

MURPHY OIL USA, INC.

SUPERIOR, WISCONSIN

TABLE 1

FIELD-SCREENING (PID) RESULTS FOR

PIPELINE RELEASE SOIL SAMPLES (JULY 6, 1998, EXCAVATION)

Sample ID	Depth Below Ground Surface (ft)	Soil Type	Relative Moisture	PID Reading (ppm)
R-31	3.5	Clay (fractured, possible fill)	M	350
R-32	4.5	Clay (fractured, possible fill)	M	380
R-33	5.5	Clay (fractured, possible fill)	M	98
R-34	6.5	Clay (fractured, possible fill)	M	512
R-35	3.0	Clay (fractured, possible fill)	M	8.9
R-36	4.0	Clay (fractured, possible fill)	M	60
R-37	5.0	Clay (fractured, possible fill)	M	476
R-38	6.0	Clay, little sand	M	81
R-39	7.0	Clay (massive, native)	M	3.5
R-40 (L)	7.5	Clay (massive, native)	M	1.7
SP-2 (L)	NA	Clay	M	138

NOTES:
Field screening conducted by Twin Ports Testing of Superior.
PID = Photoionization detector
ppm = Parts per million
M = Moist
L = Sample sent to laboratory for chemical analysis
SP = Stockpile
NA = Not applicable
Soil from sample ID locations R-31 through R-39 excavated and stockpiled.

MURPHY OIL USA, INC.

SUPERIOR, WISCONSIN

TABLE 2

ANALYTICAL RESULTS FOR PIPELINE RELEASE

SOIL SAMPLES (JULY 6, 1998, EXCAVATION)

Parameter	Results (mg/kg)		NR 720 RCL (mg/kg)
	R-40 and R-40A Closure Samples at 7.5' Below Ground Surface	SP-2 Excavated Soil Stockpile Sample	
DRO	<10.0	65	250
GRO	<3.4	124	250
Benzene	<0.025	1.05	0.0055
Ethylbenzene	<0.025	1.79	2.90
Toluene	<0.025	6.54	1.50
Xylenes	<0.025	12.5	4.10
1,2,4-TMB	<0.025	6.49	NS
1,3,5-TMB	<0.025	2.41	NS
MTBE	<0.025	0.792	NS

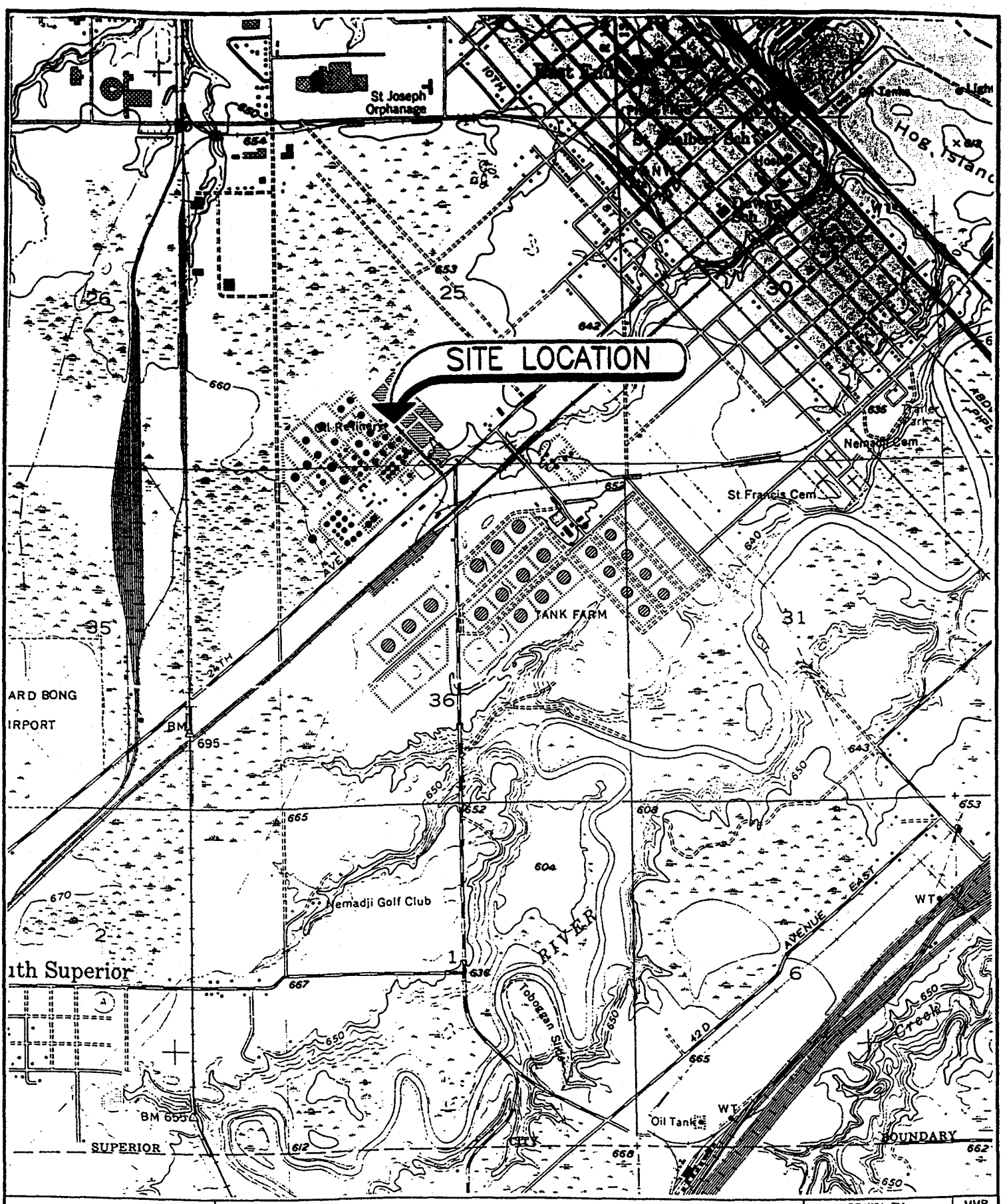
NOTES:

Soil samples collected by Twin Ports Testing of Superior.

R-40 sample for DRO analysis and the SP-2 sample were collected on July 6, 1998, and analyzed by Midwest Analytical Services.

R-40A sample for all other analyses collected on July 31, 1998, and analyzed by EnChem.

NS = No standard.

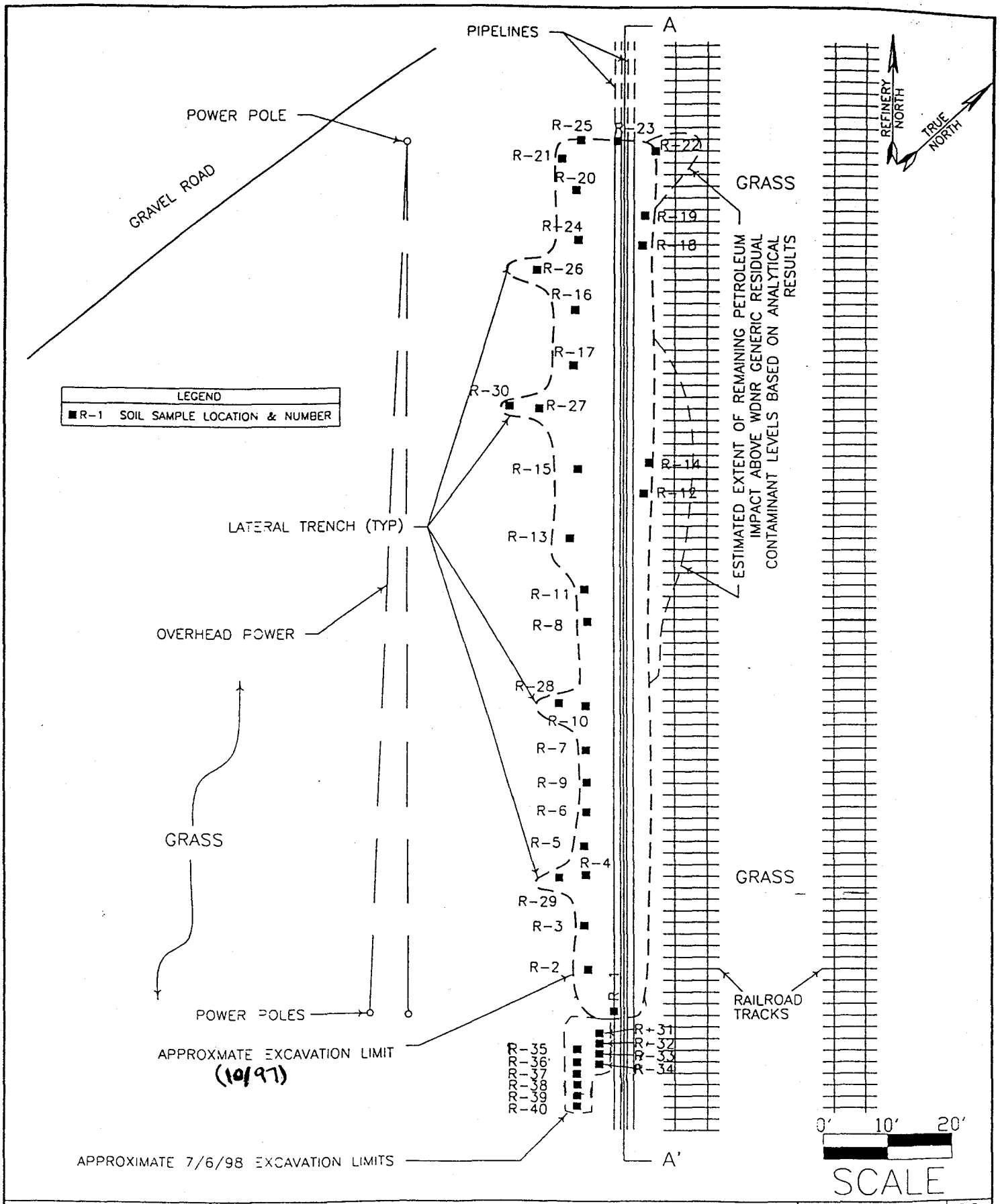


Twin Ports Testing

SITE LOCATION MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	MMR
CHECKED BY	IGM
APPR BY	BEM
DATE	12/97
TPT NO.	786-97E
FIGURE	1



