Gannett Fleming

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

August 21, 2003
File #34265.006

Shawn Wenzel, Hydrogeologist
Wisconsin Department of Commerce
Site Review Section
201 West Washington Avenue
P.O. Box 8044
Madison, WI 53708-8044

Re: Soil GIS Registry Packet
Superior Refinery/Murphy Oil - Former Tanks 1 & 2
2400 Stinson Avenue, Superior
WDNR BRRTS No.: 02-16-190549
COMM ID No: 54880-0456-07-D

Dear Mr. Wenzel:

On behalf of Murphy Oil USA, Inc., Gannett Fleming, Inc. is submitting this Geographic Information System (GIS) Registry Packet for the Tanks 1 & 2 release site at Murphy's Superior refinery. In a January 25, 2001, letter to Liz Lundmark of Murphy, the Wisconsin Department of Commerce (COMM) conditionally closed the Tanks 1 and 2 site. The condition of closure was that Murphy file a deed notice for the petroleum-contaminated soils remaining at the site. Since the time of COMM's conditional closure letter, it is now acceptable to submit a GIS Registry packet in place of a deed notice.

Following is the GIS registry required information:

1. *One-time fee of $200.00 for soil registry:* A check from Murphy Oil for $200.00 made out to the WDNR was sent to Ms. Janet Kazda in WDNR's Rhinelander office.

2. *Copies of the most recent deed:* See Attachment A for a copy of the most recent deed.

3. *A copy of the certified survey map or the relevant section of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map*: See Attachment B for a copy of the recorded plat map provided by the Douglas County Clerk's office and dated 29 June 1992.

4. *Geographic position of all properties within or partially within the contaminated site boundaries:* Based on WTM91 projection, representative coordinates for the site are 361724 and 692930. These coordinates were obtained from the following WDNR website: http://gomapout.dnr.state.wi.us/org/at/et/geo/gwur/index.htm. To determine the WTM91 coordinates, the scale of 1:4,859 was used when recording the coordinates.

5. *Parcel identification number for each property:* The parcel number for the Murphy property is 01-801-0339.00. The Douglas County Treasurer's office provided the parcel number. An outline of the property can be seen on the recorded plat map (Attachment B).

6. *A location map:* Enclosed Figure 1 is a location map of the Murphy Oil refinery.

7. *A map of all contaminated properties within site boundaries, showing buildings, roads, property boundaries, contaminant sources, utility lines, monitoring wells, and potable wells:* Enclosed Figure 2 is a site plan of the refinery. Tanks 1 & 2 were located in the approximate south-central portion of the refinery property and were removed in 1998. Figures 3 and 4 show the former Tanks 1 & 2 basin and the locations of the soil samples collected as part of the investigation.

8. *A table of the most recent analytical results, with sample collection dates and analytical results for soil samples:* Enclosed Tables 1 and 2 present the results for the soil samples collected during this investigation.

9. *A map showing the location of all soil samples and a single contour showing the horizontal extent of residual soil contamination that exceeds generic or site-specific RCLs:* Enclosed Figures 3 and 4 show the locations of all soil samples collected during this site investigation, and Figure 5 shows the approximate extent of soil exceeding NR 720 and/or 746 standards.

10. *A geologic cross section, if required as part of the site investigation:* A geological cross section was not required as part of the site investigation.

11. *A statement signed by the responsible party, which states that he or she believes that the legal descriptions attached to the statement are complete and accurate:* See Attachment C for a signed statement by Murphy Oil USA, Inc. stating that the legal description of the property is complete and accurate.

12. *A copy of a letter sent by the RP to all owners of properties with groundwater exceeding ESs:* This item is not applicable. The groundwater contamination, as a result of this release site, does not extend beyond the boundaries of Murphy's property.

13. *A copy of notification provided to city/village/municipality/state agency responsible for maintenance of a public road right-of-way, within or partially within the boundaries of the contaminated site:* This item is not applicable; the groundwater contamination, as a result of this release site, does not extend into any public road right-of-way.

Shawn Wenzel, Hydrogeologist
Wisconsin Department of Commerce
August 21, 2003

Murphy looks forward to COMM's final closure of the former Tanks 1 and 2 release site. Please call if you have any questions or need any additional information.

Sincerely,

GANNETT FLEMING, INC.

Dennis F. Kugle
Vice President

DFK/jec
Enc.

cc: Liz Lundmark (Murphy Oil)
Lee Vail (Murphy Oil)
Janet Kazda (WDNR) w/o attachments but w/$200 check

ATTACHMENT A

COPY OF MOST RECENT DEED

ATTACHMENT C

SIGNED STATEMENT THAT LEGAL DESCRIPTION OF PROPERTY IS COMPLETE AND ACCURATE

ATTACHMENT B

COPY OF RECORDED PLAT MAP

REFINERY NORTH

Gannett Fleming

FIGURE 3

LEGEND

S-7 *Twin Ports Soil Sample Location (September 1998)*

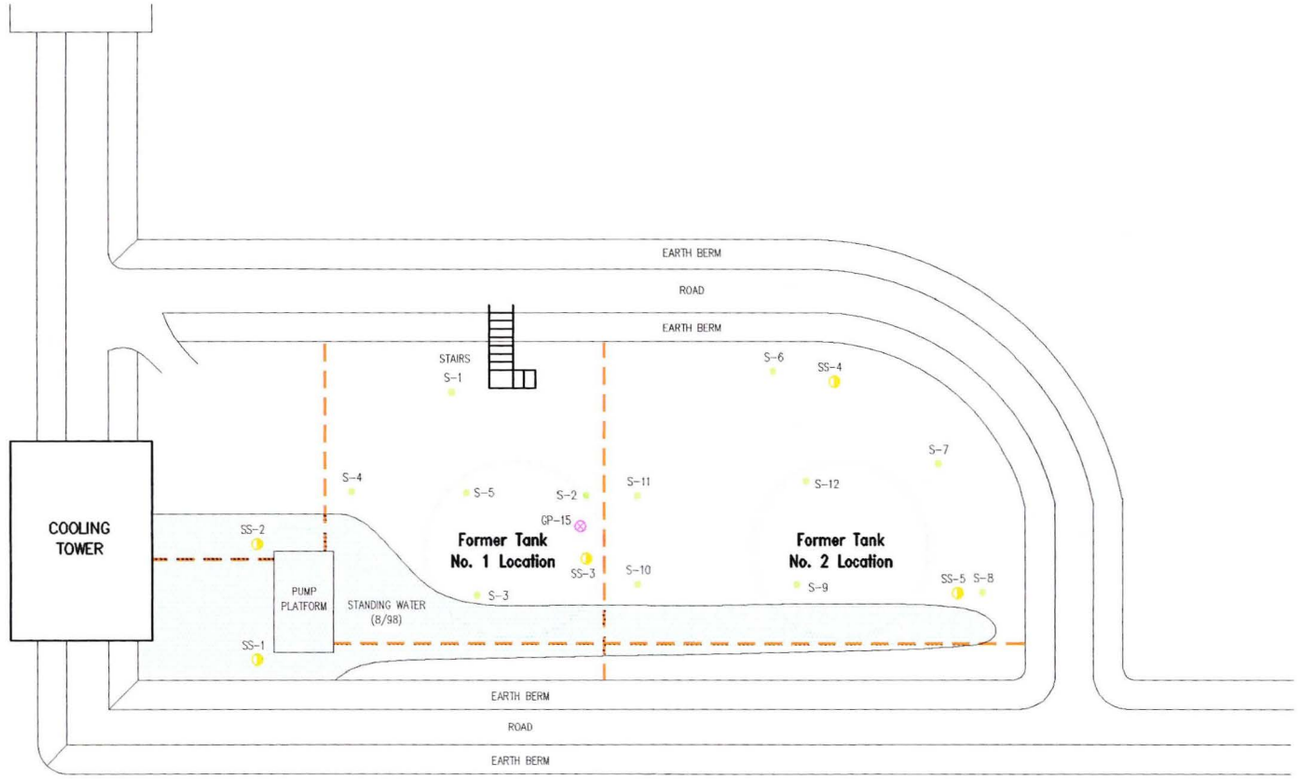
SS-2 *Gannett Fleming Hand-Auger Soil Sample Location (July 1998)*

GP-15 *Gannett Fleming Geoprobe Soil Sample Location (July 1998)*

Aboveground Piping

NOTES

1. *Site Layout And Sample Locations Are Based On Field Measurements And Are To Be Considered Approximate; Site Not Surveyed.*
2. *This Figure Is Based On A Twin Ports Testing Site Plan Of The Tanks 1 And 2 Basin.*



0 30

Approximate Scale In Feet

HAND AUGER AND GEOPROBE SAMPLING LOCATIONS AT FORMER TANK NOS. 1 AND 2

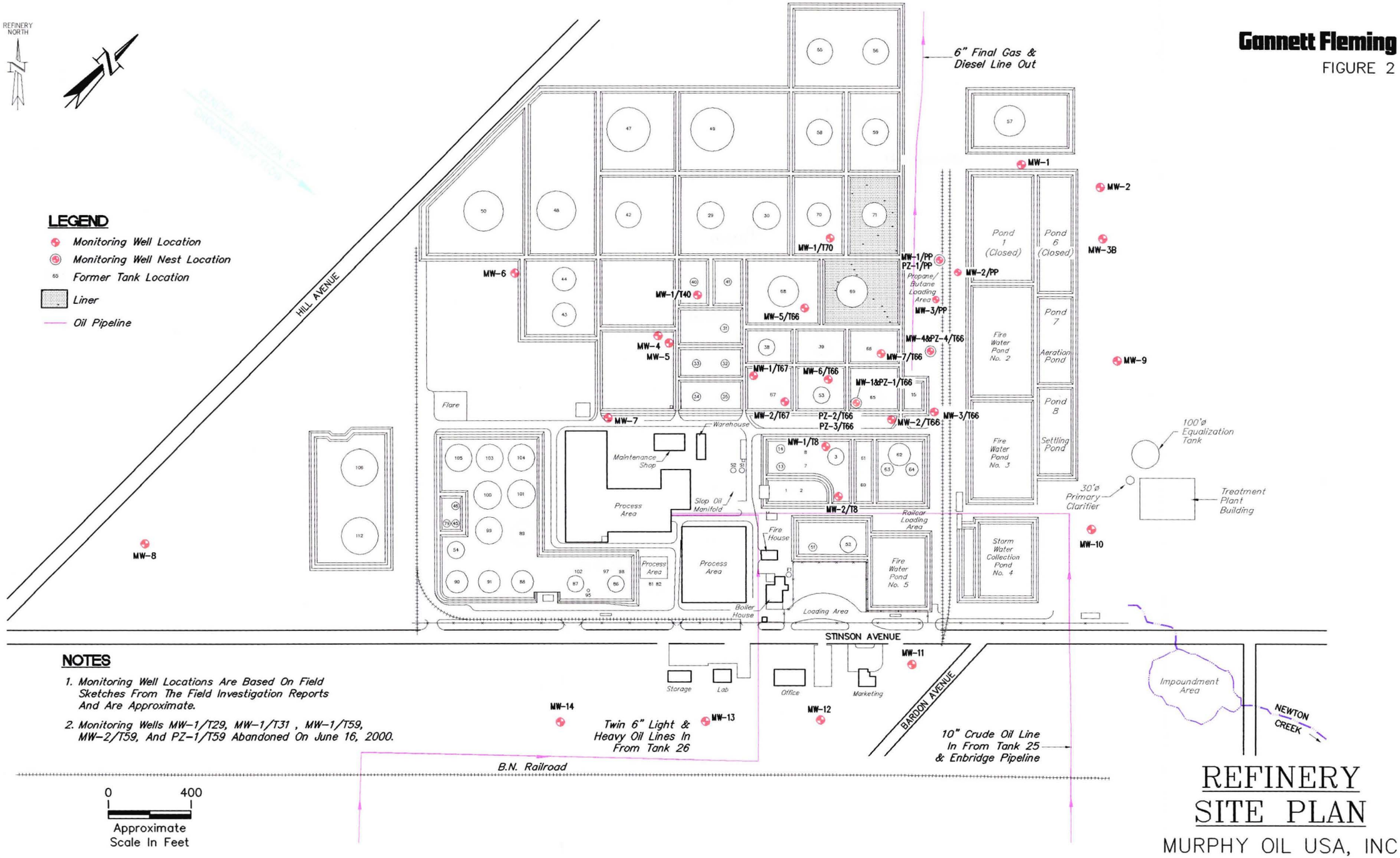
MURPHY OIL USA, INC.

SUPERIOR, WISCONSIN

072803 034265WAT

Gannett Fleming

FIGURE 2



NOTES

1. Monitoring Well Locations Are Based On Field Sketches From The Field Investigation Reports And Are Approximate.
2. Monitoring Wells MW-1/T29, MW-1/T31 , MW-1/T59, MW-2/T59, And PZ-1/T59 Abandoned On June 16, 2000.

REFINERY SITE PLAN

MURPHY OIL USA, INC

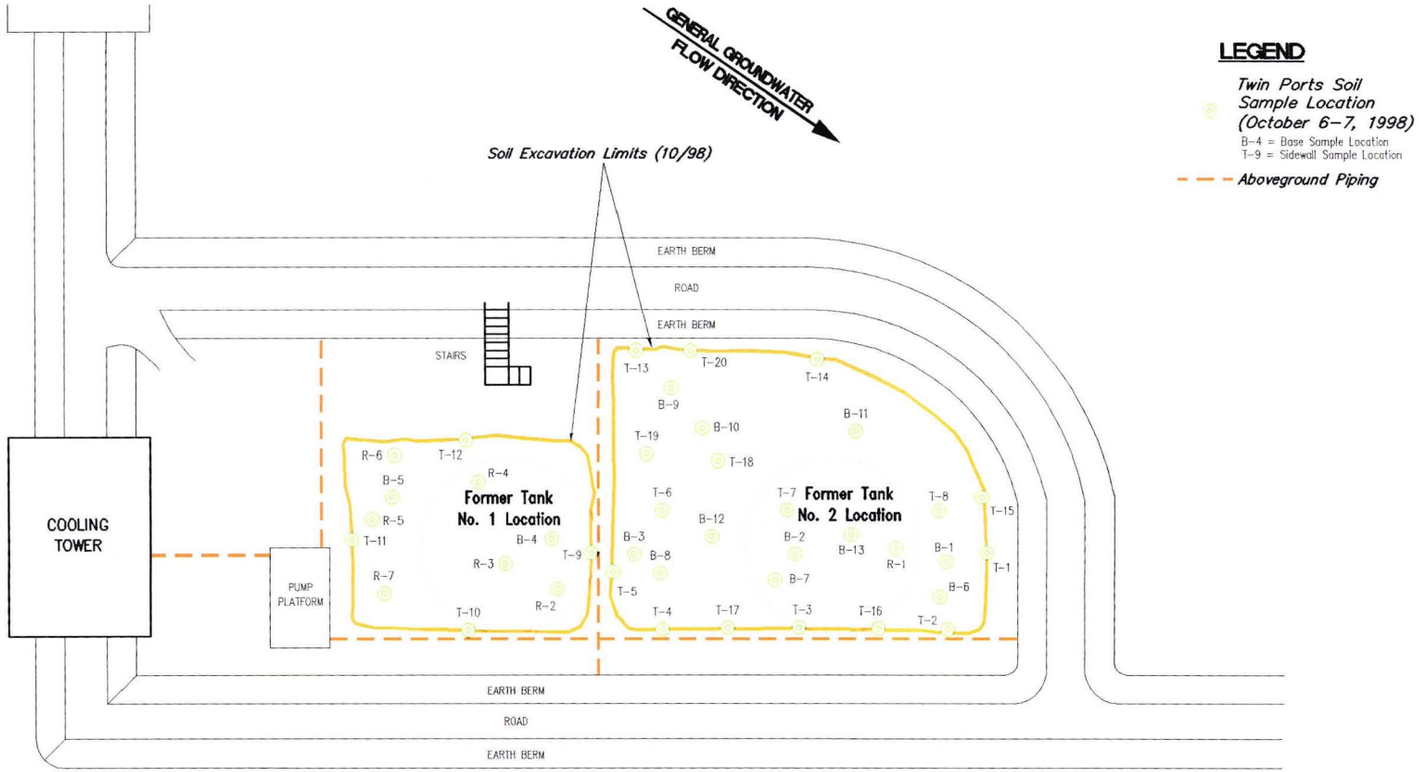
SUPERIOR, WISCONSIN

072903 34265WDJ

REFINERY NORTH

NOTES

1. *T-6, 7, 8, 18, And 19 Were Collected During The Excavation Work And Were Not Final Extent Of Excavation Sidewall Samples. Soils At These Locations Were Excavated.*
2. *Site Layout And Sample Locations Are Based On Field Measurements And Are To Be Considered Approximate; Site Not Surveyed.*
3. *This Figure Is Based On A Twin Ports Testing Site Plan Of The Tanks 1 And 2 Basin.*



LEGEND

Twin Ports Soil Sample Location (October 6-7, 1998)
B-4 = Base Sample Location
T-9 = Sidewall Sample Location

Aboveground Piping

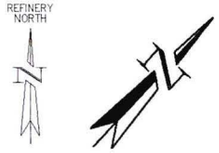
0 30
Approximate Scale In Feet

LOCATIONS OF EXCAVATION SOIL SAMPLES AT FORMER TANK NOS. 1 AND 2

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

0814O3 34265WAU

REFINERY NORTH



NOTES

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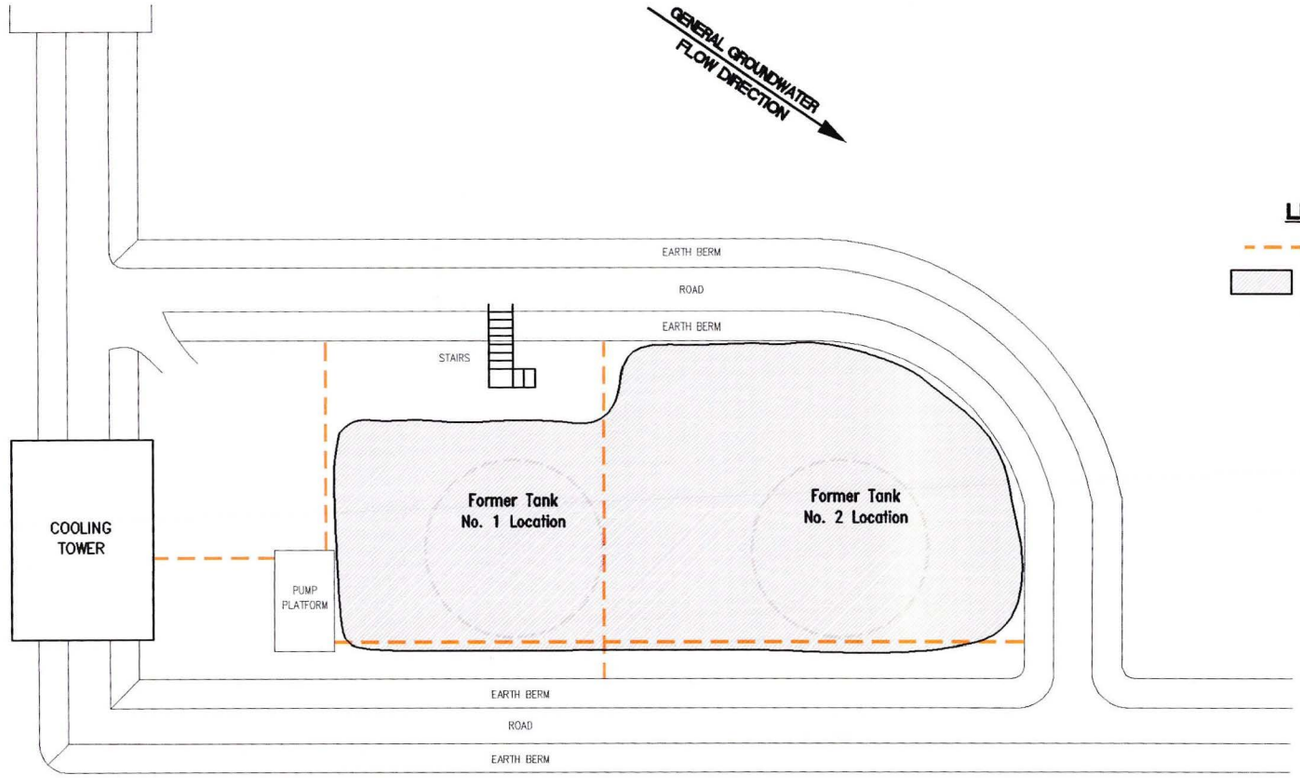
2. *This Figure Is Based On A Twin Ports Testing Site Plan Of The Tanks 1 And 2 Basin.*



LEGEND

- *Aboveground Piping*
- *Area With Soils That Exceed NR720 and/or NR746 Standards*

0 30

Approximate Scale In Feet

EXTENT OF REMAINING PETROLEUM CONTAMINATED SOILS AT FORMER TANK NOS. 1 AND 2

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

081403 34265WDM

SOUTH 1/2 SEC. 25

SCALE, IN FEET

Prepared By:
Douglas County Clerk's Office, R.W. Earh
29 June 1992

WI DNR Activities at Discharge Sites

Help

BRRTS data comes from many sources inside and outside of DNR. There may be gaps and errors in the data, or delays in updating new information. Please see our disclaimers page for more information.