Twin Ports Testing

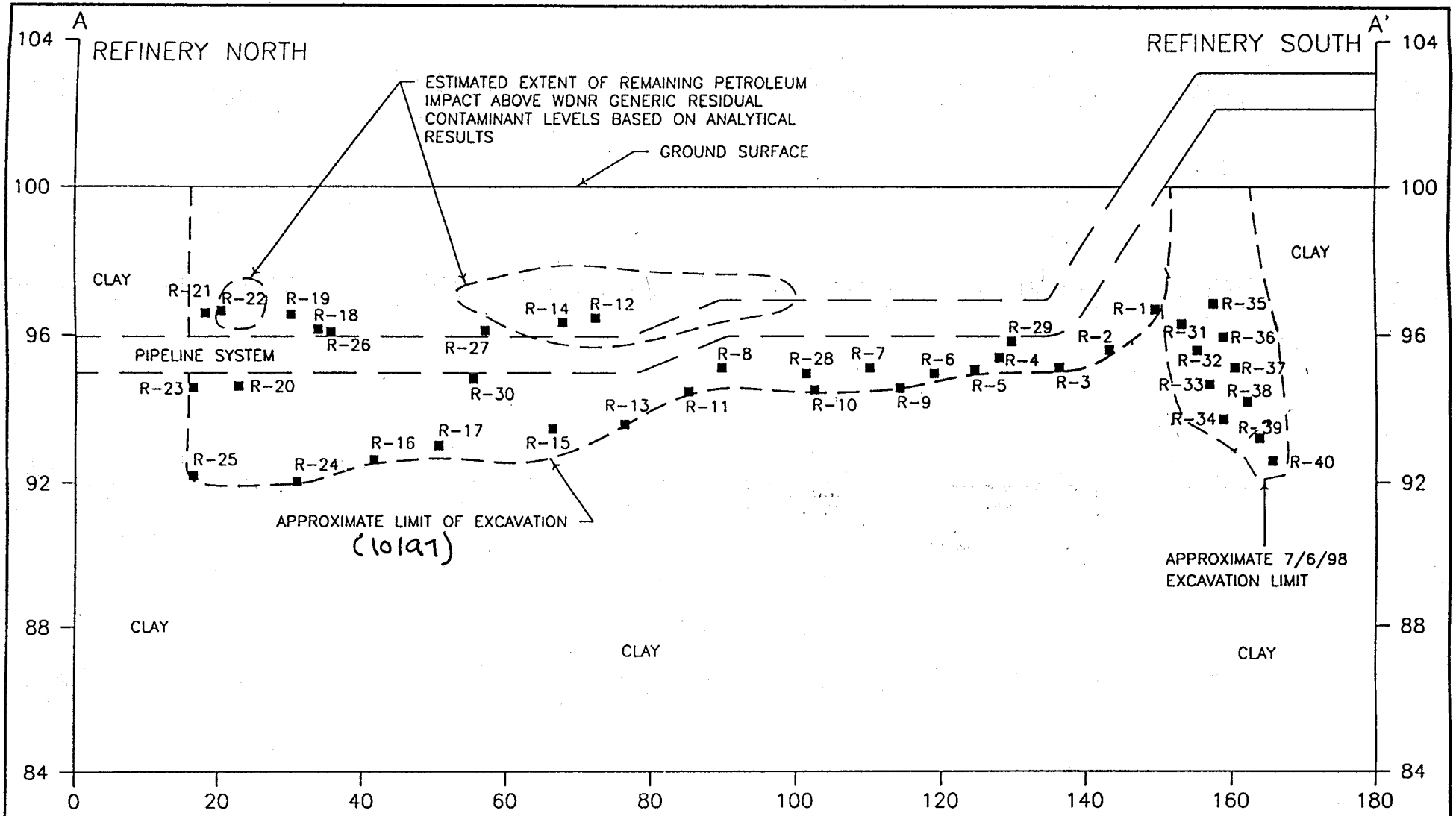
FILE SITER12.DWG

SITE MAP

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	PJB
CHECKED BY	IGM
APPR BY	BEM
DATE	7/98
TPT NO.	786-97E

FIGURE 2



LEGEND	
■R-1	SOIL SAMPLE LOCATION & NUMBER

Twin Ports Testing

CROSS SECTION

MURPHY OIL PIPELINE RELEASE
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

DRAWN BY	PJB
CHECKED BY	IGM
APPR BY	BEM
DATE	7/98
TPT NO.	786-97E
FIGURE	3

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008
LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

MIDWEST ANALYTICAL SERVICES

LAKE SUPERIOR LABORATORIES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

205 WEST 2ND STREET
SUITE 105
DULUTH, MN 55802
LAB (218) 722-9884
FAX (218) 722-9964

Analytical Report

July 16, 1998

Irvin Mossberger
Twin Ports Testing
1301 North 3rd Street
Superior, WI 54880

Chain of Custody

Project ID: 786-97E
Chain of Custody: 23638
Date Received: 7/7/98 1:27:08 PM by Shelly Manke

Sample Information

SampleID	Description	Date	Matrix
31340	R-40 7.5'	7/6/98	Soil
31341	SP-2	7/6/98	Soil
31342	Field Blank	7/6/98	Other

Analytical results are listed on the following page(s).

Reviewed By

Scott Dawson
Organic Chemist

Date Analyzed: 07-13-98

PVOC	MDL	31340 R-40 7.5'	31341 SP-2	31342 Field Blank
MTBE (mg/kg)	0.008		0.792	BDL
Benzene (mg/kg)	0.013		1.05	BDL
Toluene (mg/kg)	0.010		6.54	BDL
Ethylbenzene (mg/kg)	0.010		1.79	BDL
Xylenes (mg/kg)	0.022		12.5	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.018		6.49	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.005		2.41	BDL
Total Hydrocarbons as GRO (mg/kg)	10.0		124	BDL
Total Hydrocarbons as DRO (mg/kg)	10.0	BDL	65	
Moisture Content (%)		22.6	20.9	

BDL = Below Detection Limit

MIDWEST ANALYTICAL SERVICES

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

CHAIN OF CUSTODY RECORD
AND
REQUEST FOR ANALYSIS
(Instructions on Back of Form)

№ 23638

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

CLIENT: Twin Ports Testing
SAMPLER NAME: Irvin Mossberger
PROJECT I.D.: 786-97E
SAMPLER SIGNATURE: Irvin D. Mossberger
REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing, 1301 N. 3rd St. Superior, WI 54880
REMARKS: WI Samples

NO. OF CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	SOIL	OTHER	SAMPLE IDENTIFICATION: SAMPLE	SAMPLE NO.	PRESERVED	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or CBOD	TSS	FCOL or TCOL							PRESERVATIVE: HCl	HNO3	H2SO4	ICE	OTHER
2		X	7/16/98	9:14		X		R-40 7.5'				X																	X	
3		X	7/16/98	9:40		X		SP-2			X	X																	X	X
1								Field Blank			X																				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Irvin D. Mossberger	7/16/98				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time			Comments:	

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED:
☒ NORMAL ☐ RUSH
DATE REQUIRED: 10 wks

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

EN CHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :

Project Number : 786-98E

WI DNR LAB ID : 816079330

Client: TWIN PORTS TESTING

Report Date : 8/4/98

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
780311-001	R-40A	7/31/98			
780311-002	FIELD BLANK	7/31/98			

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this final report is authorized by Laboratory management, as is verified by the following signature.

Thomas P. Marthel — 8-4-98

Approval Signature — Date

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

ENCHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :
Project Number : 786-98E
Field ID : R-40A
Lab Sample Number : 780311-001
WI DNR LAB ID : 816079330

Client : TWIN PORTS TESTING
Report Date : 8/4/98
Collection Date : 7/31/98
Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analyst
Solids, percent	74.0				%		8/3/98	SM2540G	SM2540G	DJB

Organic Results

GASOLINE RANGE ORGANICS - SOIL/METHANOL Prep Method: Wi Mod GRO Prep Date: 8/3/98 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
Gasoline Range Organics	< 3.4			3.4	mg/kg		8/4/98	WI Mod GRO
Blank Spike	100				%Recov		8/4/98	WI Mod GRO
Blank Spike Duplicate	100				%Recov		8/4/98	WI Mod GRO
GRO blank	< 2.5			2.5	mg/kg		8/4/98	WI Mod GRO

Organic Results

PVOC - METHANOL PRESERVED SOIL Prep Method: SW846 5030B Prep Date: 8/3/98 Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	104				%Recov		8/4/98	MOD 8021B
Benzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Ethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Toluene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Xylenes, -m, -p	< 25	25	60		ug/kg		8/4/98	MOD 8021B
Xylene, -o	< 25	25	60		ug/kg		8/4/98	MOD 8021B

All soil results are reported on a dry weight basis unless otherwise noted.

Superior Laboratory
1423 N. 8th Street, Suite 122
Superior, WI 54880
715-392-5844 • Fax: 715-392-5843
1-800-837-8238

ENCHEM INC.

Corporate Office & Laboratory
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436 • Fax: 920-469-8827
1-800-7-ENCHEM

- Analytical Report -

Project Name :
Project Number : 786-98E
Field ID : FIELD BLANK
Lab Sample Number : 780311-002
WI DNR LAB ID : 816079330

Client : TWIN PORTS TESTING
Report Date : 8/4/98
Collection Date : 7/31/98
Matrix Type : METHANOL

Organic Results

PVOC - METHANOL — Prep Method: SW846 5030B — Prep Date: 8/3/98 — Analyst: DJB

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	105				%Recov		8/3/98	MOD 8021B
Benzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Ethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Toluene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Xylenes, -m, -p	< 25	25	60		ug/kg		8/3/98	MOD 8021B
Xylene, -o	< 25	25	60		ug/kg		8/3/98	MOD 8021B

Company Name: Twin Ports Testing
Branch or Location: Superior, WI
Project Contact: Irvin Mossberg
Telephone: 392-7114
Project Number: 786-98E
Project Name:
Project Location: Wisconsin
Sampled By (Print): Irvin G. Mossberg
Regulatory Program (circle): UST RCRA CLP SDWA
NPDES/WPDES CAA NR_____ Other_____

EN CHEM INC.

1241 Bellevue St., Suite 9
Green Bay, WI 54302
414-469-2436 • 1-800-736-2436
FAX 414-469-8827

2231 Catlin Ave., Suite 420
Superior, WI 54880
715-392-5844 • 1-800-837-8238
FAX 715-392-5843

CHAIN OF CUSTODY

NR720 Confirmation Analysis Required? Y
(En Chem will confirm unless otherwise instructed.)

'2 Day

Mail Report To: Irvin Mossberg
Company: TPT
Address: 1301 N. 3rd St
Superior WI 54880
Invoice To: Same
Company:
Address:
P.O. No.: Quote No.:

Field ID	Sample Description	Collection Date	Collection Time	Field Screen	Matrix	Filt'd Y/N	Preserv*	Analysis Requested	SHADED AREA FOR LABORATORY USE ONLY: Good Cond.	Total Bottles	Comments	Laboratory Number
R-40A		7/31/98	3:37	0	Soil	N	F	GRO/PVOC Quick turn				-001
Field Blank		7/31/98	3:50	—	MeOH	N	F	PVOC				-002

*Preservation Code
A=None B=HCL C=H2SO4
D=HN03 E=EnCore F=Methanol**
G=NaOH O=Other (Indicate)

**If not using En Chem's methanol, indicate volume of methanol added and mark the appropriate samples.

Relinquished By:	Date/Time:	Received By:	En Chem Project No.
Thomas D Marsh	7/31/98 5:26		780311
Relinquished By:	Date/Time:	Received By:	Sample Receipt Temp. (Must be rec'd at 4°C)
Relinquished By:	Date/Time:	Received By (En Chem): 7-31-98 5:26	RQI

DANIELLE LANCOUR - [redacted] Rhinelander

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

1705 Tower Avenue
Superior, Wisconsin 54880
TELEPHONE 715-392-0802
FAX 715-392-7993

02-16-221811

April 20, 1998

Mr. Mark Miller, Murphy Oil USA, Inc.
Superior Refinery
PO Box 2066
Superior, WI 54880

SUBJECT: Request for closure of Pipeline Release in October, 1997

Dear: Mr. Miller:

The Department received a request for closure prepared on Murphy Oil's behalf by Twin Ports Testing Inc. The report requests unconditional closure of the site using Murphy's proposed residual contaminant level (RCL) for benzene of 200 ppm. The RCL of 200 ppm for benzene was proposed in an Eder Report titled *Request to the Wisconsin Department of Natural Resources for a Site Specific Benzene Soil Cleanup Level* dated February 1998. Ms. Carol McCurry of our Central Office is presently reviewing the request for the 200 ppm residual contaminant level for benzene. At such a time that a residual contaminant level is accepted by the Department, we will take that residual contaminant level into consideration when reviewing spills sites for closure under appropriate conditions.

Prior to further consideration of closure, further definition of the horizontal and vertical extent, and degree of contamination is required in the following three areas:

1. North of R-22;
2. northeast of R-14 and R-12;
3. and in the area of R-1.

(All directions are in reference to true north)

Your letter states that the modeling performed by Eder predicted that detectable concentrations of benzene from a gasoline spill would not infiltrate more than 3.3 feet through the clay at the Murphy refinery if anaerobic degradation was included in the modeling inputs. The report states that infiltration would only occur to a depth of 3.3 feet in 100 years. Actual soil sampling results provided by Murphy indicate detectable concentrations of benzene at 3.5 feet in borings R-14 and R-22 less than one month after the spill.

If you have any questions regarding this letter please feel free to call me at (715)392-0802.

Sincerely,
NORTHERN REGION

James A. Hosch
Spills Coordinator

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

1705 Tower Avenue
Superior, Wisconsin 54880
TELEPHONE 715-392-0802
FAX 715-392-7993

April 20, 1998

Mr. Mark Miller, Murphy Oil USA, Inc.
Superior Refinery
PO Box 2066
Superior, WI 54880

SUBJECT: Request for closure of Pipeline Release in October, 1997

Dear: Mr. Miller:

The Department received a request for closure prepared on Murphy Oil's behalf by Twin Ports Testing Inc. The report requests unconditional closure of the site using Murphy's proposed residual contaminant level (RCL) for benzene of 200 ppm. The RCL of 200 ppm for benzene was proposed in an Eder Report titled *Request to the Wisconsin Department of Natural Resources for a Site Specific Benzene Soil Cleanup Level* dated February 1998. Ms. Carol McCurry of our Central Office is presently reviewing the request for the 200 ppm residual contaminant level for benzene. At such a time that a residual contaminant level is accepted by the Department, we will take that residual contaminant level into consideration when reviewing spills sites for closure under appropriate conditions.

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(All directions are in reference to true north)

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If you have any questions regarding this letter please feel free to call me at (715)392-0802.

Sincerely,
NORTHERN REGION

James A. Hosch
Spills Coordinator

cc: Mr. Gary Kulibert - Rhinelander
Mr. Mick Michaelsen - Spooner
Ms. Linda Meyer - LC/5
Ms. Carol McCurry - RR/3
Mr. Lee Vail, Murphy Oil, PO Box 61780, New Orleans, LA 70161-1780
Mr. Richard Lewandowski, DeWitt Ross & Stevens,
Capitol Square Office, Two East Mifflin Street, Suite 600, Madison, WI 53703-2865

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

1705 Tower Avenue
Superior, Wisconsin 54880
TELEPHONE 715-392-0802
FAX 715-392-7993

April 7, 1998

Mr. Mark Miller, Murphy Oil USA, Inc.
Superior Refinery
PO Box 2066
Superior, WI 54880

SUBJECT: Request for closure of Pipeline Release in October, 1997

Dear: Mr. Miller:

This letter is to acknowledge receipt of a request for closure prepared on Murphy Oil's behalf by Twin Ports Testing Inc. Because of our current workload we will need an additional 14 days to process this document through our close-out procedures.

If you have any questions regarding this letter please feel free to call me at (715)392-0802.

Sincerely,
NORTHERN REGION

James A. Hosch
Spills Coordinator

cc: Gary Kulibert - Rhinelander
Mick Michaelsen - Spooner
Linda Meyer - LC/5
Lee Vail, Murphy Oil, PO Box 61780, New Orleans, LA 70161-1780
Richard Lewandowski, DeWitt Ross & Stevens,
Capitol Square Office, Two East Mifflin Street, Suite 600, Madison, WI 53703-2865

MURPHY
OIL USA, INC.

SUPERIOR REFINERY
P O BOX 2066
SUPERIOR WISCONSIN 54880

March 2, 1998

Mr. James Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

RE: Excavation Sampling Report for Pipe Line Release and Request for Site Closure

Dear Mr. Hosch:

Enclosed is a January 1998 report prepared by Twin Ports Testing, Inc. that documents the excavation and off-site treatment of approximately 310 cubic yards of petroleum-contaminated soil associated with the release of gasoline and diesel fuel products from an underground pipe line at our Superior Refinery. Included in the report are the analytical testing results for soil samples that were collected from the base and sidewalls of the final excavation to document the levels of diesel range organics, gasoline range organics, and petroleum volatile organic compounds (PVOCs) remaining in the soil.

Clay was the only type of soil encountered during the October 1997 excavation. Twin Ports used field screening and visual observations to guide the excavation activities, and fifteen confirmation soil samples were collected for laboratory analysis. The excavation extended a maximum of 3 feet below the pipe line, and only two of the fifteen confirmation samples contained PVOC levels above applicable NR 720 residual contaminant levels (RCLs). These two samples, which had benzene concentrations of 0.120 and 0.546 mg/kg, above the NR 720 generic RCL of 0.005 mg/kg, were collected from the side walls of the excavation at the same depth as the underground pipe line. None of the seven confirmation samples collected at the base of the excavation, 2 to 3 feet below the pipe line, contained concentrations of PVOCs above an applicable NR 720 RCL.

SPUR

On February 28, 1998, Murphy submitted a report, *Request to the Wisconsin Department of Natural Resources for a Site-Specific Benzene Soil Cleanup Level,* to the WDNR. This report, which was prepared by Eder Associates, discusses the results of SESOIL modeling for soils at the Murphy site. The modeling predicted that detectable concentrations of benzene from a gasoline spill would not infiltrate more than 3.3 feet through the clay at the Murphy refinery if anaerobic degradation was included in the modeling inputs. The analytical results for the soil samples collected following remediation of the pipe line release, and discussed in the enclosed report, appear to verify the SESOIL modeling results.