DNR Activity Number:	02-16-190549 See pg 3
Activity Type:	ERP
Activity Name:	MURPHY OIL - TANK 1 & 2 (FORMER)
Start Date:	05/26/1998
End Date:	
Site Name:	MURPHY OIL CORP
Address:	2400 STINSON AVE
Municipality:	SUPERIOR
Zip:	548800456
County:	Douglas
DNR Region:	Northern Region
Facility Acres:	365
Degrees of Latitude:	46
Minutes of Latitude:	41
Seconds of Latitude:	27.6
Degrees of Longitude:	92
Minutes of Longitude:	4
Seconds of Longitude:	16.4
Lat/Long Datum:	1927 (NAD27)
Lat/Long Method:	Digitized from a map @ larger than 1:24,000 scale [40 meters]
Quarter Quarter Section:	NW
Quarter Section:	NW
Survey Section:	36
Survey Township:	49
Survey Range:	14W

FID Number: 816009590

Jurisdiction: Commerce
File Location: RHINELANDER
Eligible for PECFA Funds: Y

AST at Site: Y
Tracked by Commerce Database: Y

Priority: Unknown
Risk: Unknown

Persons or Companies associated with this DNR Activity

Person or Company	Role	Address	Address 2	PO Box	Municipality	State	Zip
HOSCH, JIM	Project Manager	1401 TOWER AVE	WDNR		SUPERIOR	WI	54880
MURPHY OIL USA INC	Responsible Party	2400 STINSON AVE			SUPERIOR	WI	54880

Records 1 to 2 of 2

Download

Actions performed during this DNR Activity

Action Name	Action Description	Comment	Date Action Occurred
Notification	Date the DNR is notified of the discovery of the contamination.		05/26/1998
Miscellaneous	Region specific. This information should be periodically reviewed to determine if additional codes should be created.	REFER TO SPILL 04-16-188883	05/26/1998
Activity Transferred to DCOM	Date that project management for the activity is transferred to Department of Commerce. Includes transfer of site files.	REQUEST BY CONSULTANT. REVIEW BY HOSCH. LETTER TO RP. FILE TO LAUBE.	07/31/2000

Records 1 to 3 of 3

Download

Impacts

Impact Description	Comment
Soil Contamination	

Record 1 of 1

Substance

Substance Description	Substance Name	Amount Released	Units
Other			

Record 1 of 1

Spiller Action

No Records returned

- Person or Company
- Distance
- PLSS
- Lat/Long

- **Return Links**
  - BRRTS on the Web

WI DNR Activities at Discharge Sites

Help

BRRTS data comes from many sources inside and outside of DNR. There may be gaps and errors in the data, or delays in updating new information. Please see our disclaimers page for more information.

DNR Activity Number:	04-16-188883
Activity Type:	Spills
Activity Name:	TANKS 1 & 2, E OF NO 2 COOLING TOWER
Start Date:	05/26/1998
End Date:	
Site Name:	MURPHY OIL CORP
Address:	2400 STINSON AVE
Municipality:	SUPERIOR
Zip:	548800456
County:	Douglas
DNR Region:	Northern Region
Facility Acres:	365
Degrees of Latitude:	46
Minutes of Latitude:	41
Seconds of Latitude:	27.6
Degrees of Longitude:	92
Minutes of Longitude:	4
Seconds of Longitude:	16.4
Lat/Long Datum:	1927 (NAD27)
Lat/Long Method:	Digitized from a map @ larger than 1:24,000 scale [40 meters]
Quarter Quarter Section:	NW
Quarter Section:	NW
Survey Section:	36
Survey Township:	49
Survey Range:	14W

FID Number: 816009590

Jurisdiction: DNR

Incident Time: 05/24/1998 12:00:00 am
Reported Time: 05/26/1998 11:00:00 am
Spill Cause: Unknown, rp contact stated past historical spillage

Spill Source Description: Pipeline, Terminal, Tank Farm, Oil Jobber/Wholesaler

Persons or Companies associated with this DNR Activity

Person or Company	Role	Address	Address 2	PO Box	Municipality	State	Zip
MURPHY OIL USA INC	Responsible Party	2400 STINSON AVE			SUPERIOR	WI	54880

Record 1 of 1

Download

Actions performed during this DNR Activity

Action Name	Action Description	Comment	Date Action Occurred
Date Spill Ocurred (Activity Date)	Date the spill occurred. Use notification date if unknown.		05/24/1998
Notification	Date the DNR is notified of the discovery of the contamination.		05/26/1998
Activity Transferred to ERP	This case was not closed out shortly after occurrence and is now tracked as an activity in ERP program.	transferred to 02-16-190549	05/26/1998

Records 1 to 3 of 3

Download

Impacts

Impact Description	Comment
Soil Contamination	

Record 1 of 1

Substance

Substance Description	Substance Name	Amount Released	Units
Other			

Record 1 of 1

Spiller Action

Spiller Action	Comment
Cleanup Method	excavation

Record 1 of 1

- Person or Company
- Distance
- PLSS
- Lat/Long

- **Return Links**
  - BRRTS on the Web

Wisconsin
Department of Commerce

P. O. Box 530
Park Falls, Wisconsin 54552
(715) 762-5557
FAX (715) 762-0054

Tommy G. Thompson, Governor
Brenda J. Blanchard, Secretary

January 25, 2001

Ms Liz Lundmark
Murphy Oil USA, Inc.
2407 Stinson Ave
Superior, WI 54880

Subject: **Close-out of Case # 54880-0456-07-D/ BRRTS #02-16-190549**
Murphy Oil Tank 1&2

Dear Ms. Lundmark:

On January 24, 2001 the above site was reviewed for closure by the Site Review staff of the PECFA Bureau. Because the site met the criteria for transfer to the Department of Commerce, all issues relating to this site are administered by the staff within the Department of Commerce's PECFA Bureau. Using the standards established in NR 700, the Department has determined that this site has been remediated to a level protective of the environment and human health. The Department considers this site to meet environmental standards for closure with a deed notification.

Please have your consultant complete a draft deed notice and submit this to me for review. Once it is approved you may have it attached to the deed for this property and send me a final copy with a copy of the receipt indicating it has been filed. Once this is done your site will be officially closed on our tracking system.

This is based upon the information provided to us by your consultant. If, in the future, site conditions indicate that any contamination that might remain poses a threat, the need for further remediation would be determined and required if necessary.

Be sure to include a copy of this letter with your PECFA claim package, if your site is eligible for reimbursement. Please be sure to keep all documentation related to the investigation and remediation of your site in case you ever decide to sell this property. The department has made the decision that after 3 years the files we hold for your site will be destroyed. So you are responsible for maintaining this file and passing it on to any future owners.

Thank you for your efforts in the protection of the environment. If you have any additional questions, please call me at 715-762-5557.

Sincerely,

Shanna L. Laube, P.G.
Hydrogeologist
PECFA Program

cc: Gannett Fleming, Inc., Jeff King

54880-0456-01

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

RECEIVED
DEC 0 8 2000
ERS DIVISION

November 21, 2000

Murphy Oil USA
2400 Stinson Ave
Superior, WI 54880

2400

Subject: Murphy Oil - 3800 barrel Crude Oil Spill, Stinson and Hill Ave, Superior, WI
BRRTS # 02-16-000506 V Ave.

To Whom It May Concern::

As you may be aware, the Wisconsin Legislature enacted legislation that gives authority for the oversight of certain environmental contamination cases to the Wisconsin Department of Commerce. The above-referenced case meets the criteria for that transfer.

The case files for this site have been combined with the materials for BRRTS # 04-16-223944 and 04-16-223956, and all files have been transferred to Shanna Laube at the Department of Commerce at the address listed below. Her phone number is 715-762-5557. Please address all future inquiries to her.

Sincerely,
NORTHERN REGION

Janet Kazda

Janet Kazda
Remediation and Redevelopment Program

C: File
County File

→ Shanna Laube
Wisconsin Dept of Commerce
PO Box 530
Park Falls, WI 54552-0530

Onewsites this
what el got. no
tracking sheets at all.
on some.

Shanna

Department of Natural Resources

ENVIRONMENTAL REPAIR PROGRAM
CASE TRACKING FORM FOR VER. ~~2~~ 2.1
Form 4400-150

I.D. # #506

District: NWD County: Douglas (16) Case No.: PMN:
Site Name: Murphy Oil - Superior (STINTSON - HILL) FID:
Address: STINTSON & HILL AVE Proj. Mgr:
Legal Municipality: Support Person:
T V C Legal Desc: 1/4 1/4 Sec 36, T 49, R 14 E/W
Lat: N ° . ' Long: W ° . '
Date of Discovery: 09 / 28 / 88 Date of RP Contact: / /

PRIORITY SCREENING:
- 1 = High
- 3 = Low
- ✓ 4 = Unknown

PRE-SCORE
27 . L

FUNDING SOURCE:
- ✓ 1 = RP
- 2 = LTF
- 3 = EF
- 4 = SF
- 5 = None
- 6 = Other (Describe In Comments)
- 7 = EPA Emergency Resp.

ENFORCEMENT AUTHORITY:
- ✓ 1 = Spill Law s. 144.76, Wis. Stats.
- 2 = Envir Repair Law s. 144.442, Wis. Stats.
- 3 = Hazardous Waste Rules NR 600 Series
- 4 = Solid Waste Rules NR 500 Series
- 5 = CERCLA
- 6 = Abandoned Container s. 144.77, Wis. Stat.
- 7 = Other (Describe in Comments)

PROGRAMS INVOLVED: (L - LEAD S - SUPPORT)

Aban Containers	NR 500 Solid Waste	Water Supply
Lust	L Spills	Water Resources Mgt
NR 600 Hazardous Waste	Superfund	Env. Repair

RESPONSIBLE PARTY:

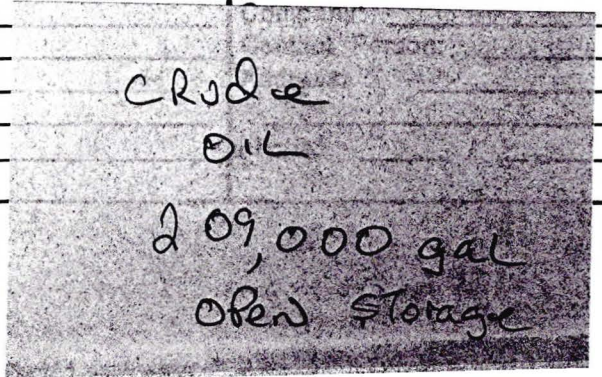
Business Name: Murphy Oil
Owner/Mgr.:
Address: STINSON AVE
Superior WI 54880
Phone: 715 / 398-3533
Contact Person:

Business Name:
Owner/Mgr.:
Address:
Phone: /
Contact Person:

		KNOWN IMPACTS (X)	POTENTIAL IMPACTS (X)
No Threat			
Fire/Explosion threat	(1)		
Contaminated Private Well	(2)		
Contaminated Public Well	(3)		
Groundwater Contamination	(4)		
Soil Contamination	(5)		
Direct Contact	(10)		
Contaminated Surface Water	(7)		
Contaminated Air	(8)		
Other	(6)		

CONSULTANT INFORMATION:

Company:
Contact Person:
Address:
Phone: /
(List additional on separate sheet & attach.)



State of Wisconsin
Department of Natural Resources

TOXIC AND HAZARDOUS SPILL REPORT

Form 4400-91 Rev. 6-86

To: John Planko

State Div. Emergency Gov't. (608) 266-3232
U.S. Nat'l. Response Center (800) 424-8802
Chemtrec/Pesticides/Chlorine (800) 424-9300

Spill ID Number _____ ✓
Y Y M M D D 0-99

Date of Incident	Day of Week	Time of Incident	Reported By (Name)	Telephone Number
9/28/88	Weds	☐ A.M. ☒ P.M.		( )

Date Reported	Day of Week	Time Reported	Agency or Firm Reporting	Reported thru Div. Emergen. Gov't.
9/28/88	Weds	☐ A.M. ☒ P.M.	Fire Dept.	☐ Yes ☐ No

Substance Involved	Quantity	Units	Person or Firm Responsible
crude oil	3600-3800	Barrels	Murphy Oil

Substance Involved	Quantity	Units	Contact Name	Telephone Number
	42gal/bbl		Dick Stampe	(715) 398-3533

Physical Characteristics

☐ Solid ☒ Liquid Color black
☐ Semisolid ☐ Gas Odor yes

Address — Street or Route: Stinson Avenue
City, State, Zip Code: Superior, WI 54880

Cause of Incident
Employee filled open storage tank

Exact Location Description (intersection, mileage, etc.)
Stinson & Hill Ave

County Location	¼¼, ¼, Section, Town, Range
Douglas	___, ___, ___, T___N, R____

DNR Dist	DNR Area	Groundwaters Affected
NW	BRL	☐ Yes ☒ No ☐ Potential

Surface Waters Affected	Name of Surface Water
☐ Yes ☒ No ☐ Potential	

Date District Notified	Day of Week	Time District Notified
9/28		☐ A.M. ☐ P.M.

District Person Notified: | Telephone Number ( )

Date Investigated	Day of Week	Time Investigated	Person Investigating	Telephone Number
9/29/88	Thurs.	7:00 ☒ A.M. ☐ P.M.	David Sellers	(715) 392-7989

Action Taken By DNR

☐ No Action Taken ☒ Investigation ☐ Supervise/Conduct Cleanup
☐ Spiller Required To Take Action; Type _____
☐ Contractor Hired By DNR; Name _____
☐ Amount Recovered _____
☐ 29.29 Enforcement

Other Agencies on Scene

Local _____
State _____
Federal _____

Action Taken By Spiller

☐ No Action Taken ☐ No Notification ☐ Investigate
☒ Containment; Type Dikes
☒ Cleanup; Method Suction Truck, Cats
☒ Amount Recovered Unknown at this time
☐ Monitor _____
☐ Contractor Hired; Name _____
☐ Other Action _____

Spill Location

☐ Industrial Facility/Paper Mill/Chem. Co.
☐ Gas/Service Station/Garage, Auto Dealer, Repair Shop
☐ Ag Coop/Facility/Cheese Factory/Creamery
☐ Other Small Business (bank, grocery, insurance co., etc.)
☐ Public Property (city, county, state, church, school, etc.)
☐ Utility Co., Power Generating/Transfer Facility
☐ Private Property (home/farm)
☒ Pipeline, Terminal, Tank Farm, Oil Jobber/Wholesaler
☐ Transportation Accident, Fuel Supply Tank Spill
☐ Transportation Accident, Load Spill
☐ Construction, Excavation, Wrecking, Quarry, Mine
☐ Other _____

Spilled Substance Destination

☒ Air
☒ Soil
☐ Groundwater
☐ Surface Water
☐ Storm Sewer
☐ Sanitary Sewer
☒ Contained/Recovered
☐ Other _____

RECEIVED
OCT - 4 1988
NORTHWEST DISTRICT HEADQUARTERS

Person Filing This Report (print name): David Sellers

Signature: David Sellers | Date Signed: 10/3/88

Additional Comments:

Crude spill out of Tank 48, oil confined to diked area around tank 48 and 42. Oil is being pumped by vacuum trucks to tank 42 and possibly slop oil tanks/which are heated. Will separate water from crude) then send crude to head of refinery will need to remediate oil soaked soil / sand Tom

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

July 31, 2000

Mr. Bill Gustafson
Murphy Oil USA
2400 Stinson Ave
Superior, WI 54880

Subject: Murphy Oil USA Tanks 1 and 2, 2400 Stinson Ave, Superior, WI
BRRTS # 02-16-190549

Dear Mr. Gustafson:

The Department of Natural Resources – Remediation and Redevelopment program has recently received a request from your consultant, Gannett Fleming, to transfer the above-referenced case to the authority of the Wisconsin Department of Commerce.

Your consultant states that no high risk factors are present at the site. The case files for this site, therefore, have been transferred to Shanna Laube at the Department of Commerce at the address listed below. Her phone number is 715-762-5557. Please address all future inquiries to her.

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

Sincerely,
NORTHERN REGION

Janet Kazda

Janet Kazda
Remediation and Redevelopment Program

Cc: File
County File

Jeff King
Gannett Fleming
8025 Excelsior Dr
Madison, WI 53717-1900

Shanna Laube
Wisconsin Dept of Commerce
PO Box 530
Park Falls, WI 54552-0530

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

July 31, 2000

Mr. Bill Gustafson
Murphy Oil USA
2400 Stinson Ave
Superior, WI 54880

Subject: Murphy Oil USA Tanks 1 and 2, 2400 Stinson Ave, Superior, WI
BRRTS # 02-16-190549

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Sincerely,
NORTHERN REGION

Janet Kazda

Janet Kazda
Remediation and Redevelopment Program

Cc: File
County File

Jeff King
Gannett Fleming
8025 Excelsior Dr
Madison, WI 53717-1900

→ Shanna Laube
Wisconsin Dept of Commerce
PO Box 530
Park Falls, WI 54552-0530

TO: Danielle Lancour, Rhinelander
FROM: Hoseh
DATE: 7-20-2000

NORTHERN REGION
CASE TRACKING

UID #			ACTION	ACTION DATE	COMMENTS
02	16	190549	76	7/20/2000	TRANSFER TO DCOMM

NOR R & R TEAM

By Janet Kazda, Rhinelander
Date 7/17/00

Spooner
Jamie Dunn
Tom Kendzierski

Brule
Chris Saari

X **Superior**
Jim Hosch

Rhinelander
Chuck Weister
Norm Dunbar
Danielle Lancour
Paula Schneider
Bill Schultz
Crystal Ramsey
Dan Boardman

Antigo
John Sager

Gannett Fleming

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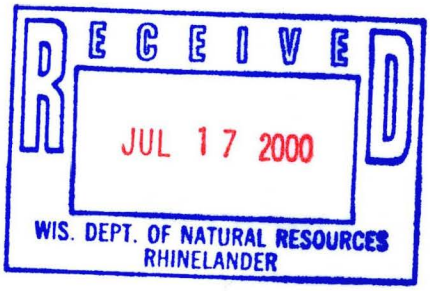
July 14, 2000
File #34265.006



Danielle Lancour
Northern Region Headquarters
Wisconsin Department of Natural Resource
107 Sutliff Avenue
Rhinelander, Wisconsin 54501

Re: Request File Transfer to Wisconsin Department of Commerce
Former Tanks 1 and 2 Release Site, Murphy Oil USA, Inc., Superior, WI
BRRTS ERR#: 02-16-190549
PECFA Claim: 54880-0456-07-D

Dear Ms. Lancour:

On behalf of Murphy Oil USA, Inc., Gannett Fleming, Inc. is requesting that the Wisconsin Department of Natural Resources (WDNR) transfer its project file for Murphy's former Tanks 1 and 2 release site to the Department of Commerce. There have been historical releases of petroleum products within this former tank basin, located at Murphy's Superior refinery.

On April 14, 2000, Gannett Fleming sent Shanna Laube of the Wisconsin Department of Commerce a letter report describing the site investigation and subsequent remediation activities, and based on these results, requested site closure for the former Tanks 1 and 2 basin. Janet Kazda of the WDNR also received a copy of the April 2000 letter. In correspondence between the WDNR and Gannett Fleming, Jim Hosch of the WDNR said that he would like an updated table listing the groundwater analytical results from monitoring well MW-2/T8, located directly downgradient from the former Tanks 1 and 2 basin, before transferring the WDNR's project file to Commerce.

Figure 1 shows the location of monitoring well MW-2/T8. As shown on Figure 1, MW-2/T8 is located in the southwest corner of the former Tank 8 basin. In our May 21, 1999, site status report to the WDNR, we indicated that we planned to install a monitoring well in the southeast corner of the Tanks 1 and 2 basin; however, because of the presence of standing water and aboveground piping, the basin was not accessible to a drill rig. Instead, we installed the monitoring well immediately downgradient, in the former Tank 8 basin, approximately 30 feet east of the former Tanks 1 and 2 basin. This well is also being used as part of a separate investigation of the former Tank 8 basin.