Based on the modeling predictions discussed in Eder's report, Murphy has requested that the WDNR establish a site-specific benzene soil cleanup level that is well above the levels found in the two excavation side wall samples discussed above. By this letter and submittal of the Twin Ports Testing, Inc. report, Murphy is requesting site closure of the underground pipe line release, based on the benzene transport modeling results provided in Eder's February 1998 report.

We look forward to the WDNR's favorable response to Murphy's request for a site-specific benzene soil cleanup level and this request for closure of the underground pipe line release. If you have any questions or need additional information, please call.

Sincerely,

Mark H. Miller
Manager, Safety and Environmental Control

mm127

Enc.

cc w/o attachment: L. Vail (Murphy)
D. Kugle (Eder)
R. Lewandowski (DeWitt, Ross & Stevens)

EXCAVATION SAMPLING REPORT
MURPHY OIL PIPELINE RELEASE
2407 STINSON AVENUE
SUPERIOR, WISCONSIN
TPT #786-97E
JANUARY 1998

MURPHY OIL USA, INC.
2407 STINSON AVENUE
SUPERIOR, WISCONSIN 54880

ATTN: MR. WILLIAM GUSTAFSON

SINCE 1972

TS TESTING INC.

1301 NORTH THIRD STREET • SUPERIOR, WISCONSIN 54880
(715) 392-7114 • FAX (715) 392-7163

728 GARFIELD AVENUE • DULUTH, MINNESOTA 55802
(218) 722-1911 • FAX (218) 722-3295

8 INDUSTRIAL PARK ROAD • NEGAUNEE, MICHIGAN 49866
(906) 226-6653 • FAX (906) 226-3699

January 2, 1998

Mr. William Gustafson
Murphy Oil, U.S.A.
2407 Stinson Ave.
Superior, WI 54880

Re: Excavation Sampling Report
Pipeline Release
Murphy Oil Superior Refinery
TPT# 786-97E

Dear Mr. Gustafson:

Enclosed is an excavation sampling report for the referenced site for your review and approval. On October 9, 1997 Twin Ports Testing (TPT) directed the excavation of approximately 310 yds^3 of petroleum-impacted soil associated with a release of gasoline and diesel product from an underground pipeline. Soil samples were collected to investigate the extent and magnitude of impacted soil. Results of the investigation indicate that a limited amount of petroleum-impacted soil remains in place. The report recommends presenting *Site-specific Residual Contaminant Levels* to the Wisconsin Department of Natural Resources to attempt closure of the site. *Site-specific Residual Contaminant Levels* may be used when it is determined that it is not practicable to achieve *Generic Residual Contaminant Levels*. Murphy Oil may develop these levels using Wisconsin Administrative Code NR 720.19.

TPT appreciates the opportunity to assist with this project. If you have any questions, please contact me at (715) 392-7114.

Sincerely,
TWIN PORTS TESTING, INC.

Irvin Mossberger
Hydrogeologist

Encl.

IGM:igm:BEM

INTRODUCTION

This report summarizes the results of soil sampling conducted by Twin Ports Testing, Inc. (TPT) during remedial excavation activities at the Murphy Oil refinery in Superior, Wisconsin, and presents recommendations for further action at the site. The purpose of the sampling was to investigate the extent of petroleum impact associated with a release from an underground pipeline system in October, 1997.

TPT was authorized by Mr. William Gustafson of Murphy Oil USA, Inc. to provide the necessary labor and equipment to sample and analyze contaminated soil associated with the release. TPT's scope of services for the project included:

- Directing the excavation of petroleum-impacted soil associated with the release.
- Field-screening soil samples from the excavation to investigate the extent of the release.
- Collecting soil samples from the sidewalls and bottom of the excavation for laboratory analysis.
- Preparing and submitting an Application to Treat Petroleum Contaminated Soil and Groundwater (Wisconsin Department of Natural Resources (WDNR) form 4400-120), including collecting one soil sample for laboratory analysis from soil stockpiled during the excavation.
- Preparing a report including results and recommendations

BACKGROUND INFORMATION

Site Information

The site is located at 2407 Stinson Avenue in Superior, Wisconsin (Figure 1). The site is currently used as an oil refinery. The release occurred from a pipeline system composed of two pipes spaced approximately 1 foot apart which run parallel to railroad tracks on the northeast (i.e. refinery east) side of the site. The release occurred proximal to where the pipeline system enters the ground as it runs from (refinery) south to (refinery) north (Figure 2). The pipeline system was approximately 4-5 feet below ground surface in the excavation. The volume and duration of the release was unknown.

Regional Geology and Hydrogeology

The site lies in Quaternary age glaciolacustrine deposits consisting of primarily red clay commonly more than 250 feet thick that locally contains small amounts of silt and sand in thin discontinuous layers. Bedrock beneath the glacial deposits is Precambrian in age, and consists predominantly of sandstone, shales, and conglomerate (Hydrologic Investigation Atlas HA-524).

Regional groundwater flow in the vicinity of the site is toward the northeast. Groundwater has been encountered between 30 and 50 feet below ground surface, as indicated in logs of potable wells located within a three mile radius from the site (Appendix A, Well Constructors Reports).

METHODS

Excavation and investigation activities took place on October 9, 1997. Excavation and hauling of impacted soil was performed by J&D Enterprises, Inc. Impacted soil was thermally treated by Lakehead Blacktop and Materials of Superior, Wisconsin. TPT directed the excavation, including collection of soil samples for field-screening and laboratory analysis. Soil samples were analyzed by Midwest Analytical Services.

A TPT environmental scientist visually examined soil samples for apparent signs of petroleum impact, classified the samples according to ASTM D2488 (Standard Practice for Description and Identification of Soils, Visual Manual Procedure) and collected appropriate samples for field-screening. Soil samples were field-screened for Volatile Organic Compounds (VOCs) using the headspace method with a Thermo Environmental Instruments Model 580B portable photoionization detector (PID) equipped with a 10.6eV lamp. The samples were logged in a field notebook. Impacted soil was removed from the excavation to a temporary stockpile. Soil samples for laboratory analysis were collected in accordance with *Soil Sampling Requirements for LUST Site Investigations and Excavations* (WDNR PUBL-SW-127). Standard chain of custody procedures were used in shipment to the laboratory. The laboratory samples were analyzed for gasoline range organics (GRO), diesel range organics (DRO) and petroleum volatile organic compounds (PVOC).

RESULTS

A total of thirty (30) soil samples from throughout the excavation were field-screened to investigate the extent of petroleum impact. The results are presented in Table 1. Of those samples, fifteen (15) from the bottom and sidewalls of the excavation, and one (1) from the temporary stockpile, were

chosen to be submitted for laboratory analysis. Laboratory analytical results are presented in Appendix B.

The excavation reached approximate dimensions of 135 feet in length, 15 feet in width, and 8 feet in depth. The excavation proceeded until results of field-screening indicated the extent of petroleum impact had been adequately delineated or until it reached the railroad tracks to the (refinery) east or until the pipeline system impeded further digging. Trenches were dug in four (4) locations along the (refinery) west edge of the excavation to investigate the lateral extent of petroleum impact. Approximately 310 cubic yards (yds^3) of petroleum-impacted soil were removed from the excavation. The only soil type encountered in the excavation was clay. Groundwater was not encountered during excavation activities.

Results of field-screening indicated that the vertical and lateral extent of petroleum-impacted soil had been delineated. The trenches proceeded approximately 5 to 10 feet laterally away from the main part of the excavation (Figure 2). Laboratory analytical results indicated low-level petroleum compounds remaining in soil near the areas of R-1, R-5, R-14, R-19, R-22, R-26, R-28, and R-29. However, only soil in samples R-1 (1365 parts per million (ppm) DRO), R-14 (120 parts per billion (ppb) benzene) and R-22 (546 ppb benzene) contained petroleum compounds above WDNR *Generic Residual Contaminant Levels* (NR 720.09).

Stockpiled soil was transported for thermal treatment to Lakehead Blacktop and Materials in Superior. Form 4400-120 was submitted to WDNR on November 3, 1997 (Appendix C). Stockpile sample SP-1 was used in the emissions calculations for the form.

CONCLUSIONS

Results of the investigation indicate that the extent and magnitude of petroleum impact has been sufficiently delineated. Soil samples R-1, R-14, and R-22, sidewall samples from the (refinery) south and east sides of the excavation, contained compounds above WDNR *Generic Residual Contaminant Levels*. It is estimated that approximately one (1) cubic yard of petroleum-impacted soil remains in the vicinity of soil sample R-1. Additional petroleum-impacted soil remains in the vicinity of R-14 and R-22 on the (refinery) east side of the excavation. The presence of the pipeline system and railroad tracks in this area impedes further excavation of soil. The clay soil in the area makes other remedial actions difficult. The maximum depth of petroleum-impacted soil appears to be approximately eight feet (Figure 3). Groundwater appears not to be impacted by the release.

It appears that the site meets the criteria for classification as a simple site as defined in NR 700.09 (1).

RECOMMENDATIONS

Analytical results indicate that a small amount of petroleum-impacted soil, above WDNR *Generic Residual Contaminant Levels*, remains at the site. However, based on TPT's experience with determining *Site-specific Residual Contaminant Levels* (NR 720.19), for similar petroleum impacts and in similar hydrogeologic settings (i.e. in Superior, Wisconsin), TPT recommends no further action for the site. Murphy Oil USA should submit a letter of compliance and a final report for a simple site as per NR 700.11 (b), which should include information required by chs. NR 700 to 726. The report should present *Site-specific Residual Contaminant Levels.*

LIMITATIONS OF INVESTIGATION AND REPORT

We have based the analysis and recommendations submitted within this report in part on the data obtained from the excavation field activities, and chemical analysis of the collected soil samples. The exact nature and extent of geologic variations and levels of contamination at the site may not be evident.