Continued . . .

Danielle Lancour
Wisconsin Department of Natural Resource
July 14, 2000

Table 1 lists the analytical results from monitoring well MW-2/T8. As shown in Table 1, all compounds, except for benzene, were below NR 140 enforcement standards.

Because this release site does not meet the definition of a high-risk site, as defined in NR 746.03(7), Commerce is the lead review agency for this site, as stated in NR 746.04(1)(b). We therefore request that the WDNR transfer its project file for this release site to Commerce.

Please call if you have any questions about this request to transfer the WDNR's project file for Murphy's former Tanks 1 and 2 release site to Commerce.

Sincerely,

GANNETT FLEMING, INC.

Jeffrey J. King
Staff Hydrogeologist

JJK/reb
Enc.
cc: Lee Vail (Murphy/New Orleans)
Greg Neve (Murphy/Superior)
Liz Lundmark (Murphy/Superior)
Kevin Melnyk (Murphy/El Dorado)
Rick Lewandowski (DeWitt, Ross & Stevens)
Shanna Laube (Wisconsin Department of Commerce)

MURPHY OIL USA, INC

SUPERIOR, WISCONSIN

TABLE 1

GROUNDWATER SAMPLING RESULTS - DETECTED COMPOUNDS

FORMER TANKS 1 AND 2 RELEASE SITE (ug/l)

Gannett Fleming

Well I.D. and Sample Date	Parameter																		
	DRO	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	Trimethlybenzenes	MTBE	Isopropylbenzene	p-Isopropyltoluene	Acenaphthene	Acenaphthylene	Anthracene	Fluoranthene	Fluorene	1-Methyl Naphthalene	2-Methyl Naphthalene	Naphthalene	Phenanthrene
MW-2/T8																			
12/10/1999	14,800	15,300	**39.3**	14.9	3.23	55.3	126	<1.5	<0.75	3.10	<0.1	<0.1	<0.09	<0.08	2.99	64.5	71.7	14.9	4.16
03/21/2000	NA	1,400	**33**	14	2.4	5.1	85	<0.31	NA	NA	3.4	<1	0.13	31	2.4	23	9.4	3.9	1.7
06/14/2000	NA	620	**24**	7.8	1.2	3.9 J	14.9	<0.47	NA	NA	3	1.3 J	0.053	<0.36	<0.33	23	14	1.9	1
NR 140 PAL	NS	NS	0.5	140	200	1,000	96	12	NS	NS	NS		600	80	80	NS	NS	8	NS
NR 140 ES	NS	NS	5	700	1,000	10,000	480	60	NS	NS	NS		3,000	400	400	NS	NS	40	NS

NOTES:

Results reported in units of micrograms per liter (ug/l).

Initial round of samples collected from the well analyzed for VOCs.

Only detected parameters shown on table.

Results in bold exceed NR 140 ES standard.

NS = No standard.

NA = No samples collected.

J = Analyte detected between level of detection and level of quantitation.

M:\CLERICAL\PROJECTS\0300\367-18\TABLES\JJK\JKTABLE1

Gannett Fleming

FIGURE 1

GENERAL DIRECTION OF GROUNDWATER FLOW

LEGEND

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

HILL AVENUE

MW-8

MW-6

MW-4

MW-5

MW-7

MW-1/T29

MW-1/T70

MW-2/T59

MW-1&PZ-1/T59

MW-1

MW-2

MW-3B

MW-1/PP

PZ-1/PP

Propane/ Butane Loading Area

MW-3/PP

MW-2/PP

MW-1/T40

MW-1/T31

MW-5/T66

MW-4&PZ-4/T66

MW-7/T66

MW-1/T67

MW-6/T66

MW-1&PZ-1/T66

MW-2/T67

PZ-2/T66

PZ-3/T66

MW-2/T66

MW-3/T66

MW-9

Flare

Warehouse

Maintenance Shop

Process Area

Slop Oil Manifold

MW-1/T8

MW-2/T8

Railcar Loading Area

Fire House

Process Area

Process Area

Fire Water Pond No. 5

Storm Water Collection Pond No. 4

Fire Water Pond No. 3

Pond 1 (Closed)

Pond 6 (Closed)

Pond 7 Aeration Pond

Pond 8 Settling Pond

100'ø Equalization Tank

30'ø Primary Clarifer

Treatment Plant Building

MW-10

Boiler House

Loading Area

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

101899
34265WBR

REFINERY SITE PLAN

MURPHY OIL USA, INC

SUPERIOR, WISCONSIN

Hosch, James A

From: Jeff King[SMTP:jking@gfnet.com]
Sent: Friday, July 14, 2000 2:02 PM
To: James Hosch
Subject: Murphy Oil - Tanks 1 and 2


gwdata.xls

Jim:

As we discussed on the telephone earlier this week, I just completed a letter to Danielle Lancour that included an updated table listing the groundwater analytical results from the monitoring well directly downgradient from former Tanks 1 and 2 at Murphy's Superior refinery. As you recall, you wanted to review these results before you could transfer the project file to Commerce. Just to give you a heads-up, attached is an Excel file that lists these data. This data is also in the letter I am sending to Danielle.

Let me know if you have any questions or comments.

-Jeff King
Gannett Fleming, Inc.
(608) 836-1500
jking@gfnet.com

Well I.D. and Sample Date	DRO	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	Trimethlybenzenes
MW-2/T8							
12/10/1999	14,800	15,300	**39.3**	14.9	3.23	55.3	126
03/21/2000	NA	1,400	**33**	14	2.4	5.1	85
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NR 140 PAL	NS	NS	0.5	140	200	1,000	96
NR 140 ES	NS	NS	5	700	1,000	10,000	480

NOTES:

Results reported in units of micrograms per liter (ug/l).

Initial round of samples collected from the well analyzed for VOCs.

Only detected parameters shown on table.

Results in bold exceed NR 140 ES standard.

NS = No standard.

NA = No samples collected.

J = Analyte detected between level of detection and level of quantitation.

MURPHY OIL USA, INC
SUPERIOR, WISCONSIN

TABLE 1

GROUNDWATER SAMPLING RESULTS - DETECTED COMPOUNDS
FORMER TANKS 1 AND 2 RELEASE SITE (ug/l)

Parameter						
MTBE	**Isopropylbenzene**	**p-Isopropyltoluene**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Fluoranthene**
<1.5	<0.75	3.10	<0.1	<0.1	<0.09	<0.08
<0.31	NA	NA	3.4	<1	0.13	31
<0.47	NA	NA	3	1.3 J	0.053	<0.36
12	NS	NS	NS		600	80
60	NS	NS	NS		3,000	400

Fluorene	1-Methyl Naphthalene	2-Methyl Naphthalene	Naphthalene	Phenanthrene
2.99	64.5	71.7	14.9	4.16
2.4	23	9.4	3.9	1.7
<0.33	23	14	1.9	1
80	NS	NS	8	NS
400	NS	NS	40	NS

Kazda, Janet L

From: Kazda, Janet L
Sent: Tuesday, April 18, 2000 11:31 AM
To: Hosch, James A
Cc: Kazda, Janet L; Laube, Shanna
Subject: Transfer Request: Murphy Oil USA, Tanks 1 and 2, BRRTS # 02-16-190549

Jim,

Gannett Fleming has requested that we transfer the above-referenced site to Shanna. They've sent her their closeout out form and a letter stating:

"Because none of the site characteristics specified in the Wisconsin Act 9 - 19999-2000 Budget Bill have been met, the site is a low- or medium--priority site, and the Department of Commerce (COMM) is the lead review agency, and a completed COMM Case Summary and Close Out Form is enclosed."

Please review the information you have there in this file. Please note whether you concur with the transfer of the site and what the priority of the site is, and then send the file to me.

Thank you.

Janet

6/23: Talked to Jim. Gannet Fleming has combined reports for Tanks 1, 2, and 8. Therefore, Confusion. He will send reports and rest of file right away.

Jim called later in the morning to say that they have not finished their investigation on Tanks 1 & 2. He will call them to tell them to send him some results before he will approve transfer.

Gannett Fleming

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April 14, 2000
File #34265.006

Ms. Shanna Laube
Hydrogeologist
Wisconsin Department of Commerce
P.O. Box 530
Park Falls, WI 54552

Re: Former Tanks 1 and 2 Release Site Investigation/Remediation Results and Request for Closure
Murphy Oil USA, Inc., Superior, Wisconsin
PECFA Claim 54880-0456-07-D
BRRTS ERR#: 02-16-190549

Dear Shanna:

On behalf of Murphy Oil USA, Inc., Gannett Fleming, Inc. is submitting this report describing the 1998 site investigation and remediation associated with historical releases of petroleum products in the former Tank 1 and 2 basin at Murphy's refinery located in Superior, Wisconsin.

The soil sampling results document that Murphy's remedial efforts were successful in removing most of the contaminated soil from the tank basin. Some remaining soil does contain petroleum-related compounds that exceed applicable NR 720 residual contaminant levels (RCLs). However, only one of the post-excavation soil samples contained petroleum-related compounds above COMM 46/NR 746 direct-contact standards. Furthermore, December 1999 samples of non-developable groundwater collected from a monitoring well installed in low-permeability clay soils located immediately downgradient from the basin did not contain any contaminants above the current COMM 46/NR 746 proposed limits in low-permeability soils.

Based on the overall analytical results and the fact that with the exception of one soil sample, none of the current COMM 46/NR 746.06(2) risk-screening criteria have been met, we are requesting closure of this release site on behalf of Murphy. Because none of the site characteristics specified in the Wisconsin Act 9 - 1999-2000 Budget Bill have been met, the site is a low- or medium-priority site, and the Department of Commerce (COMM) is the lead review agency, and a completed COMM Case Summary and Close Out form is enclosed. **By copy of this letter to Janet Kazda of the Wisconsin Department of Natural Resources (WDNR), we are requesting that the WDNR transfer its files on this release site to your attention.**

Continued . . .

Gannett Fleming

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April 14, 2000
File #34265.006

Ms. Shanna Laube
Hydrogeologist
Wisconsin Department of Commerce
P.O. Box 530
Park Falls, WI 54552

Re: Former Tanks 1 and 2 Release Site Investigation/Remediation
Results and Request for Closure
Murphy Oil USA, Inc., Superior, Wisconsin
PECFA Claim 54880-0456-07-D
BRRTS ERR#: 02-16-190549

Dear Shanna:

On behalf of Murphy Oil USA, Inc., Gannett Fleming, Inc. is submitting this report describing the 1998 site investigation and remediation associated with historical releases of petroleum products in the former Tank 1 and 2 basin at Murphy's refinery located in Superior, Wisconsin.

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Site Conditions

Figure 1 is a location map based on the USGS map for the area showing the location of the refinery, and Figure 2 is a refinery site plan. Former Tanks 1 and 2 were located on relatively flat land near the center of the refinery, as shown on Figure 2. The closest surface water to these tanks was Newton Creek, located about 1,200 feet to the east-northeast. The creek is shown on both Figures 1 and 2. The land surrounding the former tanks is also owned by Murphy and is part of the refinery. The tank basin is enclosed by an approximately 6-foot-high clay dike. The ground surface in the basin is unpaved but consists of low-permeability clay. Rainwater and snow melt within the diked area drain and collect in the east corner of the basin.

Access to the refinery property, which is zoned industrial, is restricted to Murphy employees and subcontractors. The entire property is fenced, and security guards are on duty 24 hours a day. 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 required, and the monitoring (i.e., field screening, air monitoring) 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 possibility 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.

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

Continued . . .

inquire about the status of this well. It 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 250 to 300 feet of clay, as documented by a boring done on refinery property, so there is no developable groundwater available. There is moist clay at about 3 to 5 feet below grade across the site. As noted above, one monitoring well screened in the moist clay was installed immediately downgradient of the former Tanks 1 and 2 basin for this investigation. This monitoring well typically take weeks to recharge after being purged. Although physical parameter testing of the soil in the Tanks 1 and 2 basin was not done, samples from a number of other locations at the refinery have documented the low permeability of the native clay at the refinery. Based on the results for other samples collected at the refinery and the homogeneous nature of the native clay, we believe the moist clay under the basin meets the definition of low-permeability material, as defined in COMM 46 and NR 746. This conclusion is confirmed by the fact, noted above, that it takes weeks for the water table wells to recover after they are purged.

Background of Releases

In May 1998, Murphy completed removal of Tanks 1 and 2. When the tanks were removed, field observations conducted by Murphy indicated the presence of petroleum-affected soils immediately adjacent to the former tanks. Murphy immediately reported the release of an unknown quantity of petroleum products to the WDNR.

Immediately after the affected soils were discovered, Murphy excavated about 300 cubic yards (yds^3) of visibly affected soils. The excavated soils were temporary stored in Murphy's Soil Stockpile Building before being transported to Superior Services FCR Landfill in Buffalo, Minnesota, on July 2 and 7, 1998.

In a letter dated October 1, 1998, the WDNR notified Murphy that it was required under NR 716.05(2)(b) to conduct an investigation of the historical release. Murphy subsequently confirmed

Continued . . .

PECFA eligibility for this release site with COMM and retained Gannett Fleming and Twin Ports Testing to conduct the site investigation.

Remedial Investigations and Additional Soil Excavation (July and September 1998)

To qualitatively assess the degree and extent of soil contamination that remained following the immediate-response excavation and to focus future soil sampling, Gannett Fleming used a hand auger to collect shallow (1 to 1.5 feet below ground surface [bgs]) soil samples from five locations (SS-1 through SS-5) within the former Tanks 1 and 2 basin in early July 1998. These samples were field-screened with a flame-ionization detector (FID). Figure 3 is a site plan showing the locations of the field-screened samples, and Table 1 lists the field-screening results.

Based on these results, we used a Geoprobe in late July 1998 to collect soil samples from a location (GP-15) near sample SS-3. Soil samples were collected from GP-15 at two different depths (1 to 1.5 and 4.5 to 5 feet bgs) and analyzed for gasoline range organics (GRO), diesel range organics (DRO), petroleum volatile organic compounds (PVOCs), and polycyclic aromatic hydrocarbons (PAHs). Table 2 contains the analytical results for the samples collected from GP-15. Except for DRO in the 1 to 1.5-foot and 4.5 to 5-foot samples and GRO in the 1 to 1.5-foot sample, all compounds were below their respective NR 720 RCL. The location of GP-15 is also shown on Figure 3. Appendix B contains a copy of the boring log and abandonment form. A copy of the analytical report and chain of custody record in included in Appendix C.

Based on the July 1998 field-screening and analytical results, Murphy expanded the original excavation to remove the residual petroleum-contaminated soils. This phase of the soil excavation occurred from the end of July 1998 through the end of September 1998. Figure 4 shows the extent of the excavation. Soils were removed to a depth of 4.5 feet bgs in two contiguous areas separated by an aboveground pipe that bisects the basin. The total volume removed was approximately 700 yds^3. These soils were transported to Lakehead Blacktop of Superior, Wisconsin, for thermal treatment. A copy of the Application for Soil Treatment is included in Appendix D.

To help define the final extent of the July through September excavation, on September 3, 1998, Twin Ports Testing collected soil samples from 12 hand-auger borings (S-1 through S-12) throughout

Continued . . .

the basin. Samples were collected at depths of 1 to 1.5 feet bgs at each location and field-screened with an FID. Figure 3 also shows the borehole locations, and Table 1 lists these field-screening results.

As shown in Table 1, elevated FID readings were measured in most of the samples collected the central, southern, and eastern portions of the basin. FID reading measured in the western portion of the basin were near background levels. Based on these results, Murphy expanded the extent of the excavation to include the residual petroleum-contaminated soils.

Soil Confirmation Sampling (October 1998)

On October 6 and 7, 1998, Twin Ports personnel field-screened and collected confirmation soil samples following the excavation of petroleum-contaminated soil from the tank basin. A total of 58 soil samples from multiple depths were collected and field-screened (B-1 through B-13, R-1 through R-7, and T-1 through T-20). The locations of these samples are shown on Figure 4. Table 1 includes the field-screening results.

Of the 58 field-screened soil samples, fifteen were submitted to Commonwealth Technologies, Inc. (CTI), Baraboo, Wisconsin, for DRO, GRO, PVOCs, and PAH confirmation analysis. As noted above, the locations of the samples are shown on Figure 4. Table 2 contains the analytical results, and Appendix C contains copies of the laboratory report and chain of custody forms.

Groundwater Investigation (June/July 1999)

To determine the quality of groundwater immediately downgradient from former Tanks 1 and 2, on June 2, 1999, Gannett Fleming supervised the installation of groundwater monitoring well MW-2/T8 in the southwest corner of former Tank 8 basin. Figure 4 also shows the location of MW-2/T8. In our May 21, 1999, site status report to the WDNR, we indicated that we planned to install a monitoring well in the southeast corner of the Tanks 1 and 2 basin; however, because of the presence of standing water and aboveground piping, this area of the basin was not accessible to a drill rig. In response, we installed the monitoring well immediately downgradient, in the former Tank 8 basin,

Continued . . .

approximately 30 feet east of the former Tanks 1 and 2 basin. This well is also being used as part of a separate investigation of the former Tank 8 basin area.

Boart Longyear of Rothschild, Wisconsin, installed the well using an all-terrain vehicle (ATV)-mounted standard drill rig equipped with hollow-stem augers. Soil samples, used to identify subsurface soil characteristics, were collected with a clean split-spoon sampler every 5 feet, beginning at ground surface. The borehole was converted to a 2-inch-diameter Schedule 40 PVC monitoring well that extends 18 feet bgs and was screened with 6-slot screen from 3 to 18 feet bgs. Because the well was installed in relatively impermeable clay, Murphy and the WDNR have agreed to a well development procedure that consists of purging the wells dry on two separate occasions. Appendix E contains the boring log, well construction report, and well development form.

Twin Ports collected groundwater samples from the well on December 10, 1999, and March 21, 2000. The samples were collected using a new, single-use, disposable PVC bailer and new polyethylene rope. The samples were placed in laboratory-supplied containers, preserved as necessary, placed on ice, and the December 1999 and March 2000 samples were shipped to U.S. Filter of Rothschild, Wisconsin, and U.S. Analytical of Kimberly, Wisconsin, respectively. U.S. Filter and U.S. Analytical submitted the low annual bid for analytical services in 1999 and 2000, respectively. The samples were analyzed for GRO, DRO, PAHs, and volatile organic compounds in December 1999 and for PVOCs in March 2000. Table 3 contains the analytical results for these groundwater samples. Appendix F contains copies of the laboratory reports and chain of custody forms.

Results

Soils encountered during the site investigation and remediation generally consisted of red-brown clay (USCS CL) with a trace of gravel, organic material, and fractures to 5 feet, the maximum depth explored. Table 1 provides the soil descriptions of the soil samples.

Table 2 lists the post-excavation analytical results for the soil samples collected from the bottom and sidewalls of the two excavated areas within the basin. All samples collected from the base and all but one of the sidewall samples were below the COMM 46/NR 746 standards. Soil sidewall sample T-14

Continued . . .

had a benzene concentration of 5.52 milligrams per kilogram (mg/kg), which exceeded the applicable benzene standard of 1.10 mg/kg. However, sample T-14 was collected at the toe of the berm and represents only a minor volume of soil remaining that exceeds COMM 46/NR 746 values within this basin.

The groundwater samples collected from monitoring well MW-2/T8, approximately 30 feet downgradient from the basin, did not contain any compounds above the COMM 46/NR 746 proposed standards. All compounds, except for benzene, were below NR 140 enforcement standards. In addition, this low level of groundwater contamination is in low-permeability material (clay) and is separated from any underlying or downgradient permeable material by more than 100 feet.

Summary

An unknown quantity of petroleum products was released in the former Tanks 1 and 2 basin. Murphy reported the release to the WDNR in May 1998. Immediately after the release was discovered, Murphy excavated and transported 300 yds^3 petroleum-contaminated soil to an off-site landfill.

In October 1998, the WDNR notified Murphy by letter that it was required to investigate the historical release at former Tanks 1 and 2. In July and September 1998, Gannett Fleming and Twin Ports Testing conducted subsurface site investigations to define the extent and degree of petroleum contamination in the soil remaining after the initial soil excavation.

Field-screening and analytical results confirmed that soils in the former Tanks 1 and 2 basin contained concentrations of petroleum-related parameters that exceeded applicable generic NR 720 RCLs. Based on these results, an additional 700 yd^3 of contaminated soil were excavated from the tank basin from July to September 1998. The soil was transported off site for thermal treatment.

The laboratory results for the soil samples collected after the petroleum-contaminated soil had been excavated from the basin show that virtually all unsaturated soils containing contamination above the current NR 746/COMM 46 direct-contact standards have been removed.

Continued . . .

Monitoring well MW-2/T8 was installed to assess the quality of the water in the saturated clay immediately downgradient from former Tanks 1 and 2 basin. As shown in Table 3, the groundwater samples collected from monitoring well MW-2/T8, approximately 30 feet downgradient from the basin, did not contain any compounds above the current COMM 46/NR 746 standards. All compounds, except for benzene, were below NR 140 enforcement standards. In addition, this low level of groundwater contamination is in low-permeability material (clay) and is separated by more than 100 feet from any underlying or downgradient permeable material.

Request for Closure

The results of groundwater sampling show that groundwater at the former Tanks 1 and 2 site has not been significantly affected by the historical release of petroleum products. None of the following five environmental factors, as defined in Chapter COMM 47.337(3), are present at the Tanks 1 and 2 release site:

- Documented expansion of the groundwater contaminant plume.
- Contamination of a private or public water supply well.
- Contamination of bedrock or contamination within 1 meter of bedrock.
- Petroleum free product with a thickness of 0.01 feet.
- Documented contamination discharges to surface waters or wetlands.

In addition, none of the seven risk criteria for screening sites, as defined in Chapter COMM 46.06(2), are present at the Tanks 1 and 2 release site:

- There is no contaminant concentration in any groundwater that has migrated outside the property boundary at concentrations equal to or greater than enforcement standards.
- No soil contamination exists within 4 feet of the ground surface that exceeds the direct-contact soil concentrations listed in Table 1 of COMM 46.
- No groundwater contamination exceeds the groundwater concentrations listed in Table 1 of COMM 46.

Continued . . .

- There is a vertical separation distance of 5 feet or more between any contaminants contained within low-permeability material and any permeable material on the site.
- There is no impact on underground utility corridors.
- No enforcement standards are exceeded in any groundwater within 1,000 feet of a public well.
- No enforcement standards are exceeded in any groundwater within 100 feet of a private well.

Since no NR 140 enforcement standards have been exceeded; no current COMM 46/NR 746 direct-contact standards have been exceeded; and there are no environmental factors as defined in COMM 47, on behalf of Murphy, we are requesting that COMM issue a closure letter for the historical release at the former Tank 1 and 2 site.

Please call if you have any questions or need additional information.

Sincerely,

GANNETT FLEMING, INC.

Jeffrey J. King
Staff Hydrogeologist

Dennis F. Kugle
Vice President

JJK/jec
Enc.

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

Wisconsin Department of Commerce
Environmental and Regulatory Services Division

Bureau of PECFA
Site Review Section

COMMERCE
CASE SUMMARY AND CLOSE OUT

Personal information you provide may be used for secondary purposes [Privacy Act, s. 15.04(1)(M)].

Date Received (office use only)

SEE INSTRUCTIONS ON THE BACK OF THIS PAGE

A. COMMERCE NUMBER: 54880-0456-07-D

DNR BRRTS NUMBER (optional): 02-16-190549

B. Responsible Party or Owner Name	C. Responsible Party or Owner Phone Number
Murphy Oil USA, Inc. **C/o Liz Lundmark**	**(715) 398-3533**
D. Responsible Party or Owner Address, City, State and Zip Code	**D. Remedial Action Site Name, Address, City and Zip Code**
2407 Stinson Ave. **Superior, WI 54880**	**Former Tanks 1 and 2** **2400 Stinson Ave.** **Superior, WI 54880**

Enforcement Actions or Permits Closed Out? ____ Y __X__ N Contaminant Type(s): Unknown Petroleum Products

Quantity Released: Unknown Potential Receptors: Newton Creek located approx. 1,200 feet east of the tank basin

Status of water supply wells within 1200 feet of the site? None within 1,200 feet of the basin

SOIL

Soil Type: Clay (USCS CL) Depth to Bedrock: 260 feet

Site Specific Soil Standards (NR 720.19)? ____ Y __X__ N Final Confirmation Sampling Method: Sidewall and base soil samples

Remedial Action Taken: Soil Excavation Were Soils Excavated? __X__ Y ___ N Quantity: ~1,000 Tons

Treatment/Disposal Method: Thermal Treatment/Disposal Location: Lakehead Blacktop, Superior, WI

GROUNDWATER (if applicable)

Groundwater Encountered? __X__ Y ____ N Monitoring Well(s) Installed? __X__ Y ___ N

Depth to Groundwater & Flow Direction: ~ 3 ft and east Perched Water? ____ Y __X__ N Depth: NA feet

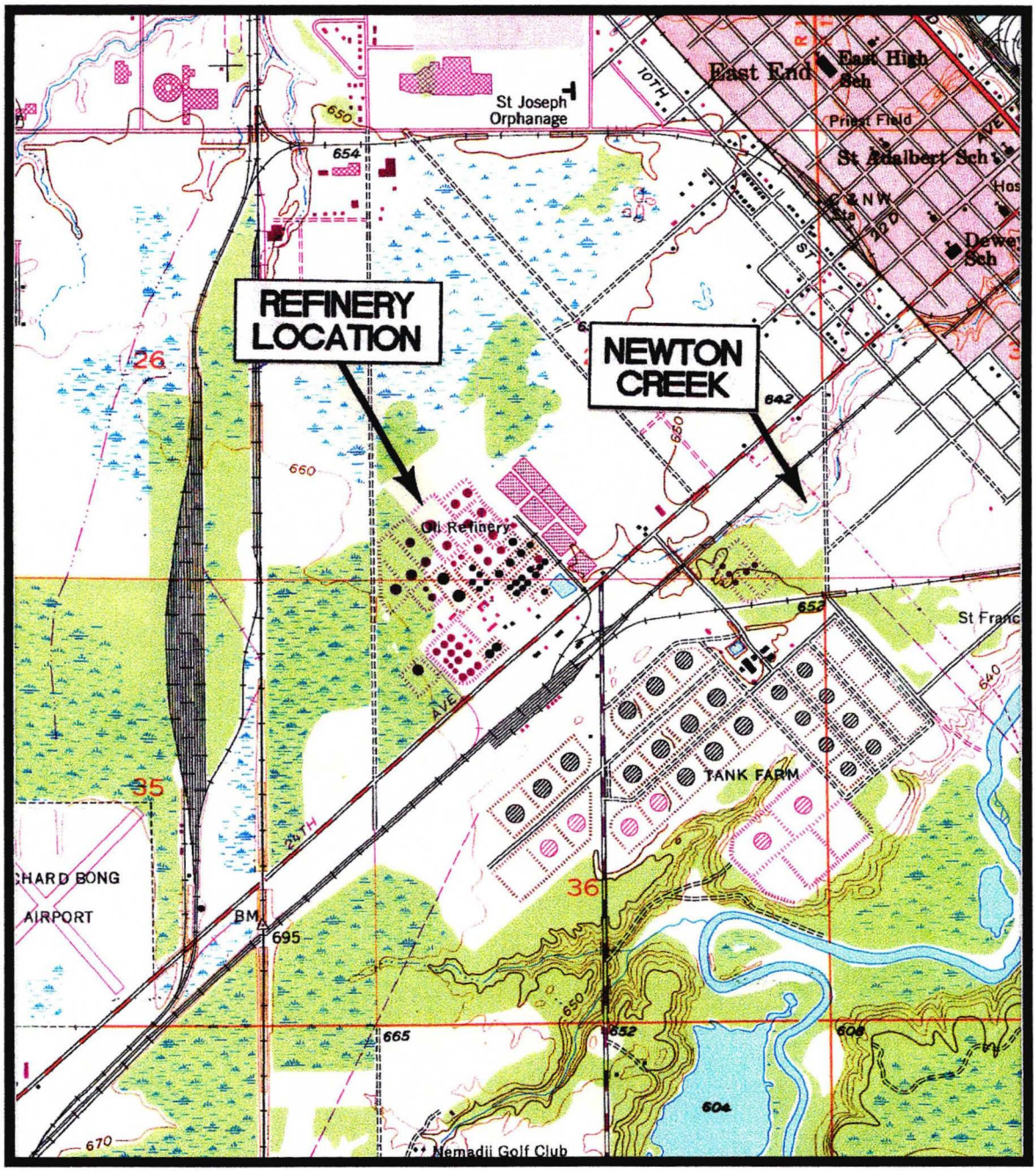
Preventive Action Limit exceeded at this time? __X__ Y ____ N (If yes, location) Benzene in Monitoring Well MW-2/T8

Enforcement Standard exceeded at this time? __X__ Y ____ N (If yes, location) Benzene in Monitoring Well MW-2/T8

Environmental Consultant Name and Phone Number	Environmental Consultant Address, City, State and Zip Code
Gannett Fleming, Inc. **Jeff King** **(608) 836-1500**	**8025 Excelsior Drive** **Madison, WI 53717**

I, the environmental consultant, certify with my signature that the information presented is true and accurate and recommend that no further action be required at this site.

Consultant Signature: Jeff King Date: 4/14/00



SCALE: 1 INCH = 2000 FEET
CONTOUR INTERVAL = 10 FEET

7.5 MIN TOPOGRAPHIC MAP
SUPERIOR, WISCONSIN
1954
PHOTOREVISED 1983

LOCATION MAP

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

032000
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-8

MW-6

MW-4
MW-5

MW-7

MW-1/T29

MW-1/T70

MW-2/T59

MW-1&PZ-1/T59

MW-1/T40

MW-1/T31

MW-5/T66

MW-1/PP
PZ-1/PP

Propane/ Butane Loading Area

MW-3/PP

MW-2/PP

MW-4&PZ-4/T66

MW-7/T66

MW-1/T67

MW-6/T66

MW-1&PZ-1/T66

MW-2/T67

PZ-2/T66
PZ-3/T66

MW-2/T66

MW-3/T66

Flare

Warehouse

Maintenance Shop

Process Area

Slop Oil Manifold

MW-1/T8

MW-2/T8

Railcar Loading Area

Fire House

Process Area

Process Area

Fire Water Pond No. 5

Boiler House

Loading Area

Storm Water Collection Pond No. 4

Fire Water Pond No. 3

Pond 1 (Closed)

Pond 6 (Closed)

Pond 7 Aeration Pond

Pond 8 Settling Pond

MW-1

MW-2

MW-3B

MW-9

MW-10

100'ø Equalization Tank

30'ø Primary Clarifer

Treatment Plant Building

STINSON AVENUE

MW-11

BARDON AVENUE

Storage

Lab

Office

Marketing

MW-14

MW-13

MW-12

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

041400
34265WBR

REFINERY SITE PLAN

MURPHY OIL USA, INC

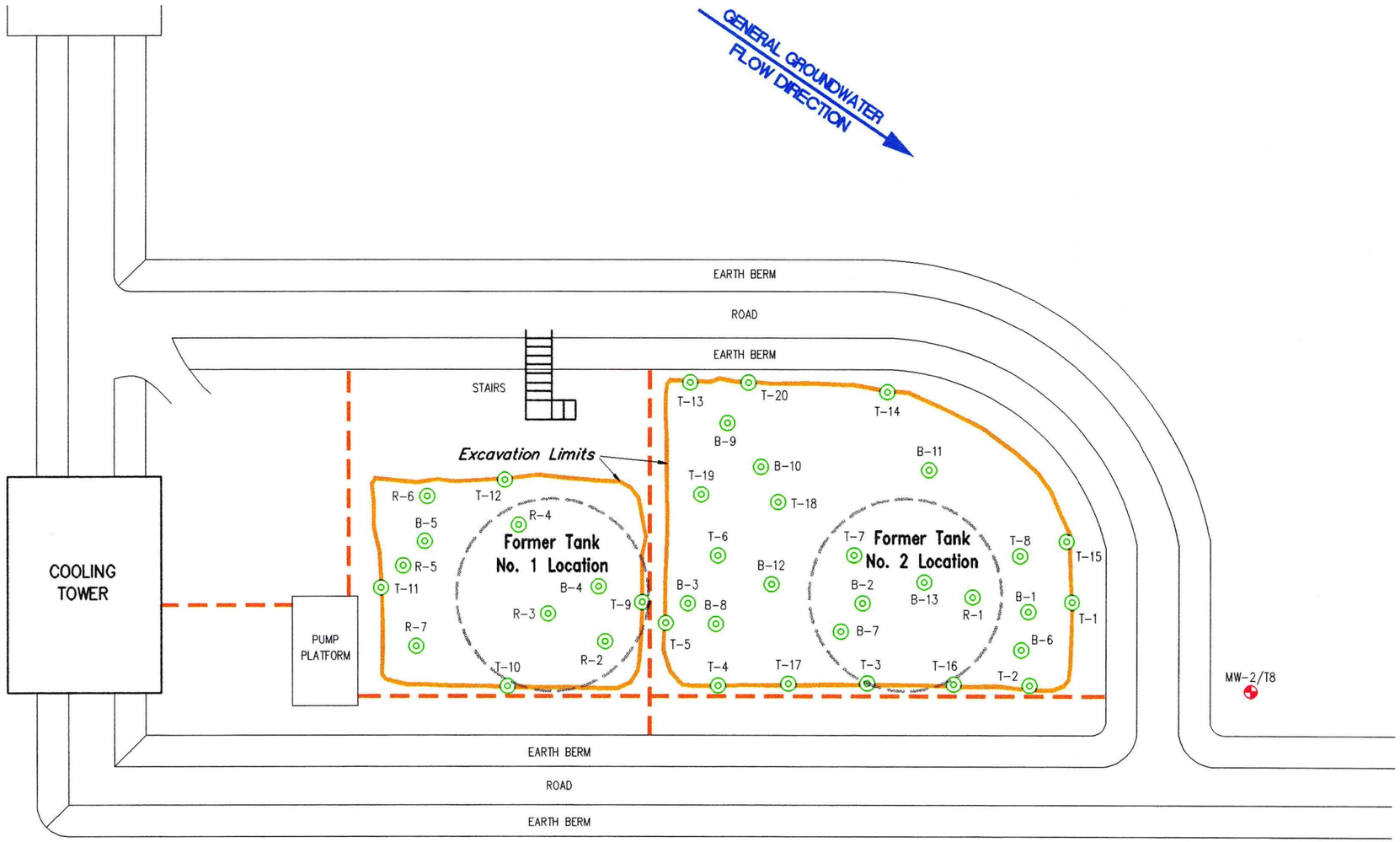
SUPERIOR, WISCONSIN

LEGEND

- Twin Ports Soil Sample Location (October 6–7, 1998)
  - B–4 = Base Sample Location
  - T–9 = Sidewall Sample Location
- Monitoring Well Location
- Aboveground Piping

NOTES

1. T–6,7,8,18, And 19 Were Collected During The Excavation Work And Were Not Final Extent Of Excavation Sidewall Samples. Soils At These Locations Were Excavated.
2. Site Layout And Sample Locations Are Based On Field Measurements And Are To Be Considered Approximate; Site Not Surveyed.
3. This Figure Is Based On A Twin Ports Testing Site Plan Of The Tanks 1 And 2 Basin.



0 20

Approximate Scale In Feet

041400
34265WAU

LOCATIONS OF EXCAVATION SOIL SAMPLES & MONITORING WELL AT FORMER TANK NOS. 1 AND 2

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

Gannett Fleming

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

TABLE 1

ORGANIC VAPOR HEADSPACE RESULTS FOR SOIL SAMPLES
COLLECTED FROM FORMER TANKS 1 AND 2 BASIN

Sample ID	Date	Depth (feet)	Soil Type (USCS classif.)	Soil Moisture	PID Reading (ppm)
SS-1	07/09/98	1.5	Black-red clay (CL), petroleum-like odor	M	>1,000
SS-2	07/09/98	2.0	Black-red clay (CL), petroleum-like odor	M	>1,000
SS-3	07/09/98	1.0	Black-red clay (CL), petroleum-like odor	M	>1,000
SS-4	07/09/98	1.0	Black-red clay (CL), petroleum-like odor	M	>1,000
SS-5	07/09/98	1.0	Black-red clay (CL), petroleum-like odor	M	>1,000
S-1	09/03/98	1.0	Dark brown-black silty clay (CL), trace sand	M	113
S-2	09/03/98	1.0	Dark brown-black sand (SW), well graded, trace silt and gravel	M/W	8
S-3	09/03/98	1.0	Dark brown-black silty clay (CL), trace sand and organics	M	372
S-4	09/03/98	1.0	Dark brown-black silty clay (CL), little gravel	M	58
S-5	09/03/98	1.5	Dark brown-black silty clay (CL), trace sand	M	218
S-6	09/03/98	1.0	Dark brown-black silty clay (CL), little gravel	M	37
S-7	09/03/98	1.0	Brown sand (SW), well graded, little gravel	M	8
S-8	09/03/98	1.0	Red-brown clay (CH)	M	303
S-9	09/03/98	1.0	Brown clay (CH)	M	290
S-10	09/03/98	1.0	Brown sandy clay (CL), little gravel	M	193
S-11	09/03/98	1.0	Black gravel with silt and sand (GM) (hardpan-like)	M	0
S-12	09/03/98	1.5	Brown sand with gravel (SW), trace silt	M	122
B-1	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	160
B-2	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	92
B-3	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	806
B-4	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	413
	10/06-07/98	2.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	227
	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	121
B-5	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	462
	10/06-07/98	3.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	261
	10/06-07/98	4.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	84
	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	84
B-6	10/06-07/98	2.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	77
	10/06-07/98	3.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	246
	10/06-07/98	4*	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	121
B-7	10/06-07/98	2.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	201
	10/06-07/98	3.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	166
	10/06-07/98	4.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	159
	10/06-07/98	5.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	185
	10/06-07/98	6.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	142
	10/06-07/98	7.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	177
	10/06-07/98	8.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	170
	10/06-07/98	10.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	108
	10/06-07/98	12.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	147
	10/06-07/98	14.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	205
	10/06-07/98	15.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	95
	10/06-07/98	17*	Red-brn clay (CL), trace gravel & organics	M	45

Table 1 Continued . . .

Sample ID	Date	Depth (feet)	Soil Type (USCS classif.)	Soil Moisture	PID Reading (ppm)
B-8	10/06-07/98	3.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	147
	10/06-07/98	3.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	211
	10/06-07/98	4.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	237
	10/06-07/98	4.5*	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	140
B-9	10/06-07/98	4.5*	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	2
B-10	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	369
B-11	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	448
B-12	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	259
B-13	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	192
R-1	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	129
R-2	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	190
R-3	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	250
R-4	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	159
R-5	10/06-07/98	3.0	Red-brn clay (CL), trace gravel & organics	M	131
R-6	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	322
SP-1	10/06-07/98	(L)	Red-brn clay (CL), trace gravel & organics	M	241
SP-2	10/06-07/98	(L)	Red-brn clay (CL), trace gravel & organics	M	151
SP-3	10/06-07/98	(L)	Red-brn clay (CL), trace gravel & organics	M	229
T-1	10/06-07/98	1*	Red-brn clay (CL), trace gravel & organics	M	80
T-2	10/06-07/98	1*	Red-brn clay (CL), trace gravel & organics	M	25
T-3	10/06-07/98	0.5*	Red-brn clay (CL), trace gravel & organics	M	237
T-4	10/06-07/98	0.5*	Red-brn clay (CL), trace gravel & organics	M	259
T-5	10/06-07/98	1.5*	Red-brn clay (CL), trace gravel & organics	M	149
T-6	10/06-07/98	1.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	166
T-7	10/06-07/98	1.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	211
T-8	10/06-07/98	1.0	Red-brn clay (CL), trace gravel & organics	M	250
T-9	10/06-07/98	0.5	Red-brn clay (CL), trace gravel & organics	M	261
T-9	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	255
T-10	10/06-07/98	0.5	Red-brn clay (CL), trace gravel & organics	M	153
	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	149
T-11	10/06-07/98	1.0	Red-brn clay (CL), trace gravel & organics	M	121
T-11	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	84
T-12	10/06-07/98	0.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	82
T-12	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	203
T-13	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	164
T-14	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	121
T-15	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	294
T-16	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	172
T-17	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	166
T-18	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	642
T-19	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	73
T-20*	10/06-07/98	2*	Red-brn clay (CL), trace gravel & organics	M	75

NOTES:

Soil samples SS- collected by Gannett Fleming, Inc.