Conclusions and recommendations contained herein are based on the applicable standards of our profession at the time this report was prepared. This warranty is in lieu of all other warranties either expressed or implied.

TABLE 1
MURPHY OIL PIPELINE RELEASE
FIELD-SCREENING (PID) RESULTS

SAMPLE #	DEPTH (feet)	SOIL TYPE	RELATIVE MOISTURE	PID READING(ppm)
R-1(L)	3.5	clay	D/M	6
R-2(L)	4.5	clay	W	4
R-3(L)	5.0	clay	M	4
R-4	4.5	clay	M	337
R-5(L)	5.0	clay	D/M	19
R-6	5.0	clay	M/W	152
R-7	5.0	clay	M/W	168
R-8	5.0	clay	W	164
R-9	5.5	clay	D/M	8.8
R-10	5.5	clay	D/M	0
R-11(L)	5.5	clay	D/M	0
R-12	3.5	clay	M/W	308
R-13	6.5	clay	M	0
R-14(L)	3.75	clay	D/M	212
R-15	6.5	clay	M	375
R-16(L)	7.5	clay	M	46
R-17	7.0	clay	M	60
R-18	4.0	clay	W	345
R-19(L)	3.5	clay	D/M	125
R-20	5.5	clay	D/M	376
R-21	3.5	clay	D/M	327
R-22(L)	3.5	clay	D/M	253
R-23(L)	5.5	clay	D/M	7.6
R-24(L)	8.0	clay	D/M	0
R-25	8.0	clay	D/M	2.9
R-26(L)	4.0	clay	D/M	3.9
R-27	4.0	clay	D/M	52
R-28(L)	5.0	clay	D/M	3.5
R-29(L)	4.0	clay	D/M	22
R-30(L)	5.0	clay	D/M	11
SP-1(L)	NA	clay	D/M	175

Notes: PID = photoionization detector. ppm = parts per million. L = sample was sent to laboratory for chemical analysis. NA = Not Applicable. D = dry. M = moist. W = wet. R = removed. SP = stockpile.

SW, SW, NE, sec. 14, T49N, R14W. DS-4-U

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

unty Douglas | Town ☐ Village ☐ City ☒ Superior
Check one and give name

cation 714 N. 8th St Superior Wis
Name of street and number of premise or Section, Town and Range number

RECEIVED JAN 1955 SANITATION

ner ☐ or Agent ☐ Winston Nelson
Name of individual, partnership or firm

il Address Superior Wis
Complete address required

om well to nearest: Building 8 ft; sewer ___ ft; drain 40 ft; septic tank ✓ ft; ______

well or filter bed ✓ ft; abandoned well ✓ ft.

ll is intended to supply water for: Wash water + Cooling

ILLHOLE:

	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
	0	140	6"	0	600

ASING AND LINER PIPE OR CURBING:

	Kind and Weight	From (ft.)	To (ft.)
	Std Blk Pipe	0	140
	Std Blk Pipe	0	269
	Sandstone	269	600

ROUT:

Kind	From (ft.)	To (ft.)

MISCELLANEOUS DATA:

test: 35 Hrs. at 20 GPM.

from surface to water-level: 40 ft.

-level when pumping: 200 ft.

sample was sent to the state laboratory at:

y Owner 19___
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay Red	0	25
Sandy Silt	25	70
Clay Red	70	105
Silt	105	130
Clay Red	130	155
Dirty Sandy silt	155	182
Hard pan & small gravel	182	269
Sand stone	269	600

Construction of the well was completed on:

March 15 1954

The well is terminated 18 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ✓ No ___

Was the well sealed watertight upon completion?

Yes ___ No ___

ure Madrigan Bros Registered Well Driller — Wentworth Wis Complete Mail Address

Please do not write in space below

___ No ___

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

station ______

Examiner ______

STATE OF WISCONSIN

NSTRUCTOR'S REPORT — DEPARTMENT OF RESOURCE DEVELOPMENT — Wel

Check one: ☒ Town ☐ Village ☐ City — Name: Superior

…ON (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)
T 49 N R [R14W] Sec 14 N E Corner of N E Part

…AT TIME OF DRILLING: Donald Soderberg

…S COMPLETE MAIL ADDRESS: 1318 91st Ave W. Duluth Minn.

…e in feet from well to nearest: (answer in appropriate block)

Building	Sanitary Sewer C.I.	Sanitary Sewer Tile	Floor Drain C.I.	Floor Drain Tile	Foundation Drain Sewer Connected	Foundation Drain Independent	Waste Water Drain C.I.	Waste Water Drain Tile
30'	50'		45'			—	45'	

…ter Drain Tile	Septic Tank	Privy	Seepage Pit	Absorption Field	Barn	Silo	Abandoned Well	Sink Hole
	100'			125'	—	—	—	—

…LLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)
Lake 250'

…intended to supply water for: Home

OLE

From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
Surface	40	4"	150	305
40	150'			

G, LINER, CURBING, AND SCREEN

Kind and Weight	From (ft.)	To (ft.)
Std 6" New 19.45 P.E. ~~20# to ft~~	Surface	150
Std 4" 10.59 – P.E. 11# to ft.	150	305

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Red Clay	Surface	20
sand & Gravel (dry)	20	40
Clay & silt	40	150
Red Clay	150	290
Hard Pan	290	300
Gravel	300	305

OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Puddled Clay	Surface	40'

Well construction completed on Sept 3 1968

…LLANEOUS DATA
8 Hrs. at 10 GPM

…surface to normal water level 50 ft.

…ater level when pumping 60 ft.

Well is terminated 8 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

…ple sent to Madison laboratory on: 11/12 1968

…on concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby …ens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub…nprooms, access pits, etc., should be given on reverse side.

… Long — Registered Well Driller — Complete Mail Address: Poplar, Wis.

Cert. Not. Res.

Please do not write in space below

…ST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
after drillers file	4/14/69			

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

SPEED MEMO SPOTCHECK

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300-15 Rev. 2-79

OCT 28 1983

COUNTY: Douglas

CHECK (✓) ONE: ☐ Town ☐ Village ☒ City Name: Superior

LOCATION: ¼ Section or Gov't. Lot: SE-SE | Section: 22 | Township: 49N | Range: 14W

OR – Grid or Street No. | Street or Road Name:

AND – If available subdivision name, lot & block No.

3 NAME ☒ OWNER ☐ AGENT AT TIME OF DRILLING CHECK (✓) ONE: Brian Schumacher

ADDRESS:

POST OFFICE: Superior, Wis ZIP CODE:

Distance in feet from well to nearest: (Record answer in appropriate blank)	Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. C.I.	Storm Bldg. Other
	30'				-25						

Street Sewer: San.	Street Sewer: Storm	Other Sewers: C.I.	Other Sewers: Other	Foundation Drain Connected to: Sewer / Sewage Sump	Foundation Drain Connected to: Clearwater Dr. / Clearwater Sump	Sewage Sump: C.I.	Sewage Sump: Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit / Seepage Bed / Seepage Trench	Manure Hoppa: Retention or Pneumatic Tan

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well / Pump / Tank	Subsurface Pumproom: Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yards	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit	Earthen Manure P

Temporary Manure Rack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Manure Storage Basin / Concrete Floor Only / Concrete Floor and Partial Concrete Walls	Other (Describe): none / Time of drillin

Well is intended to supply water for: Home

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8¾	Surface	267			
6	267	270			

CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	new steel Pipe	Surface	267
	plain end		
	wall thick .280		
	Astm 53		

GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Drill Cuttings	Surface	267

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	220
Hard Pan	220	267
Sand stone	267	270

10. TYPE OF DRILLING MACHINE USED

☐ Cable Tool ☒ Rotary w/drilling mud ☐ Rotary w/drilling mud ☐ Rotary-hammer w/drilling mud & air ☐ Rotary-hammer & air ☐ Reverse Rotary ☐ Jetting with Air / Water

Well construction completed on 10-4 1983

Well is terminated 12 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

MISCELLANEOUS DATA

Yield Test: 2 Hrs. at 10 GPM

Depth from surface to normal water level 30' Ft.

Depth of water level when pumping 50' Ft. Stabilized ☒ Yes ☐ No

Water sample sent to Will be sent at Pump inst. laboratory on 19

Explanation concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, streams, seals, method of grouting the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Name: Larry Lind Registered Well Driller

Business Name and Complete Mailing Address: Lind Well Drilling, Maple, Wis

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

AND

REQUEST FOR ANALYSIS

(Instructions on Back of Form)

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

CLIENT: Twin Ports Testing
SAMPLER NAME: Irvin Mossberger
PROJECT I.D.: 786-97E
SAMPLER SIGNATURE: Irvin D. Mossberger
REPORTS TO BE SENT TO: Irvin Mossberger, Twin Ports Testing, 1301 N. 3rd St. Superior WI 54880
REMARKS: WI Samples

NO. OF CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX: OTHER	SAMPLE IDENTIFICATION: SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (465-D)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or CBOD	TSS	FCol or TCol	PVOC	PRESERVATIVE: HCl	HNO3	H2SO4	ICE	OTHER
3		X	10/6/97	9:07		X		K-1 3.5'		21762	X	X									X					
				12:45				R-23 5.5'		21																
				2:22				R-26 4.0'		21																
				2:33				R-28 5.0'		21																
				2:40				R-24 4.0'		21																
				2:46				R-30 5.0'		21																
				10:05				R-14 3.75'		21																
				12:27				R-19 3.5'		21																
				12:40				R-22 3.5'		21																
				9:09				R-2 4.5'		21																
				9:15				R-3 5.0'		21																
				9:21				R-5 5.0'		21																
				9:47				R-11 5.5'		21																
				11:30				R-16 7.5'		21																
				2:00				R-24 8.0'		21																