Soil samples S- and T- collected by Twin Ports Testing.

* = Sample from the final extent of excavation.

PID = Photoionization detector.

ppm = Parts per million.

(L) = Sample submitted for chemical analysis.

tr = Trace.

gr = Gravel.

brn = Brown.

M = Moist.

D = Dry.

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

TABLE 2

ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM SOIL EXCAVATION AT FORMER TANKS 1 AND 2 BASIN (mg/kg)

Parameter	Sample I.D. and Depth																				NR 720 RCL
	GP-15 1-1.5 ft	GP-15 4.5-5 ft	T-9 2 ft	T-10 2 ft	T-11 2 ft	T-12 2 ft	B-4 4.5 ft	B-5 4.5 ft	B-10 4.5 ft	B-11 4.5 ft	B-12 4.5 ft	B-13 4.5 ft	T-13 2 ft	T-14 2 ft	T-15 2 ft	T-16 2 ft	T-17 2 ft	SP-1 stockpile	SP-2 stockpile	SP-3 stockpile	
Date Sampled	07/22/98	07/22/98	10/06/98	10/06/98	10/06/98	10/06/98	10/06/98	10/06/98	10/07/98	10/07/98	10/07/98	10/07/98	10/07/98	10/07/98	10/07/98	10/07/98	10/07/98	10/06/98	10/07/98	10/07/98	
DRO	**1,300**	**290**	**1,100**	**890**	**700**	**500**	**250**	220	**300**	**930**	**380**	85	230	160	**2,000**	130	**560**	**2,100**	170	140	250
GRO	**380**	86	**880**	**440**	**1,300**	**1,300**	**340**	100	180	**300**	110	72	48	120	**570**	47	190	**890**	43	100	250
Benzene	<0.38	<0.076	<0.25	<0.25	<1.2	<0.50	<0.25	**0.047**	**0.61**	**0.89**	**0.80**	**0.17**	<0.050	**5.52**	<0.25	**0.43**	<0.050	<0.25	**0.63**	**0.34**	0.0055
Toluene	<0.22	<0.044	**2.6**	0.57	<1.2	**2.2**	0.5	0.12	0.54	<0.25	<0.25	0.46	<0.050	<0.050	0.32	<0.050	0.11	**1.6**	<0.025	<0.050	1.5
Ethylbenzene	<0.22	<0.044	**6.1**	0.94	**5.0**	**5.3**	1.3	0.31	1.6	**3.8**	1.5	0.78	0.11	2.3	**8.3**	1.0	0.36	**4.2**	0.74	1.3	2.9
Xylenes	<0.68	<0.136	**20.3**	**5.0**	**11.0**	**13.13**	**5.7**	0.420	**6.7**	**18.9**	4	**4.3**	0.278	0.172	**37.4**	1.567	1.21	**16.2**	3.9	2.43	4.1
Trimethylbenzenes	45.2	5.8	44	11.7	60	74	16.2	1.44	8.8	23.4	5.9	6	1.44	12.7	64	3.9	4	57	3.54	9.9	
MTBE	<0.18	<0.036	<0.25	<0.25	<1.2	<0.50	<0.25	<0.025	<0.25	<0.25	<0.25	<0.12	<0.050	<0.050	<0.25	<0.050	<0.050	<0.25	<0.025	<0.050	
Polycyclic Aromatic Compounds																					
1-Methyl Naphthalene	62	3.1	11	NA	NA	10	NA	7.6	NA	2.0	<0.047	NA	1.1	NA	NA	1.2	NA	NA	NA	NA	
2-Methyl Naphthalene	120	6.5	18	NA	NA	19	NA	17	NA	3.3	0.36	NA	1.6	NA	NA	2.2	NA	NA	NA	NA	
Acenaphthene	<0.48	<0.048	<0.24	NA	NA	<0.24	NA	<0.24	NA	<0.048	<0.048	NA	<0.048	NA	NA	<0.048	NA	NA	NA	NA	
Acenaphthylene	<0.51	0.67	<0.26	NA	NA	<0.26	NA	<0.26	NA	0.30	0.12	NA	0.10	NA	NA	<0.051	NA	NA	NA	NA	
Anthracene	<0.23	<0.023	<0.12	NA	NA	<0.12	NA	<0.12	NA	<0.023	<0.023	NA	<0.023	NA	NA	<0.023	NA	NA	NA	NA	
Benzo(a)anthracene	<0.020	<0.0020	<0.010	NA	NA	<0.010	NA	<0.010	NA	<0.0020	<0.0020	NA	<0.0020	NA	NA	<0.0020	NA	NA	NA	NA	
Benzo(a)pyrene	<0.015	<0.0015	<0.0075	NA	NA	<0.0075	NA	<0.0075	NA	<0.0015	<0.0015	NA	<0.0015	NA	NA	0.056	NA	NA	NA	NA	
Benzo(b)flouranthene	<0.015	<0.0015	<0.0075	NA	NA	<0.0075	NA	<0.0075	NA	<0.0015	<0.0015	NA	<0.0015	NA	NA	<0.0015	NA	NA	NA	NA	
Benzo(g,h,i)perylene	<0.041	<0.0041	<0.021	NA	NA	<0.021	NA	<0.021	NA	<0.0041	<0.0041	NA	<0.0041	NA	NA	<0.0041	NA	NA	NA	NA	
Benzo(k)fluoranthene	<0.015	<0.0015	0.2	NA	NA	<0.0075	NA	<0.0075	NA	<0.0015	<0.0015	NA	<0.0015	NA	NA	<0.0015	NA	NA	NA	NA	
Chrysene	<0.92	<0.092	<0.46	NA	NA	<0.46	NA	<0.46	NA	<0.092	<0.092	NA	<0.092	NA	NA	<0.092	NA	NA	NA	NA	
Dibenzo(a,h)anthracene	<2.3	<0.23	<1.2	NA	NA	<1.2	NA	<1.2	NA	<0.23	<0.23	NA	<0.23	NA	NA	<0.23	NA	NA	NA	NA	
Fluoranthene	<0.049	0.44	<0.025	NA	NA	<0.025	NA	<0.025	NA	<0.0049	0.23	NA	0.71	NA	NA	0.63	NA	NA	NA	NA	
Fluorene	6.5	<0.0086	<0.043	NA	NA	<0.043	NA	<0.043	NA	<0.0086	<0.0086	NA	<0.0086	NA	NA	<0.0086	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	<0.094	<0.0094	<0.047	NA	NA	<0.047	NA	<0.047	NA	<0.0094	<0.0094	NA	<0.0094	NA	NA	<0.0094	NA	NA	NA	NA	
Naphthalene	33	1.1	1.4	NA	NA	4.5	NA	3.0	NA	0.86	0.076	NA	<0.031	NA	NA	<0.031	NA	NA	NA	NA	
Phenanthrene	7.6	0.3	1.9	NA	NA	1.1	NA	0.81	NA	0.52	0.098	NA	0.57	NA	NA	0.29	NA	NA	NA	NA	
Pyrene	<0.062	<0.0062	5.7	NA	NA	2.7	NA	3.1	NA	1.6	<0.0062	NA	2.2	NA	NA	0.99	NA	NA	NA	NA	

NOTES:
Results reported in units of milligrams per kilogram (mg/kg).
Soil sample GP-15 collected by Gannett Fleming.
Soil samples B-, SP-, and T- collected by Twin Ports Testing.
Results obtained from table created by Twin Ports Testing.
NA = Not analyzed.

MURPHY OIL USA, INC
SUPERIOR, WISCONSIN

TABLE 3

GROUNDWATER SAMPLING RESULTS - DETECTED COMPOUNDS
FORMER TANKS 1 AND 2 RELEASE SITE (ug/l)

Well I.D. and	Parameter															
Sample Date	DRO	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	Trimethlybenzenes	MTBE	Isopropylbenzene	p-Isopropyltoluene	Fluoranthene	Fluorene	1-Methyl Naphthalene	2-Methyl Naphthalene	Naphthalene	Phenanthrene
MW-2/T8																
12/10/99	14,800	15,300	**39.3**	14.9	3.23	55.3	126	<1.5	<0.75	3.10	<0.08	2.99	64.5	71.7	14.9	4.16
03/21/00	NA	1,400	**33**	14	2.4	5.1	85	<0.31	NA	NA	31	2.4	23	9.4	3.9	1.7
NR 140 PAL	NS	NS	0.5	140	68.6	124	96	12	NS	NS		80	NS	NS	8	
NR 140 ES	NS	NS	5	700	343	620	480	60	NS	NS		400	NS	NS	40	
Proposed Limits in Low-Permeability Soils	NS	NS	1,500	7,100	20,000	7,800	NS	NS	NS	NS		NS	NS	NS	NS	

NOTES:

Results reported in units of micrograms per liter (ug/l).

Initial round of samples collected from MW-2/T8 analyzed for VOCs and PAHs.

Only detected parameters shown on table.

Results in bold exceed NR 140 ES standard.

APPENDIX A

WELL RECORDS REQUEST FORM AND WELL CONSTRUCTION REPORT

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 Hobbs* Driller *Mastrian Bros*

Street or RFD *Norman Roofaube* 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,

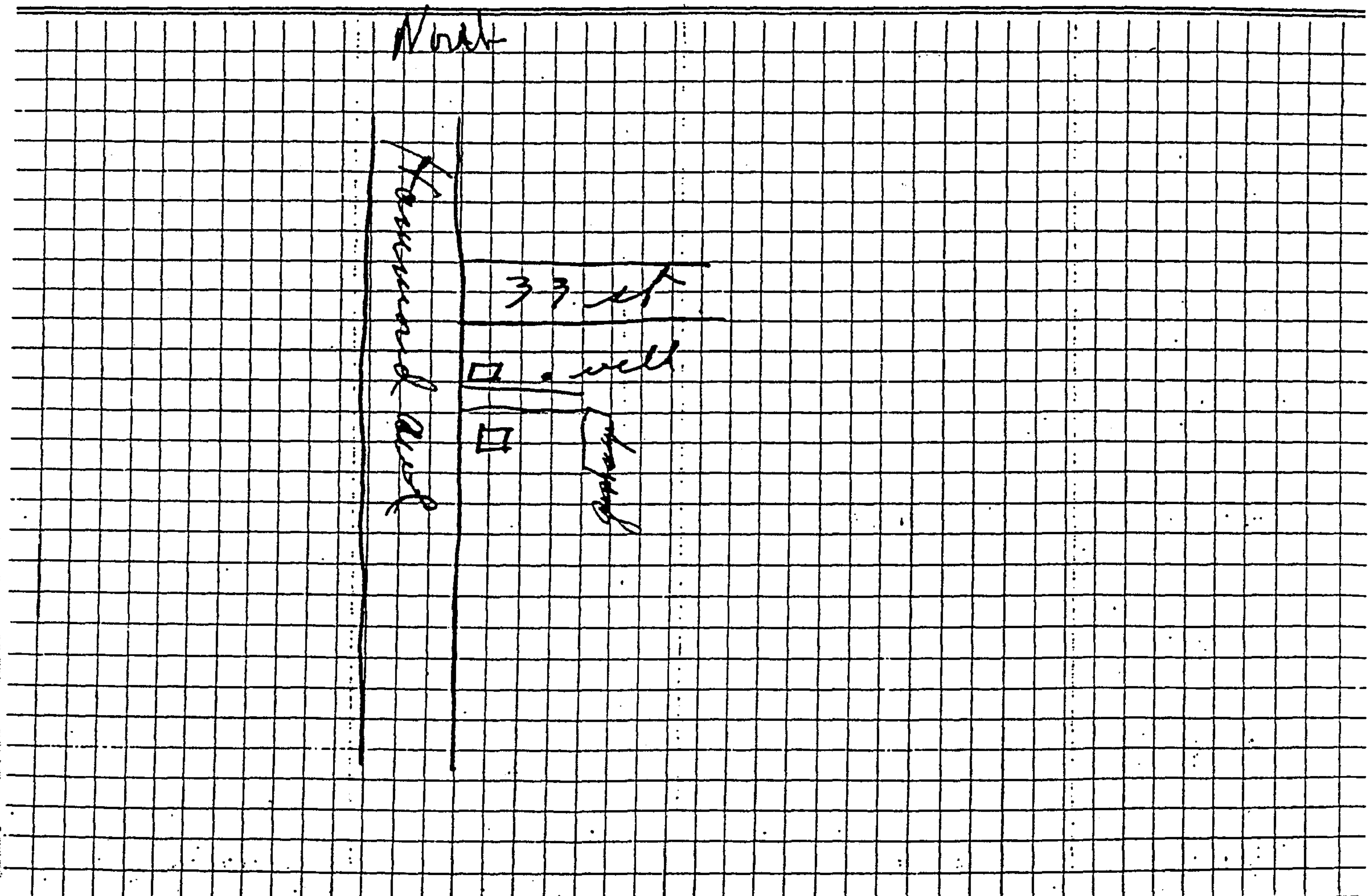
S ½ of sec 28 *Sec 26?*
block, nearest principal highway, etc., whichever apply.

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

Sec. *28 26?*
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.

RECEIVED
JAN 14 1954
ENVIRONMENTAL SANITATION

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

Sec 36?
T 49
R 14W

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: 8 of 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 Hartman Bros
Registered Well Driller

Hartman Bros
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 ____

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.	Depth	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			Duration of test Hours 24 hr
		25		Pumping rate G.P.M. 3
		50	Red Clay	Depth of pump in well. Ft. 108
		75		Standing water-level (from surface) Ft. 45
		100	150 ft	Water-level when pumping Ft. 106
				Water. End of test. Clear ✓ Cloudy Turbid
		150	Hadpan Boulders 110 ft	Was the well sterilized? Yes ✓ No
Casing to 260 ft.		200		To which laboratory was sample sent? Superior Date Feb 29 4
rock 15		260	sand stone 15 ft	Was the well sealed on completion? Yes ✓ No
		275		
		400		How high did you leave the casing-pipe above grade? 1 ft
		800		Well completed Date Feb 27-41
		1200		Well Driller [illegible] Signature
	Draw the diagram to show the right half only			

APPENDIX B

JULY 1998 BORING LOG AND ABANDONMENT FORM

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste
☐ Emergency Response
☐ Wastewater
☐ Haz. Waste
☐ Underground Tanks
☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		GP-15

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Twin Ports Testing	07/22/98	07/22/98	Geoprobe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	1.3 Inches

Boring Location
State Plane N, E
NE 1/4 of NW 1/4 of Section 36 T 49 N,R 14 W
Lat ° ' "
Long ° ' "
Local Grid Location (If applicable)
Feet ☐ N ☐ S Feet ☐ E ☐ W

County: Douglas
DNR County Code: 16
Civil Town/City/ or Village: Superior

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
				Gravel FILL	CL									
1-3	16		1	Red CLAY, slightly moist, trace unsorted coarse sand, petroleum-like odor, no fractures						M				
			2											
3-5	16		3	Same as above, slightly more moist, no coarse sand						M				
			4											
			5	End of boring at 5 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm: Eder Associates
8025 Excelsior Drive Madison, WI 53717
Tel: (608)836-1500 Fax: (608)831-3337

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 ; T. 49 N; R. 14 ☐ E ☒ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Superior

Street Address of Well: 2400 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA, Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior WI

Facility Well No. and/or Name (If Applicable): GP15

WI Unique Well No. _ _ _ _ _ _

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 7/22/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 7/22/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 5 Casing Diameter (ins.) 2
(From groundsurface)

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~3.12

Pump & Piping Removed?	☒ Yes	☐ No	☐ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	5	1/4 Sack	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work: Twin Ports Testing / Garnett Fleming

Signature of Person Doing Work: Jeff Long of GF

Date Signed: 3/9/00

Street or Route: 8025 Excelsior Dr.

Telephone Number: (608) 836-1500

City, State, Zip Code: Madison WI 53717

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

APPENDIX C

LABORATORY REPORT AND CHAIN OF CUSTODY RECORDS FOR SOIL SAMPLES

Commonwealth
Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

August 12, 1998

Eder Associates
Jeff King
8025 Excelsior Dr.
Madison, WI 53717-1900

Project: Murphy Oil
Project No.: 367-18.3
Received: 07/24/98

Sample ID: 206235
206238
206268

Dear Jeff:

I have enclosed a revised analytical report for the project and sample listed above. This report is labeled "Revised Analytical Report" and supercedes any previous reports.

The bulk density results were inadvertently not reported for samples 206235 and 206238. The results have been added to page 18 and 20 of the revised report, respectively.

The bulk density result for sample 206268 was incorrect in the initial report. The correct concentration value is listed on page 33 of the revised report.

We regret the errors and any inconvenience this may have caused. If you have any questions or comments regarding this report, please feel free to contact me.

Sincerely,

Harley G. Cliff
Chemistry Laboratory Manager

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

REVISED
ANALYTICAL REPORT

Customer #: LE8000006752
Work Order: 9807000689
Date Revised: 08/12/98
Date Received: 07/24/98
Arrival Temperature: On Ice

EDER ASSOCIATES
JEFF KING
8025 EXCELSIOR DR
MADISON, WI 53717-1900

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: MURPHY OIL Project Number: 367-18.3

Sample I.D. #: 206230 Sample Description: GP-15(1-1.5) Date Sampled: 07/22/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.8	%					07/27/98	NMP	EPA 5030
Gasoline Range Organics	380	mg/kg	L	1.3	4.5		07/31/98	EMH	WDNR GRO
1,2,4-Trimethylbenzene	36	mg/Kg		0.014	0.048	07/24/98	07/31/98	RLD	EPA 8021A
1,2-Dibromoethane (EDB)	<0.14	mg/Kg		0.007	0.023	07/24/98	07/31/98	RLD	EPA 8021A
1,3,5-Trimethylbenzene	9.2	mg/Kg		0.012	0.039	07/24/98	07/31/98	RLD	EPA 8021A
Benzene	<0.38	mg/Kg	V	0.019	0.063	07/24/98	07/31/98	RLD	EPA 8021A
Ethylbenzene	<0.22	mg/Kg		0.011	0.036	07/24/98	07/31/98	RLD	EPA 8021A
m&p-Xylene	<0.44	mg/Kg		0.022	0.075	07/24/98	07/31/98	RLD	EPA 8021A
Methyl-tert-butyl ether	<0.18	mg/Kg		0.009	0.030	07/24/98	07/31/98	RLD	EPA 8021A
o-Xylene	<0.24	mg/Kg		0.012	0.042	07/24/98	07/31/98	RLD	EPA 8021A
Toluene	<0.22	mg/Kg		0.011	0.037	07/24/98	07/31/98	RLD	EPA 8021A
Diesel Range Organics	1300	mg/kg		1.4	4.7	07/27/98	08/05/98	PML	WDNR DRO
1-Methyl Naphthalene	62	mg/kg	V	0.047	0.16	07/28/98	07/30/98	CMK	EPA 8310
2-Methyl Naphthalene	120	mg/kg		0.031	0.10	07/28/98	07/30/98	CMK	EPA 8310
Acenaphthene	<0.48	mg/kg		0.048	0.16	07/28/98	07/30/98	CMK	EPA 8310
Acenaphthylene	<0.51	mg/kg		0.051	0.17	07/28/98	07/30/98	CMK	EPA 8310
Anthracene	<0.23	mg/kg		0.023	0.077	07/28/98	07/30/98	CMK	EPA 8310
Benzo(a)anthracene	<0.020	mg/kg		0.002	0.006	07/28/98	07/30/98	CMK	EPA 8310
Benzo(a)pyrene	<0.015	mg/kg		0.001	0.005	07/28/98	07/30/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.015	mg/kg		0.001	0.005	07/28/98	07/30/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.041	mg/kg		0.004	0.014	07/28/98	07/30/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.015	mg/kg		0.001	0.005	07/28/98	07/30/98	CMK	EPA 8310
Chrysene	<0.92	mg/kg		0.092	0.31	07/28/98	07/30/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<2.3	mg/kg		0.23	0.77	07/28/98	07/30/98	CMK	EPA 8310
Fluoranthene	<0.049	mg/kg		0.004	0.016	07/28/98	07/30/98	CMK	EPA 8310
Fluorene	6.5	mg/kg		0.008	0.029	07/28/98	07/30/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.094	mg/kg		0.009	0.031	07/28/98	07/30/98	CMK	EPA 8310
Naphthalene	33	mg/kg		0.031	0.10	07/28/98	07/30/98	CMK	EPA 8310
Phenanthrene	7.6	mg/kg		0.003	0.012	07/28/98	07/30/98	CMK	EPA 8310
Pyrene	<0.062	mg/kg		0.006	0.021	07/28/98	07/30/98	CMK	EPA 8310