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	10/6/97 7:05	[signature]	[signature]		
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Temperature:	Comments:
		[signature]	10/10/97		

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED:
☐ NORMAL ☐ RUSH
DATE REQUIRED:

DATE: 11-24-97

TO:

__AM/7 - SLR_____Madison
*_Janet Kazda R&R _____Rhinelander
_____Rhinelander
_____Spooner
_____Cumberland
_____Superior
_____Park Falls

FROM: Phyliss Holmbeck

RE: Soil Treatment

__ COMMENT
*_ FYI
__ SEE ME
__ TAKE ACTION
__ APPROVE
__ SIGN
__ REVISE
__ PER YOUR REQUEST
__ ROUTE TO
__ RETURN
__ FILE

State of Wisconsin
Department of Natural Resources

NOTIFICATION TO TREAT OR DISPOSE OF PETROLEUM CONTAMINATED SOIL & WATER

Rev. 9-95

This form is required by the Department of Natural Resources (DNR) to ensure that the remediation of petroleum contaminated soil and water is in compliance with NR 500-540, NR 158, NR 419 and NR 445, Wis. Adm. Code. Failure to comply with applicable statutes and administrative rules may lead to violations of subchapters III and IV of Ch. 144, Wis. Stats. and may result in forfeitures of not less than $10 or more than $25,000 for each violation, pursuant to ss. 144.426(1), 144.74(1), 144.99, Wis. Stats., or fines of not less than $100 or more than $150,000 or imprisonment for not more than 10 years, or both, pursuant to s. 144.74(2), Wis. Stats. Each day of a continuing violation constitutes a separate violation. Except for the remediation of virgin petroleum spills, this form needs to be submitted to the DNR 10 business days prior to the commencement of the remediation.

DIRECTIONS: 1) Complete both sides of the form. 2) Have the responsible party sign the form. This signature certifies that the information on this form and in all supporting documents is accurate. 3) Submit the form with supporting documentation, lab reports and any maps to the appropriate District Air Management Program at least 10 business days prior to the commencement of remediation. 4) Submit a copy of this form to the DNR project manager and retain a copy for your records.

PART I - GENERAL INFORMATION

Site Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	**Date of Form Completion:** 11/3/97
Site #: 02-16-221811	**Do Other Remediation Systems Exist at This Site?** ☐ YES ☐ NO
County: Douglas	**Site Type:** ☐ LUST ☒ ERP ☐ CERCLA ☐ Other, Explain:
Responsible Party Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	**Responsible Party Signature:** Irvin G. Mossberger for Bill Gustafson **Telephone #:** (715) 398-8217
Consulting Firm Name & Address: Twin Ports Testing Inc. 1301 N. 3rd St. Superior, WI 54880	**Consulting Firm Contact:** Irvin Mossberger **Telephone #:** (715) 392-7114

PART II - SOIL AND WATER DATA (Attach Lab Reports and Calculations)

Type of Contamination: ☒ Gasoline ☒ Diesel ☐ Fuel Oil ☐ Waste Oil ☐ Chlorinated Organics ☐ Other: _____

Soil Concentration:

GRO:	229	mg/kg/10^6	x	2,800 lb/yd³	x	310	yd³	=	198,772 lb
DRO:	65.8	mg/kg/10^6	x	2,800 lb/yd³	x	310	yd³	=	57,114 lb
Benzene:	2.12	mg/kg/10^6	x	2,800 lb/yd³	x	310	yd³	=	1,840.6 lb
Chlorinated Organics:		mg/kg/10^6	x	2,800 lb/yd³	x		yd³	=	lb
Other:		mg/kg/10^6	x	2,800 lb/yd³	x		yd³	=	lb

Water Concentration: GRO: _____ mg/L DRO: _____ mg/L Benzene: _____ mg/L

Chlorinated Organics: _____ mg/L Other: _____ mg/L

PART III - TREATMENT OR DISPOSAL FACILITY INFORMATION

Treatment/Disposal Facility Name & Address: Lakehead Blacktop & Materials 5800 Albany Ave. Superior, WI 54880	**Facility ID:** 816037640
	Air Pollution Control Permit #: 93-BAB-802
Facility Contact: Bob Patterson **Telephone #:** (715) 392-3844	**Facility Located in 10-county Area in Southeast Wisconsin:** No **Distance to Nearest Residence or Business:** ~5,000 ft.
Headquarter Address: 6327 Tower Ave, Superior, WI 54880	**Portable Sources Only:** Has a Portable Source Relocation Notification (Form 4500-25) Been Submitted for this Location: ☐ YES ☐ NO N/A

PART III - SOIL VACUUM EXTRACTION OR GROUNDWATER REMEDIATION

Site Contact & Telephone #:	**Proposed Operations (Attach Calculations)** **Anticipated Start-Up Date:**
Is Site Located in the 10-county Area in Southeastern WI	**Estimated Project Duration:**
Distance to Nearest Residence or Business:	**# of Wells:**
Pilot Test/Soil Venting Only **(Attach Lab Reports and Calculations)** **Date of Test:**	**# of Emission Points:**
Flow Rate (scfm):	**Stack Height:**
Total Withdrawal of Air (scf):	**Maximum Equipment Flow Rate (scfm or gpm):**
Total VOC Emission Rate (lb/hr):	**Total VOC Emission Rate (lb/hr):**
Benzene Emission Rate (lb/hr):	**Benzene Emission Rate (lb/hr):** **Benzene Emission Rate (lb/yr):**

PART III - OTHER REMEDIATION METHODS

Proposing Other Remediation Method: ☐ YES **Method Name:** _____

Attach a project description for other remediation methods including landspreading, passive aeration and bioremediation. At a minimum, the information submitted should include the following items (with any supporting lab reports and calculations):

✓ Address/Location of Remediation Site - Indicate if this location is in the 10-county area in Southeast Wisconsin and the distance to the nearest residence or business. Include a map or site plan if appropriate.
✓ Description of Remediation Method
✓ Project Contact & Telephone #
✓ Anticipated Start-Up and Estimated Project Duration
✓ Highest Estimated Hourly VOC Emissions
✓ Highest Estimated Hourly and Annual Benzene Emissions
✓ Emission Testing Methodology
✓ Final Destination of Soil

EMISSION CALCULATIONS
CONTAMINATED SOIL EXCAVATED FROM
PIPELINE RELEASE AT
MURPHY OIL USA
SUPERIOR, WISCONSIN

GRO CALCULATION:

SP-1 = 229 ppm for GRO

$$\frac{229 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 198.772 \text{ lbs. of GRO}$$

DRO CALCULATION:

SP-1 = 65.8 ppm for DRO

$$\frac{65.8 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 57.1144 \text{ lbs. of DRO}$$

BENZENE CALCULATION:

SP-1 = 2.12 ppm for benzene

$$\frac{2.12 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 1.84016 \text{ lbs. of benzene}$$

THE SOIL VAPOR READING FOR SOIL SAMPLE SP-1 WAS 175 PPM USING A MODEL 580 OVM EQUIPPED WITH A 10.6 eV LAMP.

microsoft word
[p:\tptfiles\786-97e\soilapp\]

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

MIDWEST ANALYTICAL SERVICES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

October 27, 1997

Irvin Mossberger
Twin Ports Testing
1301 North 3rd Street
Superior, WI 54880

Project ID:	786-97E
Chain of Custody:	22507/21955
Date Sampled:	10-09-97
Date Received:	10-10-97
Date Analyzed:	10-14-97
Matrix:	Soil

Sample Identification:

Lab ID:		
21766	R-1	3.5'
21767	R-23	5.5'
21768	R-26	4.0'
21769	R-28	5.0'
21770	R-29	4.0'
21771	R-30	5.0'
21772	R-14	3.75'
21773	R-19	3.5'
21774	R-22	3.5'
21775	R-2	4.5'
21776	R-3	5.0'
21777	R-5	5.0'
21778	R-11	5.5'
21779	R-16	7.5'
21780	R-24	8.0'
21781	SP-1	
21782	Trip Blank	

Samples were analyzed for GRO and DRO by the Wisconsin Modified GRO and DRO procedures. The results are reported on the following page.

Sincerely,

Lon Jones 10/28

Lon Jones
Organic/Bio Group Leader

PVOC	MDL (mg/kg)	21766 R-1 3.5'	21767 R-23 5.5'	21768 R-26 4.0'	21769 R-28 5.0'
MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Toluene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.068	BDL	BDL	BDL
Xylenes (mg/kg)	0.105	BDL	BDL	BDL	BDL
GRO (mg/kg)	10.0	10.8	BDL	31.4	BDL*
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.094	BDL	0.158	0.066
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.068	BDL	0.431	BDL
DRO (mg/kg)	10.0	1365	BDL*	26.5	BDL*
Moisture Content (%)		26.9	28.5	21.4	20.6

PVOC	MDL (mg/kg)	21770 R-29 4.0'	21771 R-30 5.0'	21772 R-14 3.75'	21773 R-19 3.5'
MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	0.120	BDL
Toluene (mg/kg)	0.050	BDL	BDL	0.217	0.474
Ethylbenzene (mg/kg)	0.050	0.585	BDL	0.746	0.288
Xylenes (mg/kg)	0.105	0.816	BDL	0.649	1.29
GRO (mg/kg)	10.0	59.3	BDL*	53.6	18.1
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.721	BDL	0.341	0.436
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.639	BDL	0.499	0.663
DRO (mg/kg)	10.0	32.2	BDL*	157	BDL*
Moisture Content (%)		25.6	23.4	22.0	28.4

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

PVOC	MDL (mg/kg)	21774 R-22 3.5'	21775 R-2 4.5'	21776 R-3 5.0'
MTBE (mg/kg)	0.500	BDL	BDL	BDL
Benzene (mg/kg)	0.050	0.546	BDL	BDL
Toluene (mg/kg)	0.050	0.682	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.084	BDL	BDL
Xylenes (mg/kg)	0.105	0.492	BDL	BDL
GRO (mg/kg)	10.0	BDL	BDL	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.184	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.172	BDL	BDL
DRO (mg/kg)	10.0	79.4	BDL*	BDL*
Moisture Content (%)		24.4	28.0	23.4

PVOC	MDL (mg/kg)	21777 R-5 5.0'	21778 R-11 5.5'	21779 R-16 7.5'
MTBE (mg/kg)	0.500	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	BDL
Toluene (mg/kg)	0.050	0.080	BDL	0.073
Ethylbenzene (mg/kg)	0.050	0.050	BDL	BDL
Xylenes (mg/kg)	0.105	0.382	BDL	BDL
GRO (mg/kg)	10.0	BDL*	BDL	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.311	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.090	BDL	BDL
DRO (mg/kg)	10.0	BDL*	BDL*	BDL*
Moisture Content (%)		25.6	28.9	31.7

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

PVOC	MDL (mg/kg)	21780 R-24 8.0'	21781 SP-1	21782 Trip Blank
MTBE (mg/kg)	0.500	BDL	< 2.50	BDL
Benzene (mg/kg)	0.050	BDL	2.12	BDL
Toluene (mg/kg)	0.050	BDL	11.1	BDL
Ethylbenzene (mg/kg)	0.050	BDL	3.19	BDL
Xylenes (mg/kg)	0.105	BDL	19.1	BDL
GRO (mg/kg)	10.0	BDL*	229	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	BDL	9.87	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	BDL	9.90	BDL
DRO (mg/kg)	10.0	BDL	65.8	BDL
Moisture Content (%)		23.4	25.1	

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

11/24/97 AM/7 o RR/Rhinelander

TWIN PORTS TESTING INC.

1301 NORTH THIRD STREET • SUPERIOR, WISCONSIN 54880
(715) 392-7114 • FAX (715) 392-7163

728 GARFIELD AVENUE • DULUTH, MINNESOTA 55802
(218) 722-6653 • FAX (218) 722-3295

8 INDUSTRIAL PARK ROAD • NEGAUNEE, MICHIGAN 49866
(906) 226-6653 • FAX (906) 226-3699

November 3, 1997
TPT# 786-97E.MM

Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, Wisconsin 54880
Attn: Ms. Phyliss Holmbeck

Re: Soil Treatment Application for
Soil Excavated from Pipeline Release at
Murphy Oil U.S.A in Superior, Wisconsin

Dear Ms. Holmbeck:

Enclosed is the application to thermally treat approximately 310 cubic yards of petroleum contaminated soil from a pipeline release at Murphy Oil's facility. The petroleum contamination is gasoline and diesel. The sample collected from the stockpile (SP-1) was analyzed for GRO, DRO, and PVOCs.

If you have any questions or need any additional information, please feel free to call me at (715) 392-7114.

Sincerely,

TWIN PORTS TESTING, INC.

Irvin Mossberger, Hydrogeologist

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CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: November 4, 1997

FILE REF: [Click **here** and type file ref.]
S-1, S-2 Spills

TO: Murphy Oil Refinery File

FROM: Jim Hosch

SUBJECT: Murphy Oil Refinery

Hosch was speaking to Phyliss Holmbeck regarding Treatment and Disposal Application Forms for Murphy. Holmbeck showed two forms to Hosch that she is working on.

Hosch called Irvin Mossberger of Twin Ports Testing at 15:58 on November 4, 1997, regarding Mossberger's submittal dated November 3, 1997. Mossberger stated that the results were from bottom excavation samples and a stockpile sample from a spill on the Refinery property which he believed occurred in October, 1997. Hosch asked if a map had been developed. Mossberger said no.

The submitted results show that the site exceeds NR 720 Wis. Adm. Code. generic residual contaminant levels at more than one location.

Cc: Gary Kulibert - Rhinelander
Mick Michaelsen - Spooner
Steve LaValley -Superior

11/24/97 AM/7 o RR/Rhinelander

TWIN PORTS TESTING INC.

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November 3, 1997
TPT# 786-97E.MM

Wisconsin Department of Natural Resources
1705 Tower Avenue
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Attn: Ms. Phyliss Holmbeck

Re: Soil Treatment Application for
Soil Excavated from Pipeline Release at
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Dear Ms. Holmbeck:

Enclosed is the application to thermally treat approximately 310 cubic yards of petroleum contaminated soil from a pipeline release at Murphy Oil's facility. The petroleum contamination is gasoline and diesel. The sample collected from the stockpile (SP-1) was analyzed for GRO, DRO, and PVOCs.

If you have any questions or need any additional information, please feel free to call me at (715) 392-7114.

Sincerely,

TWIN PORTS TESTING, INC.

Irvin Mossberger, Hydrogeologist

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EMISSION CALCULATIONS
CONTAMINATED SOIL EXCAVATED FROM
PIPELINE RELEASE AT
MURPHY OIL USA
SUPERIOR, WISCONSIN

GRO CALCULATION:

SP-1 = 229 ppm for GRO

$$\frac{229 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 198.772 \text{ lbs. of GRO}$$

DRO CALCULATION:

SP-1 = 65.8 ppm for DRO

$$\frac{65.8 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 57.1144 \text{ lbs. of DRO}$$

BENZENE CALCULATION:

SP-1 = 2.12 ppm for benzene

$$\frac{2.12 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 310 \text{ yd}^3 = 1.84016 \text{ lbs. of benzene}$$

THE SOIL VAPOR READING FOR SOIL SAMPLE SP-1 WAS 175 PPM USING A MODEL 580 OVM EQUIPPED WITH A 10.6 eV LAMP.

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State of Wisconsin
Department of Natural Resources

NOTIFICATION TO TREAT OR DISPOSE OF PETROLEUM CONTAMINATED SOIL & WATER

Form 4400-120
Rev. 9-95

This form is required by the Department of Natural Resources (DNR) to ensure that the remediation of petroleum contaminated soil and water is in compliance with NR 500-540, NR 158, NR 419 and NR 445, Wis. Adm. Code. Failure to comply with applicable statutes and administrative rules may lead to violations of subchapters III and IV of Ch. 144, Wis. Stats. and may result in forfeitures of not less than $10 or more than $25,000 for each violation, pursuant to ss. 144.426(1), 144.74(1), 144.99, Wis. Stats., or fines of not less than $100 or more than $150,000 or imprisonment for not more than 10 years, or both, pursuant to s. 144.74(2), Wis. Stats. Each day of a continuing violation constitutes a separate violation. Except for the remediation of virgin petroleum spills, this form needs to be submitted to the DNR 10 business days prior to the commencement of the remediation.

DIRECTIONS: 1) Complete both sides of the form. 2) Have the responsible party sign the form. **This signature certifies that the information on this form and in all supporting documents is accurate.** 3) Submit the form with supporting documentation, lab reports and any maps to the appropriate District Air Management Program at least 10 business days prior to the commencement of remediation. 4) Submit a copy of this form to the DNR project manager and retain a copy for your records.

PART I - GENERAL INFORMATION

Site Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	**Date of Form Completion:** 11/3/97
Site #:	**Do Other Remediation Systems Exist at This Site?** ☐ YES ☐ NO
County: Douglas	**Site Type:** ☐ LUST ☒ ERP ☐ CERCLA ☐ Other, Explain:
Responsible Party Name & Address: Murphy Oil U.S.A. 2407 Stinson Ave. Superior, WI 54880	**Responsible Party Signature:** Irvin Mossberger for Bill Gustafson **Telephone #:** (715) 398-8217
Consulting Firm Name & Address: Twin Ports Testing Inc. 1301 N. 3rd St. Superior, WI 54880	**Consulting Firm Contact:** Irvin Mossberger **Telephone #:** (715) 392-7114

PART II - SOIL AND WATER DATA (Attach Lab Reports and Calculations)

Type of Contamination: ☒ Gasoline ☒ Diesel ☐ Fuel Oil ☐ Waste Oil
☐ Chlorinated Organics ☐ Other: _____

Soil Concentration:

GRO:	229	mg/kg/10^6	x	2,800 lb/yd³	x	310	yd³	= 198,772 lb
DRO:	65.8	mg/kg/10^6	x	2,800 lb/yd³	x	310	yd³	= 57,114 lb
Benzene:	2.12	mg/kg/10^6	x	2,800 lb/yd³	x	310	yd³	= 1,840.16 lb
Chlorinated Organics:		mg/kg/10^6	x	2,800 lb/yd³	x		yd³	= lb
Other:		mg/kg/10^6	x	2,800 lb/yd³	x		yd³	= lb

Water Concentration: GRO: _____ mg/L DRO: _____ mg/L Benzene: _____ mg/L

Chlorinated Organics: _____ mg/L Other: _____ mg/L

PART III - TREATMENT OR DISPOSAL FACILITY INFORMATION

Treatment/Disposal Facility Name & Address: Lakehead Blacktop & Materials 5800 Albany Ave. Superior, WI 54880	**Facility ID:** 816037640
	Air Pollution Control Permit #: 93-BAB-802
Facility Contact: Bob Patterson **Telephone #:** (715) 392-3814	**Facility Located in 10-county Area in Southeast Wisconsin:** No **Distance to Nearest Residence or Business:** ~ 5,000 ft.
Headquarter Address: 6327 Tower Ave, Superior, WI 54880	Portable Sources Only: Has a Portable Source Relocation Notification (Form 4500-25) Been Submitted for this Location: ☐ YES ☐ NO N/A