Sample I.D. #: 206231 Sample Description: GP-15(4.5-5) Date Sampled: 07/22/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	73.1	%					07/27/98	NMP	EPA 5030
Gasoline Range Organics	86	mg/kg	L	1.3	4.5	07/24/98	07/30/98	EMH	WDNR GRO
1,2,4-Trimethylbenzene	4.8	mg/Kg		0.014	0.048	07/24/98	07/31/98	RLD	EPA 8021A
1,2-Dibromoethane (EDB)	<0.028	mg/Kg		0.007	0.023	07/24/98	07/31/98	RLD	EPA 8021A
1,3,5-Trimethylbenzene	1.0	mg/Kg		0.012	0.039	07/24/98	07/31/98	RLD	EPA 8021A
Benzene	<0.076	mg/Kg	V	0.019	0.063	07/24/98	07/31/98	RLD	EPA 8021A
Ethylbenzene	<0.044	mg/Kg		0.011	0.036	07/24/98	07/31/98	RLD	EPA 8021A
m&p-Xylene	<0.088	mg/Kg		0.022	0.075	07/24/98	07/31/98	RLD	EPA 8021A
Methyl-tert-butyl ether	<0.036	mg/Kg		0.009	0.030	07/24/98	07/31/98	RLD	EPA 8021A

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

REVISED
ANALYTICAL REPORT

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

Customer #: LE8000006752
Work Order: 9807000689
Date Revised: 08/12/98
Date Received: 07/24/98
Arrival Temperature: On Ice

Report Submitted By: HGC
Record Reviewer

EDER ASSOCIATES
JEFF KING
8025 EXCELSIOR DR
MADISON, WI 53717-1900

Note: None

Project Name: **MURPHY OIL** Project Number: **367-18.3**

Sample I.D. #: 206231 Sample Description: GP-15(4.5-5) Date Sampled: 07/22/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
o-Xylene	<0.048	mg/Kg		0.012	0.042	07/24/98	07/31/98	RLD	EPA 8021A
Toluene	<0.044	mg/Kg		0.011	0.037	07/24/98	07/31/98	RLD	EPA 8021A
Diesel Range Organics	290	mg/kg		1.4	4.7	07/27/98	08/05/98	PML	WDNR DRO
1-Methyl Naphthalene	3.1	mg/kg		0.047	0.16	07/28/98	07/30/98	CMK	EPA 8310
2-Methyl Naphthalene	6.5	mg/kg		0.031	0.10	07/28/98	07/30/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	07/28/98	07/30/98	CMK	EPA 8310
Acenaphthylene	0.67	mg/kg		0.051	0.17	07/28/98	07/30/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	07/28/98	07/30/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	07/28/98	07/30/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	07/28/98	07/30/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	07/28/98	07/30/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	07/28/98	07/30/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	07/28/98	07/30/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	07/28/98	07/30/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	07/28/98	07/30/98	CMK	EPA 8310
Fluoranthene	0.44	mg/kg		0.004	0.016	07/28/98	07/30/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	07/28/98	07/30/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	07/28/98	07/30/98	CMK	EPA 8310
Naphthalene	1.1	mg/kg		0.031	0.10	07/28/98	07/30/98	CMK	EPA 8310
Phenanthrene	0.30	mg/kg		0.003	0.012	07/28/98	07/30/98	CMK	EPA 8310
Pyrene	<0.0062	mg/kg		0.006	0.021	07/28/98	07/30/98	CMK	EPA 8310

Sample I.D. #: 206232 Sample Description: GP-15(4-4.5) Date Sampled: 07/22/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Air-filled Porosity	0	%					08/06/98	ETK	MOSA 18-2
Total Porosity	0.460						08/06/98	ETK	MOSA 18-2
% Moisture/ %SMHC	67.6	%					08/06/98	ETK	MOSA 36-2
Moisture Holding Capacity	38.3	%					08/06/98	ETK	MOSA 36-2
Bulk Density	1.43	gTS/cm3					08/06/98	ETK	MOSA 13-2
Total Percent Solids	73.5	%					07/27/98	NMP	EPA 5030
pH (Soil)(Lab)	7.85	S.U.'s					07/27/98	JDC	EPA 9040
TOC as % Organic Matter	1.74	%		0.01	NA		07/29/98	KJF	MOSA 29.4

Sample I.D. #: 206233 Sample Description: GP-16(1-1.5) Date Sampled: 07/22/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	69.4	%					07/27/98	NMP	EPA 5030
Gasoline Range Organics	37	mg/kg	L	1.3	4.5	07/24/98	07/30/98	EMH	WDNR GRO
1,2,4-Trimethylbenzene	0.24	mg/Kg		0.014	0.048	07/24/98	07/29/98	RLD	EPA 8021A

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.

ENVIRONMENTAL AND ANALYTICAL SERVICES
1230 Lange Court
Baraboo, WI 53913
1-800-228-3012 (608) 356-2760 FAX: (608) 356-2766

FILL IN ANALYSIS NEEDED BELOW

Remarks: 02705

689

Project #: 367-18.3

Proj. Name: Murphy Oil

Client Name / Number: Edge Associates

Date	Time	Comp	Grab	Sample Description	Sample #	Number of Containers	Porosity/% moisture	Fraction organic Carbon	Bulk density	pH	GRO/PRO + chlorinated hydrocarbons	DRO	PAH	Space Below For Laboratory Use Pres.	Sample I.D. #'s:
7/21/98	PM	50:1	X		GP-11(4.5-5)	3						✓	✓		206224
					GP-11(4-4.5)	1	✓	✓	✓	✓					206274
					GP-12(1-1.5)	3						✓	✓		206225
					GP-13(4.5-5)	3						✓	✓		206226
					GP-13(4-4.5)	1	✓	✓	✓	✓					206276
					GP-14(1-1.5)	3						✓	✓		206227
					GP-14(4.5-5)	3						✓	✓		206228
↓	↓				GP-14(4-4.5)	1	✓	✓	✓	✓					206229
7/20/98	9:20				GP-15(1-1.5)	3						✓	✓		206230
	9:35				GP-15(4.5-5)	3						✓	✓		206231
	9:35				GP-15(4-4.5)	1	✓	✓	✓	✓					206232
	9:55				GP-16(1-1.5)	3						✓	✓		206233
	10:05				GP-16(4.5-5)	3						✓	✓		206234
	10:05				GP-16(4-4.5)	1	✓	✓	✓	✓					206235
	10:20				GP-17(1-1.5)	3						✓	✓		206236
	10:30				GP-17(4.5-5)	3						✓	✓		206237
	10:30				GP-17(4-4.5)	1	✓	✓	✓	✓					206238
	10:45				GP-18(1-1.5)	3						✓	✓		206239
	10:55				GP-18(4.5-5)	3						✓	✓		206240
	10:55				GP-18(4-4.5)	1	✓	✓	✓	✓					206241
↓	11:15	↓	↓		GP-19(1-1.5)	3						✓	✓		206242

Sampled By: Jeff King (J.K.)

Relinquished By: Jeff King

Date: 7/23/98 Time: 7:15

Received By:

Date: Time:

Received By Lab: B.O. M

Date: 7/23/98 Time:

Remarks:

Date Sample Disposed of:

Sample Shipped Via: _____ UPS
_____ Fed. Exp. _____ Hand _____ U.S. Mail

Sublab: _____
Is this a PECFA project? (Please indicate "Yes" or "No") Yes

Sample Status: on ice
Deg. C: pH:

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215934 **Sample Description:** T-9 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	73.8	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	31	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	13	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	6.1	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	880	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	16	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	4.3	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	2.6	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Diesel Range Organics	1100	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	11	mg/kg	V	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	18	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	0.20	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.025	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	1.4	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	1.9	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	5.7	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215935 **Sample Description:** T-10 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	77.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	5.0	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	6.7	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	0.94	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	440	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	1.8	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	3.2	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	0.57	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HOC
Record Reviewer

Note: None

Project Name: 858-98E Project Number:

Sample I.D. #: 215935 **Sample Description:** T-10 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Diesel Range Organics	890	mg/kg	K	1.4	4.7	10/09/98	10/13/98	LLN	WDNR DRO

Sample I.D. #: 215936 **Sample Description:** T-11 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.6	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	32	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	28	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<1.2	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	5.0	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	1300	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	6.9	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<1.2	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	4.1	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	<1.2	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Diesel Range Organics	700	mg/kg	K	1.4	4.7	10/09/98	10/13/98	LLN	WDNR DRO

Sample I.D. #: 215937 **Sample Description:** T-12 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	75.6	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	48	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	26	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<0.50	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	5.3	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	1300	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	8.5	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	4.8	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	2.2	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Diesel Range Organics	500	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	10	mg/kg	V	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	19	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215937 **Sample Description:** T-12 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.025	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	4.5	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	1.1	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	2.7	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215938 **Sample Description:** B-4 4.5 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.0	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	8.4	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	7.8	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	1.3	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	340	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	2.0	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	3.7	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	0.50	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	250	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215939 **Sample Description:** B-5 4.5 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	0.46	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	0.98	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	0.047	mg/kg		0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	0.31	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	100	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	0.36	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	0.060	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	0.12	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	220	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	7.6	mg/kg	V	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310

Commonwealth Technology, Inc.
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215939 **Sample Description:** B-5 4.5 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	17	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.025	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	3.0	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.81	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	3.1	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215940 **Sample Description:** SP-1 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.9	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	32	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	25	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	4.2	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	890	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	1.2	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	15	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	1.6	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	2100	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215941 **Sample Description:** B-10 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	5.9	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	2.9	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	0.61	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HG
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215941 **Sample Description:** B-10 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Ethylbenzene	1.6	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	180	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	4.8	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	1.9	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	0.54	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	300	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215942 **Sample Description:** B-11 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.3	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	16	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	7.4	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	0.89	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	3.8	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	300	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	13	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	5.9	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	<0.25	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	930	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	2.0	mg/kg	S	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	3.3	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	0.30	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.0049	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	0.86	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.52	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	1.6	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

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Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HSC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215943 **Sample Description:** B-12 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.2	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	4.6	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.3	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.80	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	1.5	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	110	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	4.0	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	<0.25	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.25	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	380	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	<0.047	mg/kg		0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	0.36	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	0.12	mg/kg	J	0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	0.23	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	0.076	mg/kg	J	0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.098	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	<0.0062	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215944 **Sample Description:** B-13 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	4.6	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.4	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.17	mg/kg	VJ	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	0.78	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	72	mg/kg	L	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	3.2	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.12	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	1.1	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.12	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

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Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215944 **Sample Description:** B-13 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Diesel Range Organics	85	mg/kg	KL	1.4	4.7	10/09/98	10/13/98	LLN	WDNR DRO

Sample I.D. #: 215945 **Sample Description:** T-13 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	0.80	mg/kg		0.015	0.053	10/12/98	10/14/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	0.64	mg/kg		0.010	0.030	10/12/98	10/14/98	LMH	WDNR GRO
Benzene	<0.050	mg/kg	V	0.009	0.029	10/12/98	10/14/98	LMH	WDNR GRO
Ethylbenzene	0.11	mg/kg		0.009	0.028	10/12/98	10/14/98	LMH	WDNR GRO
Gasoline Range Organics	48	mg/kg	L	1.3	4.5	10/12/98	10/14/98	LMH	WDNR GRO
m & p- Xylene	0.20	mg/kg		0.017	0.053	10/12/98	10/14/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/14/98	LMH	WDNR GRO
o-Xylene	0.078	mg/kg		0.008	0.026	10/12/98	10/14/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/14/98	LMH	WDNR GRO
Diesel Range Organics	230	mg/kg	L	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	1.1	mg/kg	S	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	1.6	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	0.10	mg/kg	J	0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	0.71	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.57	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	2.2	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215946 **Sample Description:** T-14 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.8	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	10	mg/kg	D	0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO

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Laboratory Division
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Baraboo, WI 53913-3901
Phone: 800-228-3012
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email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215946 **Sample Description:** T-14 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
1,3,5-Trimethylbenzene	2.7	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.16	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	2.3	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	120	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	5.3	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.22	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	160	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215947 **Sample Description:** T-15 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.7	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	50	mg/kg	D	0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	14	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	8.3	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	570	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	36	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	1.4	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	0.32	mg/kg	J	0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	2000	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215948 **Sample Description:** T-16 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.7	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	3.2	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	0.70	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.43	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	1.0	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	47	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	1.5	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.067	mg/kg	J	0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	130	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	1.2	mg/kg		0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 98100003[1]
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: *Record Reviewer*

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215948 **Sample Description:** T-16 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	2.2	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	0.056	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	0.63	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.29	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	0.99	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215949 **Sample Description:** T-17 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	77.7	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	2.8	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.2	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	<0.050	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	0.36	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	190	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	0.85	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.36	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	0.11	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	560	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215950 **Sample Description:** SP-2 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.6	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	2.8	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	0.74	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.63	mg/kg		0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215950 **Sample Description:** SP-2 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Ethylbenzene	0.74	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	43	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	2.9	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	1.0	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.025	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	170	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215951 **Sample Description:** SP-3 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	71.2	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	8.4	mg/kg	D	0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.5	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.34	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	1.3	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	100	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	2.2	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.23	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	140	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

Data Qualifiers

A	Sample analyzed with a dilution. Surrogates were diluted outside the calibration range. Applies to all analytes for this method.
B	Analyte detected in associated Method Blank.
C	Sample result confirmed by alternate analysis.
D	Results reported from higher dilution.
E	Analyte concentration exceeded calibration range.
F	Unable to analyze due to sample matrix interference. Applies to all analytes for this method.
G	Insufficient sample for analysis. Applies to all analytes for this method.
H	Sample was received past the established holding time. Applies to all analytes for this method.
I	Sample was analyzed past the established holding time. Applies to all analytes for this method.
J	Reported concentration below the Quantitation Limit.
K	Sample contained lighter hydrocarbon fractions.
L	Sample contained heavier hydrocarbon fractions.
M	Matrix Spike and/or Matrix Spike Duplicate outside acceptance limits.
O	Hydrocarbons atypical of gasoline.
P	Hydrocarbons atypical of diesel #2 fuel.
Q	Laboratory Control Sample outside acceptance limits.
S	Surrogate outside acceptance limits. Applies to all analytes for this method.
T	Sample received exceeding proper preservation criteria. Applies to all analytes for this method.
V	Raised Quantitation Limit due to dilution for background interference. Applies to all analytes for this method.
W	Raised Quantitation Limit due to limited sample volume. Applies to all analytes for this method.
Y	Replicate outside acceptance limits.
Z	Calibration criteria exceeded.
1	Safe, No Total Coliform detected.
2	Unsafe, Total Coliform detected, no E. coli detected.
3	Unsafe, Total Coliform detected, E. coli detected.
4	Sample weight was below program minimum. Applies to all analytes for this method.
5	Insufficient oxygen depletion.
6	Complete oxygen depletion.
7	Sliding BOD, toxicity present in sample.

CTI Wisconsin Division Laboratory Certification #'s:
IA DNR: 146
KY Dept. of Environmental Protection: 90110
WI DNR: 157066030
DATCP: 289

H:\MSWORD\DATQUAL.DOC

Commonwealth Technology, Inc. (CTI)
1-800-228-3012
1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-276

Nº 5359 Is this a PECFA project? (Please indicate "Yes" or "No") Yes

SAMPLE COLLECTOR: Irvin Mossberger | COMPANY: Twin Ports Testing | TELEPHONE # (include area code): (715) 392-7114

PROJECT NUMBER: 858-98E | PROJECT NAME: TK [redacted] 42

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (must be completed): Murphy Oil, P.O. Box 2066, Superior, WI 54880

REPORT ADDRESS (must be completed): Irvin Mossberger, Twin Ports Testing, 1301 N 3rd St., Superior, WI 54880

DATE & TIME OF RELINQUISHMENT: 10/7/98 3:15pm | RELINQUISHED BY (signature): [signature] | RECEIVED BY (signature): | DATE / TIME OF RECEPTION:

DATE & TIME OF RELINQUISHMENT: | RELINQUISHED BY (signature): | RECEIVED BY LABORATORY (signature): B. Munger | DATE / TIME OF RECEPTION: 10-8-98 [redacted]

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION / DESCRIPTION	TYPE OF ANALYSES REQUIRED (please circle)	LAB USE ONLY PROF. W/MeOH? "X" IF YES	NO./TYPE OF CONTAINERS	LAB I.D.
T-9 2'	10/06/98	2:30	So.1		MeOH		DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): T-9			215934
T-10 2'		2:35								215935
T-11 2'		2:40					DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): T-12			215936
T-12 2'		2:45								215937
B-4 4.5'		2:50					DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): B-5			215938
B-5 4.5'		2:55								215939
SP-1		3:00					DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): SP-1: TLP benzene & benzene>10ppm B-11	[redacted]		215940
B-10 4.5'	10/07/98	9:10								215941
B-11 4.5'		9:15					DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): B-12			215942
B-12 4.5'		9:20								215943
B-13 4.5'		9:25					DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): T-13			215944
T-13 2'		9:30								215945
T-14 2'		9:35					DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			215946
T-15 2'		9:40								215947
T-16 2'		9:45					DRO GRO GRO/PVOC PVOC PL Cd % SOLIDS FLASHPOINT VOC-LIST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): T-16			215948
T-17 2'		9:50								215949
~~SAMPLE CONDITIONS / COMMENTS~~ SP-2		~~9:55~~					DRO GRO/PVOC 215950	CHECKED		ARRIVAL TEMPERATURE
SP-3		10:00					TLP benzene & benzene >10 ppm 215951			

APPENDIX D

SOIL TREATMENT APPLICATION FOR SOIL EXCAVATED FROM FORMER TANKS 1 AND 2 BASIN

SINCE 1972

TWIN PORTS TESTING INC.

1301 NORTH THIRD STREET • SUPERIOR, WISCONSIN 54880
(715) 392-7114 • (800) 373-2562 • FAX (715) 392-7163

P.O. BOX 16246 • DULUTH, MINNESOTA 55816-0246
(218) 722-1911

October 28, 1998
TPT# 858-98E

Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, Wisconsin 54880
Attn: Ms. Phyliss Holmbeck

Re: Soil Treatment Application for
Soil Excavated from Tanks 1 and 2 area
Murphy Oil U.S.A., Superior, Wisconsin

Dear Ms. Holmbeck:

Enclosed is the application to thermally treat approximately 700 cubic yards of petroleum contaminated soil from a release of gasoline at the Tanks 1 and 2 area at Murphy Oil. Soil samples SP-1, SP-2, and SP-3 were collected from the stockpile of soil generated at the site and are used for the emissions calculations.

If you have any questions or need any additional information, please call me at (715) 392-7114.

Sincerely,

TWIN PORTS TESTING, INC.

Irvin Mossberger, Hydrogeologist

c: Mr. Bill Gustafson

[p:\tptfiles\858-98e\soilapp\]

Department of Natural Resources

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 USA, 2407 Stinson Ave., Superior, WI 54880	Date of Form Completion: 10/28/98
Site #: TK 142	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 USA, 2407 Stinson Ave., Superior, WI 54880	Responsible Party Signature: Telephone #:
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:	394.3	mg/kg/10⁶	x 2,800 lb/yd³	x	700	yd³	=	675 lb
DRO:	803.3	mg/kg/10⁶	x 2,800 lb/yd³	x	700	yd³	=	1574.5 lb
Benzene:	~~6.8836~~ 0.411	mg/kg/10⁶	x 2,800 lb/yd³	x	700	yd³	=	0.8036 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

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

Chlorinated Organics: _____ mg/L Other: _____ mg/L

EMISSION CALCULATIONS
SOIL EXCAVATED FROM
TANKS 1 and 2 AREA
MURPHY OIL USA
SUPERIOR, WISCONSIN

GRO CALCULATION:

SP-1 = 890 ppm GRO
SP-2 = 43 ppm GRO
SP-2 = 100 ppm GRO

Avg. = 344.3 ppm GRO

$$\frac{344.3 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 700 \text{ yds}^3 = 675 \text{ lbs. of GRO}$$

BENZENE CALCULATION:

SP-1 = 0.25 ppm benzene
SP-2 = 0.63 ppm benzene
SP-3 = 0.34 ppm benzene

Avg. = 0.41 ppm benzene

$$\frac{0.41 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 700 \text{ yds}^3 = 0.8036 \text{ lbs. of benzene}$$

DRO CALCULATION:

SP-1 = 2100 ppm DRO
SP-2 = 170 ppm benzene
SP-3 = 140 ppm benzene

Avg. = 803.3 ppm benzene

$$\frac{803.3 \text{ ppm}}{1{,}000{,}000 \text{ ppm}} \times \frac{2{,}800 \text{ lbs.}}{\text{yd}^3} \times 700 \text{ yd}^3 = 1574.5 \text{ lbs. of benzene}$$

[p:\tptfiles\858-97e\soilapp\]

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215940 **Sample Description:** SP-1 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.9	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	32	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	25	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	4.2	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	890	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	1.2	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	15	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	1.6	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	2100	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Commonwealth Technology, Inc.
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HOC
Record Reviewer

Note: None

Project Name: 858-98E Project Number:

Sample I.D. #: 215950 **Sample Description:** SP-2 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.6	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	2.8	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	0.74	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.63	mg/kg		0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215950 **Sample Description:** SP-2 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Ethylbenzene	0.74	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	43	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	2.9	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	1.0	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.025	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	170	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215951 **Sample Description:** SP-3 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	71.2	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	8.4	mg/kg	D	0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.5	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.34	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	1.3	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	100	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	2.2	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.23	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	140	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

Data Qualifiers

A	Sample analyzed with a dilution. Surrogates were diluted outside the calibration range. Applies to all analytes for this method.
B	Analyte detected in associated Method Blank.
C	Sample result confirmed by alternate analysis.
D	Results reported from higher dilution.
E	Analyte concentration exceeded calibration range.
F	Unable to analyze due to sample matrix interference. Applies to all analytes for this method.
G	Insufficient sample for analysis. Applies to all analytes for this method.
H	Sample was received past the established holding time. Applies to all analytes for this method.
I	Sample was analyzed past the established holding time. Applies to all analytes for this method.
J	Reported concentration below the Quantitation Limit.
K	Sample contained lighter hydrocarbon fractions.
L	Sample contained heavier hydrocarbon fractions.
M	Matrix Spike and/or Matrix Spike Duplicate outside acceptance limits.
O	Hydrocarbons atypical of gasoline.
P	Hydrocarbons atypical of diesel #2 fuel.
Q	Laboratory Control Sample outside acceptance limits.
S	Surrogate outside acceptance limits. Applies to all analytes for this method.
T	Sample received exceeding proper preservation criteria. Applies to all analytes for this method.
V	Raised Quantitation Limit due to dilution for background interference. Applies to all analytes for this method.
W	Raised Quantitation Limit due to limited sample volume. Applies to all analytes for this method.
Y	Replicate outside acceptance limits.
Z	Calibration criteria exceeded.
1	Safe, No Total Coliform detected.
2	Unsafe, Total Coliform detected, no E. coli detected.
3	Unsafe, Total Coliform detected, E. coli detected.
4	Sample weight was below program minimum. Applies to all analytes for this method.
5	Insufficient oxygen depletion.
6	Complete oxygen depletion.
7	Sliding BOD, toxicity present in sample.

CTI Wisconsin Division Laboratory Certification #'s:
IA DNR: 146
KY Dept. of Environmental Protection: 90110
WI DNR: 157066030
DATCP: 289

H:\MSWORD\DATQUAL.DOC

Commonwealth Technology, Inc.
1-800-228-3012
1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-276

No. 5359 Is this a PECFA project? (Please indicate "Yes" or "No") Yes

SAMPLE COLLECTOR: Irvin Mossberger | COMPANY: Twin Ports Testing | TELEPHONE # (include area code): (715) 392-7114

PROJECT NUMBER: 858-98E | PROJECT NAME: TK [redacted] 142

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (must be completed): Murphy Oil, P.O. Box 2066, Superior, WI 54880

REPORT ADDRESS (must be completed): Irvin Mossberger, Twin Ports Testing, 1301 N. 3rd St., Superior, WI 54880

DATE & TIME OF RELINQUISHMENT: 10/7/98 3:15pm | RELINQUISHED BY (signature): [signature] | RECEIVED BY (signature): | DATE / TIME OF RECEPTION:

DATE & TIME OF RELINQUISHMENT: | RELINQUISHED BY (signature): | RECEIVED BY LABORATORY (signature): [signature] | DATE / TIME OF RECEPTION: 10-9-98 [redacted]

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION / DESCRIPTION	TYPE OF ANALYSES REQUIRED (please circle)	LAB USE ONLY PROF. W/MeOH? "X" IF YES	NO./TYPE OF CONTAIN-ERS	LAB I.D.
T-9 2'	10/6/98	2:30	So. 1		MeOH		DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): T-9			215934
T-10 2'		2:35								215935
T-11 2'		2:40								215936
T-12 2'		2:45					T-12			215937
B-4 4.5'		2:50								215938
B-5 4.5'		2:55					B-5			215939
SP-1		3:00					SP-1: TCLP Benzene & Benzo(a)pyrene B-11	[redacted]		215940
B-10 4.5'	10/7/98	9:10								215941
B-11 4.5'		9:15								215942
B-12 4.5'		9:20					B-12			215943
B-13 4.5'		9:25								215944
T-13 2'		9:30					T-13			215945
T-14 2'		9:35								215946
T-15 2'		9:40								215947
T-16 2'		9:45								215948
T-17 2'		9:50					T-16			215949
~~SAMPLE DESCRIPTION / COMMENTS~~ SP-2		~~9:55~~					DRO GRO/PVOC 215950	CHECKED		ARRIVAL TEMPERATURE
SP-3		10:00					TCLP Benzene if Benzene >10 ppm 215951			

APPENDIX E

BORING LOG AND CONSTRUCTION AND DEVELOPMENT FORMS FOR MONITORING WELL MW-2/T8

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other ☐ _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc. - Former Tank 8		MW-2/T8

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Larry Last Name: Erdman Firm: Boart Longyear	6/2/99 (m m d d y y y y)	6/2/99 (m m d d y y y y)	hollow stem auger

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _ _		0 Feet MSL	0 Feet MSL	8.25 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 0 N, 0 E S/C/N
NE 1/4 of NW 1/4 of Section 36, T 49 N, R 14 E/W
Lat 0 ° 0 ' 0 "
Long 0 ° 0 ' 0 "

Local Grid Location
0 Feet ☐ N ☐ S 0 Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
0	DOUGLAS	16	Superior

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
0-2	2		2	Black-red CLAY with little silt and trace fine to coarse sand, dry	CL									
5-7	24		7	Red CLAY, trace gray fractures, petroleum-like odor	CL									
?	24		12	Same as above	CL									
15-17	24		17	Red CLAY, no petroleum-like odor, trace root zones, wet	CL									
			18.25	EOB @ 18.25 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature _____ Firm Gannett Fleming, Inc. - Madison, WI

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

Route To: ☐ Watershed/Wastewater ☐ Remediation/Redevelopment ☐ Waste Management ☐ Other ☐

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 6-97

Facility/Project Name: Murphy Oil	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: MW-2 T8
Facility License, Permit or Monitoring No.	Grid Origin Location (Check if estimated: ☐) Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well No.
Facility ID: 10082	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 06/02/1999
Type of Well: Well Code 11/mw	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____ T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm): L. Erdman; Boart Longyear
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation ____ ft. MSL

B. Well casing, top elevation 2.50 ft. MSL

C. Land surface elevation ____ ft. MSL

D. Surface seal, bottom ____ ft. MSL or 2.5 ft.

12. USC classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; ____ Other ☐

15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis): ____

E. Bentonite seal, top ____ ft. MSL or 0.5 ft.

F. Fine sand, top ____ ft. MSL or NA ft.

G. Filter pack, top ____ ft. MSL or 2.5 ft.

H. Screen joint, top ____ ft. MSL or 3.0 ft.

I. Well bottom ____ ft. MSL or 18.0 ft.

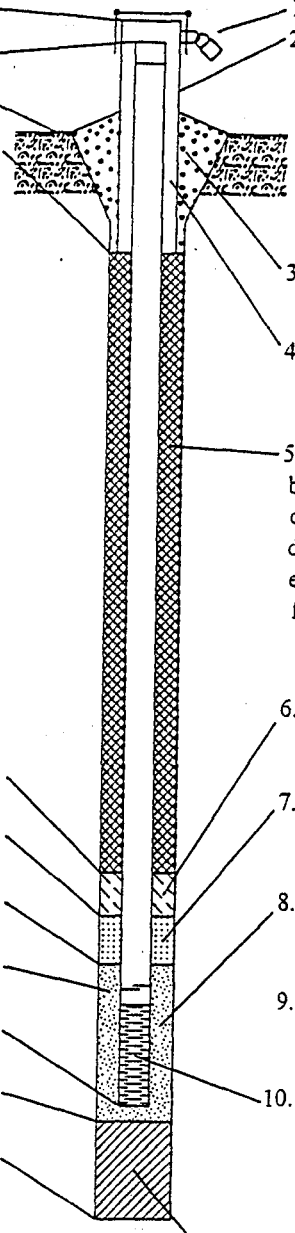
J. Filter pack, bottom ____ ft. MSL or 19.0 ft.

K. Borehole, bottom ____ ft. MSL or 19.0 ft.

L. Borehole, diameter 8.0 in.

M. O.D. well casing 2.37 in.

N. I.D. well casing 2.06 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: ____ Steel ☒ 04 Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: ____

3. Surface seal: Bentonite ☒ 30 Concrete ☐ 01 ____ Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30 Sand Other ☒

5. Annular space seal: a. Granular Bentonite ☒ 33
b. ____ Lbs/gal mud weight . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
c. ____ Other ☐

7. Fine sand material: Manufacturer, product name and mesh si
a. NA
b. Volume added ____ ft^3

8. Filter pack material: Manufacturer, product name and mesh s
a. #9 Badger
b. Volume added ____ ft^3

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 ____ Other ☐

10. Screen material: PVC
a. Screen Type: Factory cut ☒ 11 Continuous slot ☐ 01 ____ Other ☐
b. Manufacturer Boart Longyear
c. Slot size: 0.006 in.
d. Slotted length: 15.0 ft.

11. Backfill material (below filter pack): None ☒ 14 ____ Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: Boart Longyear, 101 Alderson St. Schofield, WI 54476 Tel: (715)359-7090 Fax: (715)355-5715

Please complete both Forms 4400-113A and 4400-113B and return to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 4-90

Route to: Solid Waste ☐ Haz. Waste ☐ Wastewater ☐
Env. Response & Repair ☐ Underground Tanks ☐ Other ☐ _____

Facility/Project Name	County Name	Well Name
Murphy Oil USA - Former Tank 8	Douglas	MW-2/TK8
Facility License, Permit or Monitoring Number	**County Code**	**Wis. Unique Well Number**	**DNR Well Number**
_____	16		

		Before Development	After Development
1. Can this well be purged dry?	■ Yes ☐ No		
2. Well development method			
surged with bailer and bailed	■ 41		
surged with bailer and pumped	☐ 61		
surged with block and bailed	☐ 42		
surged with block and pumped	☐ 62		
surged with block, bailed and pumped	☐ 70		
compressed air	☐ 20		
bailed only	☐ 10		
pumped only	☐ 51		
pumped slowly	☐ 50		
Other _____	☐ ___		
11. Depth to Water (from top of well casing)		a. 15.00 ft.	____.__ ft.
Date		b. 08/19/99 (m m d d y y)	__/__/__ (m m d d y y)
Time		c. __:__ ☐ a.m. ☐ p.m.	__:__ ☐ a.m. ☐ p.m.
12. Sediment in well bottom		0.0 inches	0.0 inches
13. Water clarity		Clear ■ 10 Turbid ☐ 15	Clear ■ 20 Turbid ☐ 25
(Describe)		No sediment in well.	No sediment in well.
3. Time spent developing well	11 min.		
4. Depth of well (from top of well casing)	20.3 ft.		
5. Inside diameter of well	2.05 in.		
6. Volume of water in filter pack and well casing	5.0 gal.		
7. Volume of water removed from well	2.0 gal.		
8. Volume of water added (if any)	____.__ gal.		
9. Source of water added	_____		
10. Analysis performed on water added? (If yes, attach results)	☐ Yes ☐ No		
Fill in if drilling fluids were used and well is at solid waste facility:			
14. Total suspended solids		____.__ mg/l	____.__ mg/l
15. COD		____.__ mg/l	____.__ mg/l

16. Additional comments on development:

On 8/19/99 1.0 gallons were removed from the well from 9:58 - 10:03 a.m.
On 8/26/99 1.0 gallons were removed from 10:11 - 10:16 a.m.

Well developed by: Person's Name and Firm

Name: Irvin G. Mossberger

Firm: Twin Ports Testing

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Irvin G. Mossberger

Print Initials: I G M

Firm: Twin Ports Testing

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

APPENDIX F

LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS FOR DECEMBER 1999 AND MARCH 2000 GROUNDWATER SAMPLES

U.S. Analytical Lab

Tank 8
GW results

JEFF KING
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 98E0871
Project Name TK 8, SUPERIOR, WI
Invoice # E29164

Report Date *28-Mar-00*

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5029164A						**Sample Type** Water			
Sample ID MW2/TK8						**Sample Date** 3/15/00			
Organic									
GRO/PVOC									
Gasoline Range Organics	1400	ug/l	9.3	31	1	3/21/00	GRO95	MSV	1 46
Benzene	33	ug/l	0.32	1.1	1	3/21/00	GRO95	MSV	1
Ethylbenzene	14	ug/l	0.34	1.1	1	3/21/00	GRO95	MSV	1
MTBE	< 0.31	ug/l	0.31	1	1	3/21/00	GRO95	MSV	1
Toluene	2.4	ug/l	0.35	1.2	1	3/21/00	GRO95	MSV	1
1,2,4-Trimethylbenzene	18	ug/l	0.35	1.2	1	3/21/00	GRO95	MSV	1
1,3,5-Trimethylbenzene	67	ug/l	0.64	2.1	1	3/21/00	GRO95	MSV	1
Xylene's	5.1	ug/l	1	3.3	1	3/21/00	GRO95	MSV	1
PAH's									
Acenaphthene	3.4	ug/l	0.17	0.55	1	3/24/00	8310	TJW	1
Acenaphthylene	< 1	ug/l	1	3.2	1	3/24/00	8310	TJW	1
Anthracene	0.13	ug/l	0.01	0.033	1	3/24/00	8310	TJW	1
Benzo(a)anthracene	< 0.074	ug/l	0.074	0.25	1	3/24/00	8310	TJW	1
Benzo(a)pyrene	< 0.1	ug/l	0.1	0.34	1	3/24/00	8310	TJW	1
Benzo(b)fluoranthene	< 0.065	ug/l	0.065	0.22	1	3/24/00	8310	TJW	1
Benzo(g,h,i)perylene	< 0.52	ug/l	0.52	1.7	1	3/24/00	8310	TJW	1
Benzo(k)fluoranthene	< 0.01	ug/l	0.01	0.033	1	3/24/00	8310	TJW	1
Chrysene	< 0.7	ug/l	0.7	2.4	1	3/24/00	8310	TJW	1
Dibenzo(a,h)anthracene	< 0.42	ug/l	0.42	1.4	1	3/24/00	8310	TJW	1
Fluoranthene	31	ug/l	0.36	1.2	1	3/24/00	8310	TJW	1
Fluorene	2.4	ug/l	0.33	1.1	1	3/24/00	8310	TJW	1
Indeno(1,2,3-cd)pyrene	< 0.59	ug/l	0.59	2	1	3/24/00	8310	TJW	1
1-Methyl naphthalene	23	ug/l	0.21	7	1	3/24/00	8310	TJW	1
2-Methyl naphthalene	9.4	ug/l	0.2	0.67	1	3/24/00	8310	TJW	1
Naphthalene	3.9	ug/l	0.22	0.74	1	3/24/00	8310	TJW	1
Phenanthrene	1.7	ug/l	0.037	0.12	1	3/24/00	8310	TJW	1
Pyrene	< 0.059	ug/l	0.059	0.2	1	3/24/00	8310	TJW	1
Lab Code 5029164B						**Sample Type** Water			
Sample ID FIELD BLANK						**Sample Date** 3/15/00			
Organic									
PVOC									
Benzene	< 0.32	ug/l	0.32	1.1	1	3/20/00	GRO95	MSV	1
Ethylbenzene	< 0.34	ug/l	0.34	1.1	1	3/20/00	GRO95	MSV	1

U.S. Analytical Lab

JEFF KING
GANNETT FLEMING
8025 EXCELSIOR DR.
MADISON, WI 53717-1900

Project # 98E0871
Project Name TK 8, SUPERIOR, WI
Invoice # E29164

Report Date *28-Mar-00*

Analyte	Result	Units	LOD	LOQ	Dil	Run Date	Method	Analyst	QC Code
Lab Code 5029164B						**Sample Type** Water			
Sample ID FIELD BLANK						**Sample Date** 3/15/00			
MTBE	< 0.31	ug/l	0.31	1	1	3/20/00	GRO95	MSV	1
Toluene	< 0.35	ug/l	0.35	1.2	1	3/20/00	GRO95	MSV	1
1,2,4-Trimethylbenzene	< 0.35	ug/l	0.35	1.2	1	3/20/00	GRO95	MSV	1
1,3,5-Trimethylbenzene	< 0.64	ug/l	0.64	2.1	1	3/20/00	GRO95	MSV	1
Xylene's	< 1	ug/l	1	3.3	1	3/20/00	GRO95	MSV	1

LOD Limit of Detection "J" Flag: Analyte detected between LOD and LOQ LOQ Limit of Quantitation

Code	*Comment*
1	All laboratory QC requirements were met for this sample.
46	Chromatogram indicates contamination outside of the specified window.

Authorized Signature

CHAIN OF CUSTODY RECORD

Analytical Lab
1090 Kennedy Ave. • Kimberly, WI 54136
(920) 735-8295 • FAX 920-739-1738 • 800-490-4902
LAB@USOIL.COM

Rev. Date: 12-17-98

Lab I.D. # 5029164

Chain # No 18761

Page 1 of 1

Account No. :

Quote No.: (Gannett Fleming)

Project #: 98E0871

Sampler: (signature)

Project (Name / Location): TK 8 Superior, WI

Sample Integrity - To be completed by receiving lab.
Method of Shipment: Courier Temp. of Temp. Blank: ____ °C On Ice: Y
Cooler seal intact upon receipt: X Yes ____ No Labcoded By: PW

Reports To: Jeff King	Invoice To: Liz Lundmark
Company Gannett Fleming	Company MOUSA
Address 8025 Excelsior Dr.	Address P.O. Box 2066
City State Zip Madison, WI 53717	City State Zip Superior, WI 54880
Phone (608) 836-1500	Phone (715) 398-8204

Sample Handling Request

___ Rush Analysis
Date Required ____

X Normal Turn Around

Analysis Requested

Lab I.D.	Sample I.D.	Collection Date	Collection Time	No. of Containers Size and Type	Description*	Preservation	DRO (Mod/TPH)	GRO (Mod/TPH)	PVOC (EPA 8021)	BTEX (EPA 8021)	VOC (EPA 8021)	VOC (EPA 8260)	O&G (EPA 413.1)	PAH (EPA 8310)	Pb	Flash Point	Other Analysis						PID/ FID
5029164																							
A	MW-2/TK8	3/15/00	1:10	5	GW	HCl		X	X					X									
B	Field Blank	3/15/00	1:00	3		HCl			X														

Department Use Only

Split Samples: Offered ? ____ Yes ____ No
Accepted? ____ Yes ____ No
Accepted By: ____

Comments/ Special Instructions
*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", etc.

Department Use Optional for Soil Samples

Disposition of unused portion of sample
Lab Should:
___ Dispose ____ Retain for ___ days
___ Return ____ Other

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
	8:00am	3/16/00			

Received in Laboratory By: P Wade Time: 10:00 Date: 3-17-00

USFilter

ENVIROSCAN SERVICES
301 WEST MILITARY ROAD
ROTHSCHILD, WI 54474

TELEPHONE 715-359-7226
FACSIMILE 715-355-3221

December 28, 1999

Gannett Fleming, Inc.
8025 Excelsior Drive
Madison, WI 53717

Attn: Jeff King/ Liz Lundmark

Re: 98E0871

Please find enclosed the analytical results for the sample(s) received December 11, 1999.

The chain of custody document is enclosed.

If you have any questions about the results, please call. Thank you for using US Filter/Enviroscan for your analytical needs.