PART III - SOIL VACUUM EXTRACTION OR GROUNDWATER REMEDIATION

Site Contact & Telephone #:	Proposed Operations (Attach Calculations) Anticipated Start-Up Date: Estimated Project Duration: # of Wells:
Is Site Located in the 10-county Area in Southeastern WI	
Distance to Nearest Residence or Business:	# of Emission Points:
Pilot Test/Soil Venting Only (Attach Lab Reports and Calculations) Date of Test: Flow Rate (scfm): Total Withdrawal of Air (scf): Total VOC Emission Rate (lb/hr): Benzene Emission Rate (lb/hr):	Stack Height: Maximum Equipment Flow Rate (scfm or gpm): Total VOC Emission Rate (lb/hr): Benzene Emission Rate (lb/hr): Benzene Emission Rate (lb/yr):

PART III - OTHER REMEDIATION METHODS

Proposing Other Remediation Method: ☐ YES Method Name:_____

Attach a project description for other remediation methods including landspreading, passive aeration and bioremediation. At a minimum, the information submitted should include the following items (with any supporting lab reports and calculations):

✓ Address/Location of Remediation Site - Indicate if this location is in the 10-county area in Southeast Wisconsin and the distance to the nearest residence or business. Include a map or site plan if appropriate.
✓ Description of Remediation Method
✓ Project Contact & Telephone #
✓ Anticipated Start-Up and Estimated Project Duration
✓ Highest Estimated Hourly VOC Emissions
✓ Highest Estimated Hourly and Annual Benzene Emissions
✓ Emission Testing Methodology
✓ Final Destination of Soil

330 SO. CLEVELAND ST.
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October 27, 1997

Irvin Mossberger
Twin Ports Testing
1301 North 3rd Street
Superior, WI 54880

Project ID:	786-97E		
Chain of Custody:	22507/21955		
Date Sampled:	10-09-97		
Date Received:	10-10-97		
Date Analyzed:	10-14-97		
Matrix:	Soil		
Sample Identification:			
Lab ID:	21766	R-1	3.5'
	21767	R-23	5.5'
	21768	R-26	4.0'
	21769	R-28	5.0'
	21770	R-29	4.0'
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	21778	R-11	5.5'
	21779	R-16	7.5'
	21780	R-24	8.0'
	21781	SP-1	
	21782	Trip Blank	

Samples were analyzed for GRO and DRO by the Wisconsin Modified GRO and DRO procedures. The results are reported on the following page.

Sincerely,

Lon Jones 10/28

Lon Jones
Organic/Bio Group Leader

PVOC	MDL (mg/kg)	21766 R-1 3.5'	21767 R-23 5.5'	21768 R-26 4.0'	21769 R-28 5.0'
MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Toluene (mg/kg)	0.050	BDL	BDL	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.068	BDL	BDL	BDL
Xylenes (mg/kg)	0.105	BDL	BDL	BDL	BDL
GRO (mg/kg)	10.0	10.8	BDL	31.4	BDL*
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.094	BDL	0.158	0.066
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.068	BDL	0.431	BDL
DRO (mg/kg)	10.0	1365	BDL*	26.5	BDL*
Moisture Content (%)		26.9	28.5	21.4	20.6

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MTBE (mg/kg)	0.500	BDL	BDL	BDL	BDL
Benzene (mg/kg)	0.050	BDL	BDL	0.120	BDL
Toluene (mg/kg)	0.050	BDL	BDL	0.217	0.474
Ethylbenzene (mg/kg)	0.050	0.585	BDL	0.746	0.288
Xylenes (mg/kg)	0.105	0.816	BDL	0.649	1.29
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DRO (mg/kg)	10.0	32.2	BDL*	157	BDL*
Moisture Content (%)		25.6	23.4	22.0	28.4

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

Site exceeds NR 720 limits

Detection ~~MDL~~ don't seem low enough Limits

PAHs would typically be required

Required in 720.09

PVOC	MDL (mg/kg)	21774 R-22 3.5'	21775 R-2 4.5'	21776 R-3 5.0'
MTBE (mg/kg)	0.500	BDL	BDL	BDL
Benzene (mg/kg)	0.050	0.546	BDL	BDL
Toluene (mg/kg)	0.050	0.682	BDL	BDL
Ethylbenzene (mg/kg)	0.050	0.084	BDL	BDL
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1,2,4-Trimethylbenzene (mg/kg)	0.050	0.184	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.172	BDL	BDL
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Moisture Content (%)		24.4	28.0	23.4

PVOC	MDL (mg/kg)	21777 R-5 5.0'	21778 R-11 5.5'	21779 R-16 7.5'
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Benzene (mg/kg)	0.050	BDL	BDL	BDL
Toluene (mg/kg)	0.050	0.080	BDL	0.073
Ethylbenzene (mg/kg)	0.050	0.050	BDL	BDL
Xylenes (mg/kg)	0.105	0.382	BDL	BDL
GRO (mg/kg)	10.0	BDL*	BDL	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	0.311	BDL	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	0.090	BDL	BDL
DRO (mg/kg)	10.0	BDL*	BDL*	BDL*
Moisture Content (%)		25.6	28.9	31.7

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

PVOC	MDL (mg/kg)	21780 R-24 8.0'	21781 SP-1	21782 Trip Blank
MTBE (mg/kg)	0.500	BDL	< 2.50	BDL
Benzene (mg/kg)	0.050	BDL	2.12	BDL
Toluene (mg/kg)	0.050	BDL	11.1	BDL
Ethylbenzene (mg/kg)	0.050	BDL	3.19	BDL
Xylenes (mg/kg)	0.105	BDL	19.1	BDL
GRO (mg/kg)	10.0	BDL*	229	BDL
1,2,4-Trimethylbenzene (mg/kg)	0.050	BDL	9.87	BDL
1,3,5-Trimethylbenzene (mg/kg)	0.050	BDL	9.90	BDL
DRO (mg/kg)	10.0	BDL	65.8	BDL
Moisture Content (%)		23.4	25.1	

BDL = Below Detection Limit
* = Peaks present in range but below detection limit.

Phone Log Sheet - Spills

04-16-208484 pdf

Agency, Person or Firm Reporting the Spill: Joseph McLaughlin (caller reporting)
Phone Number: (715) 398-3533

Person or Firm Responsible for the Spill: Murphy Oil
Phone Number: (715) 398-3533

Address: Stinson Ave. City: Superior State: WI Zip: 54880

Date Of Spill: 9-29/9-30-97 Time: ~~2:30~~ ?
Date Spill Reported: 9-30-97 Time: 2:30 P.M.

Substance Spilled: #1 Fuel Oil Quantity: Undetermined Amount

Substance Spilled: #2 Fuel Oil Quantity: Undetermined Amount

Exact Spill Location (Intersection, mileage, ¼¼-¼-Section-Town-Range, etc.) County:

Refinery property on Stinson where propane tanks are. Discovered an underground line is leaking as the substance was bubbling up from underground.

Surface Waters Affected? ☐ Yes ☒ No ☐ Potential

(name)

Action Taken to Control/Clean-up Spill:

Murphy staff working on clean-up

RECEIVED
OCT 1 1997
DNR SUPERIOR

Other Agencies On Scene? NO

Additional Comments

District Notified? ☒ Yes ☒ No

(name) [redacted]

First Responder Contacted Date Time

(name) Gave to Lee Wiesner

Person Filling Out This Form (print name) Date

Rachael Krivinchuk 9-30-97

DRAFT

Forward This Phone Log to The First Responder

MURPHY
OIL USA, INC.

SUPERIOR REFINERY
P O BOX 2066
SUPERIOR WISCONSIN 54880

October 6, 1997

Mr. James A. Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

RE: Fuel Oil Release
Product Pipeline

Dear Mr. Hosch:

This letter is to provide additional information on the site clean-up for the release of fuel oil that was discovered September 30, 1997, at approximately 0800 hours. Verbal notification of the release was provided the WDNR on the date the release was discovered. As reported in the notification, the release was a result of a leak that developed in a product pipeline due to corrosion that occurred on a damaged spot on the line. The damage was apparently done during the original installation of the line during the late 1950's.

At the time the spill occurred, the soil was generally dry. The material leaked to the surface of the ground in the vicinity of the propane tanks (tank nos. 107 - 111) located in the refinery property. The amount of material spilled is unknown. At no time was there any danger of the material moving off site.

The spill location is on the refinery property which is at 2400 Stinson Ave., Superior, WI. The map coordinates for the refinery are NW¼, NW¼, Sect. 36, T 49N, R 14N.

Clean-up activities commenced immediately after discovery of the release. The pipeline was depressured and purged of product. Soil was excavated to locate the site of the leak. The line has been repaired by replacing this section of line with new pipe. Soil is being removed from the site at this time.

The amount of soil to be removed is unknown at this writing. The recovered soil will be stored in the contaminated soil storage building until arrangements for the ultimate disposition of the soil are made. Typically, contaminated soils are disposed of at a local asphalt plant in an asphalt roaster.

SPUR

Murphy Oil USA will remove the soil visibly contaminated from this release. Sampling will be done after the soil has been removed to determine if the contaminated materials have been adequately removed.

A follow-up letter will be sent to the WDNR at the completion of the remedial activities to summarize the clean-up and the results of any samples that are taken.

Please contact me at (715)398-3533 if you have any questions or comments in this regard.

Sincerely,

Mark H. Miller
Manager, Safety and Environmental Control

mm118

cc: Fred Green
Jim Britt
Jim Kowitz
Rick Lewandowski