Sincerely,

US Filter/Enviroscan

James R. Salkowski

James R. Salkowski
Laboratory Director

USFilter

UNITED STATES FILTER CORPORATION

Gannett Fleming, Inc.
8025 Excelsior Drive
Madison, WI 53717

PROJECT NO.: 98E0871
SAMPLED BY : Client
DATE REC'D : 12/11/99
REPORT DATE: 12/28/99
PREPARED BY: JRS

Attn: Jeff King/ Liz Lundmark

Sample ID: **MW-2 TK8** Matrix: **GRDWTR** Sample Date: **12/10/99** Lab No. **026317**

	Result	Units	LOD	LOQ	Dilution Factor	Qualifiers	Date Analyzed	Analyst
EPA 239.2								
Sol. Lead (GFAAS)	<1.00	µg/l	1.0	3.33	1.0		12/17/99	JCH
EPA 8021								
Benzene	39.3	µg/l	0.15	0.5	5.0		12/21/99	LMP
Bromobenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Bromodichloromethane	<0.65	µg/l	0.13	0.433	5.0		12/21/99	LMP
n-Butylbenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
sec-Butylbenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
tert-Butylbenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Carbon Tetrachloride	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Chlorobenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Chlorodibromomethane	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Chloroethane	<0.75	µg/l	0.15	0.5	5.0	CSH	12/21/99	LMP
Chloroform	<0.7	µg/l	0.14	0.466	5.0		12/21/99	LMP
Chloromethane	<0.75	µg/l	0.15	0.5	5.0	CSH SPH	12/21/99	LMP
o-Chlorotoluene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
p-Chlorotoluene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Dibromochloropropane(DBCP)	<1.25	µg/l	0.25	0.833	5.0		12/21/99	LMP
1,2-Dibromoethane(EDB)	<0.6	µg/l	0.12	0.4	5.0		12/21/99	LMP
1,2-Dichlorobenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,3-Dichlorobenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,4-Dichlorobenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Dichlorodifluoromethane	<1.25	µg/l	0.25	0.833	5.0		12/21/99	LMP
1,1-Dichloroethane	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,2-Dichloroethane	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,1-Dichloroeth(yl)ene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
cis-1,2-Dichloroeth(yl)ene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
trans-1,2-Dichloroethylene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,2-Dichloropropane	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,3-Dichloropropane	<1.00	µg/l	0.2	0.666	5.0		12/21/99	LMP
2,2-Dichloropropane	<0.75	µg/l	0.15	0.5	5.0	CSL	12/21/99	LMP
Ethylbenzene	14.9	µg/l	0.5	1.67	5.0		12/21/99	LMP
Hexachlorobutadiene	<5.00	µg/l	1.0	3.33	5.0		12/21/99	LMP
Isopropylbenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Isopropyl Ether	<1.25	µg/l	0.25	0.833	5.0		12/21/99	LMP
p-Isopropyltoluene	3.10	µg/l	0.2	0.666	5.0		12/21/99	LMP
Methyl tert-butyl ether	<1.50	µg/l	0.3	0.999	5.0		12/21/99	LMP
Methylene Chloride	<1.95	µg/l	0.39	1.3	5.0		12/21/99	LMP
Naphthalene	23.3	µg/l	0.8	2.66	5.0	CSH	12/21/99	LMP
n-Propylbenzene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
Tetrachloroeth(yl)ene	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,1,2,2-Tetrachloroethane	<0.65	µg/l	0.13	0.433	5.0	CSL SPH	12/21/99	LMP
Toluene	3.23	µg/l	0.4	1.33	5.0		12/21/99	LMP
1,2,3-Trichlorobenzene	<2.50	µg/l	0.5	1.67	5.0		12/21/99	LMP
1,2,4-Trichlorobenzene	<2.50	µg/l	0.5	1.67	5.0		12/21/99	LMP
1,1,1-Trichloroethane	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,1,2-Trichloroethane	<0.7	µg/l	0.14	0.466	5.0		12/21/99	LMP
Trichloroeth(yl)ene	<2.00	µg/l	0.4	1.33	5.0		12/21/99	LMP
Trichlorofluoromethane	<0.75	µg/l	0.15	0.5	5.0		12/21/99	LMP
1,2,4-Trimethylbenzene	65.2	µg/l	0.4	1.33	5.0		12/21/99	LMP
1,3,5-Trimethylbenzene	60.6	µg/l	0.15	0.5	5.0		12/21/99	LMP
Vinyl Chloride	<0.55	µg/l	0.11	0.366	5.0		12/21/99	LMP

Gannett Fleming, Inc.
8025 Excelsior Drive
Madison, WI 53717

PROJECT NO.: 98E0871
SAMPLED BY : Client
DATE REC'D : 12/11/99
REPORT DATE: 12/28/99
PREPARED BY: JRS

Attn: Jeff King/ Liz Lundmark

Sample ID: **MW-2 TK8** Matrix: **GRDWTR** Sample Date: **12/10/99** Lab No. **026317**

	Result	Units	LOD	LOQ	Dilution Factor	Qualifiers	Date Analyzed	Analyst
EPA 8021								
m- & p-Xylene	44.2	µg/l	0.4	1.33	5.0		12/21/99	LMP
o-Xylene & Styrene	11.1	µg/l	0.15	0.5	5.0		12/21/99	LMP
EPA 8310								
Acenaphthene	<0.1	µg/l	0.1	0.333	1.0		12/20/99	GLS
Acenaphthylene	<0.1	µg/l	0.1	0.333	1.0		12/20/99	GLS
Anthracene	<0.09	µg/l	0.09	0.3	1.0		12/20/99	GLS
Benzo(a)Anthracene	<0.05	µg/l	0.05	0.167	1.0		12/20/99	GLS
Benzo(a)Pyrene	<0.04	µg/l	0.04	0.133	1.0	DUP	12/20/99	GLS
Benzo(b)Fluoranthene	<0.04	µg/l	0.04	0.133	1.0		12/20/99	GLS
Benzo(k)Fluoranthene	<0.06	µg/l	0.06	0.2	1.0		12/20/99	GLS
Benzo(ghi)Perylene	<0.06	µg/l	0.06	0.2	1.0	DUP	12/20/99	GLS
Chrysene	<0.05	µg/l	0.05	0.167	1.0		12/20/99	GLS
Dibenzo(a,h)Anthracene	<0.1	µg/l	0.1	0.333	1.0	DUP	12/20/99	GLS
Fluoranthene	<0.08	µg/l	0.06	0.2	1.0		12/20/99	GLS
Fluorene	2.99	µg/l	0.07	0.233	1.0		12/20/99	GLS
Indeno(1,2,3-cd)Pyrene	<0.07	µg/l	0.07	0.233	1.0	DUP	12/20/99	GLS
1-Methyl Naphthalene	64.5	µg/l	0.09	0.3	20.0		12/22/99	GLS
2-Methyl Naphthalene	71.7	µg/l	0.08	0.266	20.0		12/22/99	GLS
Naphthalene	14.9	µg/l	0.08	0.266	20.0		12/22/99	GLS
Phenanthrene	4.16	µg/l	0.08	0.266	1.0		12/20/99	GLS
Pyrene	<0.11	µg/l	0.11	0.366	1.0		12/20/99	GLS
Liquid Organic Extraction	COMP		-	-	-		12/14/99	CKV
WI DNR								
Diesel Range Organics	14,800	µg/l	100.	333.	10.0	D2	12/17/99	DJB
Water Org Ext - DRO	COMP		-	-	-		12/14/99	CKV
Gasoline Range Organics	15,300	µg/l	50.0	167.	50.0	G2	12/21/99	LMP

Gannett Fleming, Inc.
8025 Excelsior Drive
Madison, WI 53717

PROJECT NO.: 98E0871
SAMPLED BY : Client
DATE REC'D : 12/11/99
REPORT DATE: 12/28/99
PREPARED BY: JRS

Attn: Jeff King/ Liz Lundmark

Qualifier Descriptions

CSH	Check standard for this analyte exhibited a high bias. Sample results may also be biased high.
SPL	Matrix spike recovery within analytical batch was low. Sample matrix appears similar to your sample; result may be biased low.
SPH	Matrix spike recovery within analytical batch was high. Sample matrix appears similar to your sample; result may be biased high.
CSL	Check standard for this analyte exhibited a low bias. Sample results may also be biased low.
DUP	Result of duplicate analysis in this quality assurance batch exceeds the limits for precision.
SL	Surrogate recovery was low. Result for sample may be biased low.
D2A	The chromatogram is characteristic for a light petroleum product. (i.e. gasoline, aged or degraded gasoline, mineral spirits, etc.)
D1	The chromatogram is characteristic for a fuel oil/ diesel. (i.e. #1 or #2 Diesel, jet fuel, kerosene, aged or degraded diesel, etc.)
G8	The chromatogram is characteristic for aged gasoline, however either additional peaks are present or PVOC peaks are not propotrional to aged gasoline indicating the presence of additional compounds.
D2	The chromatogram is not characteristic for diesel. It has the characteristics of a product which has significant peaks within the DRO window.
G2	The chromatogram has characteristics of an aged gasoline sample.

REQUEST FOR SERVICES USFilter

ENVIROSCAN SERVICES 301 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

REPORT TO:
Name: Jeff King
Company: Gannett Fleming
Address: 8025 Excelsior Dr.
Madison, WI 53717-1900
Phone: (608) 836-1500
P. O. #
Project # 98E0571 Quote #
Location Superior, WI

BILL TO: (if different from Report To info)
Name: Liz Lindmark
Company: MOUSA
Address: P.O. Box 2066
Superior WI 54880
Phone: (715) 398-8204

ANALYTICAL REQUESTS
(use separate sheet if necessary)

Sample Type
(Check all that apply)
- ■ Groundwater
- ☐ Wastewater
- ☐ Soil/Solid
- ☐ Drinking Water
- ☐ Oil
- ☐ Vapor
- ☐ Other

Turnaround Time
- ■ Normal
- ☐ Rush (Pre-approved by Lab)

Date Needed
Approved By

LAB USE ONLY	DATE	TIME	No. of Containers COMP	No. of Containers GRAB	SAMPLE ID	GRO	VOC	Dissolved Pb	~~Alkalinity/Sulfate~~	~~Nitrate/Nitrite~~	DRO	PAH	REMARKS
21026316	12/10/99	10:05		7	MW-1/TK8	X	X	X	~~X~~	~~X~~	X	X	
21026317	12/10/99	9:45		7	MW-2/TK8	X	X	X	~~X~~	~~X~~	X	X	

Del'v: Hand (Comm)
Ship. Cont. OK (Y) N N/A
Samples leaking? Y (N) N/A
Seals OK? (Y) N N/A
Rec'd on ice? (Y) N N/A __°C

Comments:

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature) [signature]

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	12/10/99 | 1220	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY (Signature) [signature] — DATE/TIME 12-11-99 | 1:20

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

May 21, 1999
File #34265.006 & .007

Mr. James A. Hosch
Wisconsin Department of Natural Resources
1401 Tower Avenue
Superior, WI 54880

Re: Status Report for Tanks 1/2 and Former Tank 8
Murphy Oil USA, Inc., Superior, Wisconsin

Dear Mr. Hosch:

On behalf of Murphy Oil USA, Inc., Gannett Fleming, Inc. is submitting this status report describing the 1998 site investigation activities in the areas affected by a historic release of petroleum products in the Tanks 1/2 basin, and four separate releases of fuel oil from former Tank 8 at Murphy's Superior refinery.

Background

The release in the Tanks 1/2 basin was of an unknown quantity of petroleum products and was reported to the Wisconsin Department of Natural Resources (WDNR) in May 1998. Releases from former Tank 8 were reported to the WDNR in March 1991 (2,000 gallons No. 2 fuel oil), September 1991 (250 gallons No. 1 fuel oil), June 1992 (630 gallons No. 2 fuel oil), and August 1994 (8,400 gallons No. 2 fuel oil).

Initial field-screening of shallow soils in the Tanks 1/2 basin identified the lateral extent of contamination. In September and October 1998, approximately 600 to 700 cubic yards of unsaturated contaminated soil was removed from the tank basin and transported to Lakehead Blacktop and Materials in Superior, Wisconsin, for thermal treatment. Soil samples were collected during and following the excavation activities to document the effectiveness of the excavation.

Investigation Activities To Date

Tanks 1/2

In September 1998, before the excavation of contaminated soil, Twin Ports Testing (Twin Ports) collected and field-screened 12 shallow soil samples (1 to 2 feet) from 12 locations (S-1 through S-12) within the diked area of Tanks 1/2 to identify the lateral extent of contamination within the tank

Continued ...

basin. The attached Figure 1 identifies all these sampling locations, along with the field-screening results for those samples. Table 1 contains all the field data collected in association with those 12 soil samples.

In October 1998, Twin Ports personnel provided oversight, field-screening, and confirmation soil sampling during and following the excavation of contaminated soil from the tank basin. Soils were removed to a depth of 4.5 feet in two contiguous areas separated by an aboveground pipe that bisects the basin. The total volume removed was 600 to 700 cubic yards. A total of 58 surficial soil samples were collected and field-screened. Fifteen of these samples were submitted to Commonwealth Technologies, Inc. (CTI), Baraboo, Wisconsin, for diesel range organic (DRO), gasoline range organic (GRO), petroleum volatile organic compounds (PVOCs), and on select samples, polynuclear aromatic hydrocarbon (PAH) confirmation analysis. The locations of these samples are shown on Figure 2. Table 2 contains the field-screening results, while Table 3 contains the laboratory analytical results of the fourteen post excavation soil samples, and three stockpile samples used to characterize the excavated soil for thermal treatment. The laboratory reports and chain of custody forms for all samples are attached.

Tank 8

In July 1998, Gannett Fleming staff provided oversight during the sampling of a 6-foot Geoprobe soil boring (GP-21) in the former Tank 8 basin. Soil samples for chemical analysis were collected at depths of 1 to 2 and 4 to 5 feet in the probe hole. Both samples were submitted to CTI for DRO, PVOC, and PAH analysis. The attached Figure 3 shows the location of the probe hole. Table 4 contains the analytical results of both soil samples.

In October 1998, Twin Ports used a hand auger to collect and field-screen 43 (1 to 43) shallow (2 foot) soil samples from within the tank basin. The field-screening results for those soil samples are shown next to the sample locations on Figure 3.

In December 1998, a Geoprobe was used to collect soil samples from 8 probe holes (B8-1 through B8-8). Gannett Fleming staff provided oversight during the collection of these Geoprobe soil samples. Soil samples for chemical analysis were collected at depths of 1 to 2 and 4 to 5 feet in each probe hole. In one probe hole, a Shelby tube was used to collect a sample from a depth of 2 to 4 feet for permeability testing, and four other samples were collected at various depths throughout the probe hole for organic carbon fraction testing.

Continued ...

Mr. James A. Hosch
Wisconsin Department of Natural Resources
May 21, 1999

The samples collected for chemical analysis were submitted to CTI for DRO, PVOC, and PAH analysis. CTI also analyzed the 2- to 4-foot sample for vertical permeability, using the falling head test, and the four samples from various depths for their organic carbon fraction.

Previously referenced Table 4, contains all the analytical results for the chemical testing of these samples. Table 5 contains the results of the organic carbon fraction and permeameter tests. The permeameter test conducted on the Shelby tube sample resulted in a hydraulic conductivity of 4.1 x 10^{-6} cm/sec. The boring logs and abandonment forms for all probe holes and the laboratory reports and chain of custody forms for all laboratory analyses, with the exception of GP-21, are attached. The information for GP-21 was submitted in our September 10, 1998, Phase 1/Phase 2 report.

In addition to the investigative and remedial activities completed for soils in these two basins, two water table groundwater monitoring wells will be installed in June 1999, to determine the quality of groundwater beneath these basins. One well will be installed in the northeast corner of the former Tank 8 basin, and one will be installed in the southeast corner of the basin for Tanks 1/2. The boring logs and well construction and development forms for these wells will be submitted following the installation and development of these two new wells.

If you have any questions about this status report, please call.

Very truly yours,

GANNETT FLEMING, INC.

David J. Olig., P.G.
Senior Project Manager

Jeffrey J. King
Staff Hydrogeologist

Dennis F. Kugle
Vice President

DJO/reb
Enc.
cc: Lee Vail (Murphy/New Orleans)
Liz Lundmark (Murphy/Superior)
Kevin Melnyk (Murphy/El Dorado)
Greg Neve (Murphy/Superior)
Rick Lewandowski (DeWitt, Ross & Stevens/Madison)

M:\CLERICAL\PROJECTS\0300\367-18\CORRESP\DJO\1L367-18.017

LEGEND

S-7 ● *Twin Ports Soil Sample Location (August 1998)*

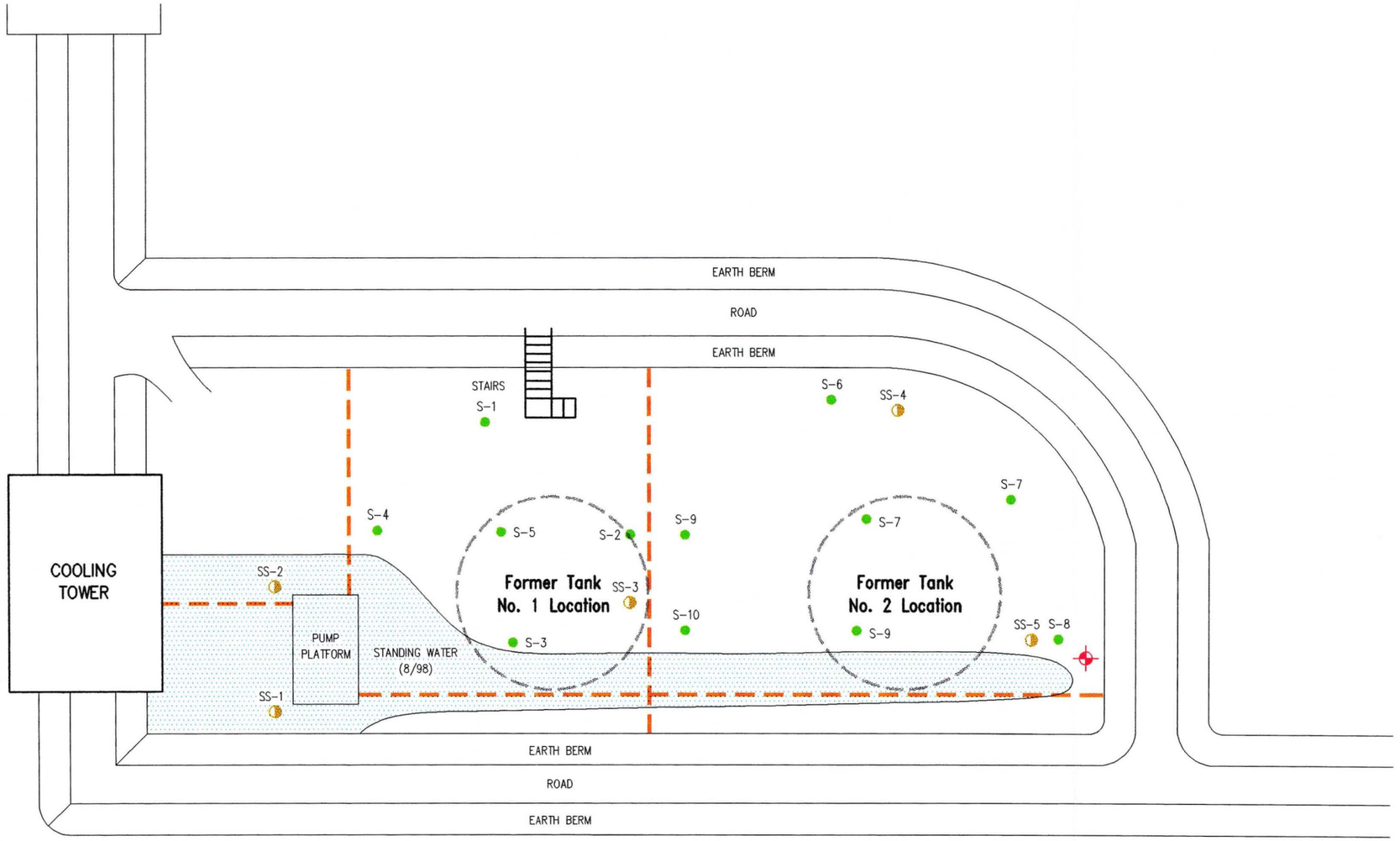
SS-2 ◐ *Gannett Fleming Hand-Auger Soil Sample Location (July 1998)*

⌖ *Proposed Monitoring Well Location (To Be Installed 6/99)*

Aboveground Piping

NOTES

1. *Site Layout And Sample Locations Are Based On Field Measurements And Are To Be Considered Approximate; Site Not Surveyed.*
2. *This Figure Is Based On A Twin Ports Testing Site Plan Of The Tanks 1 And 2 Basin.*

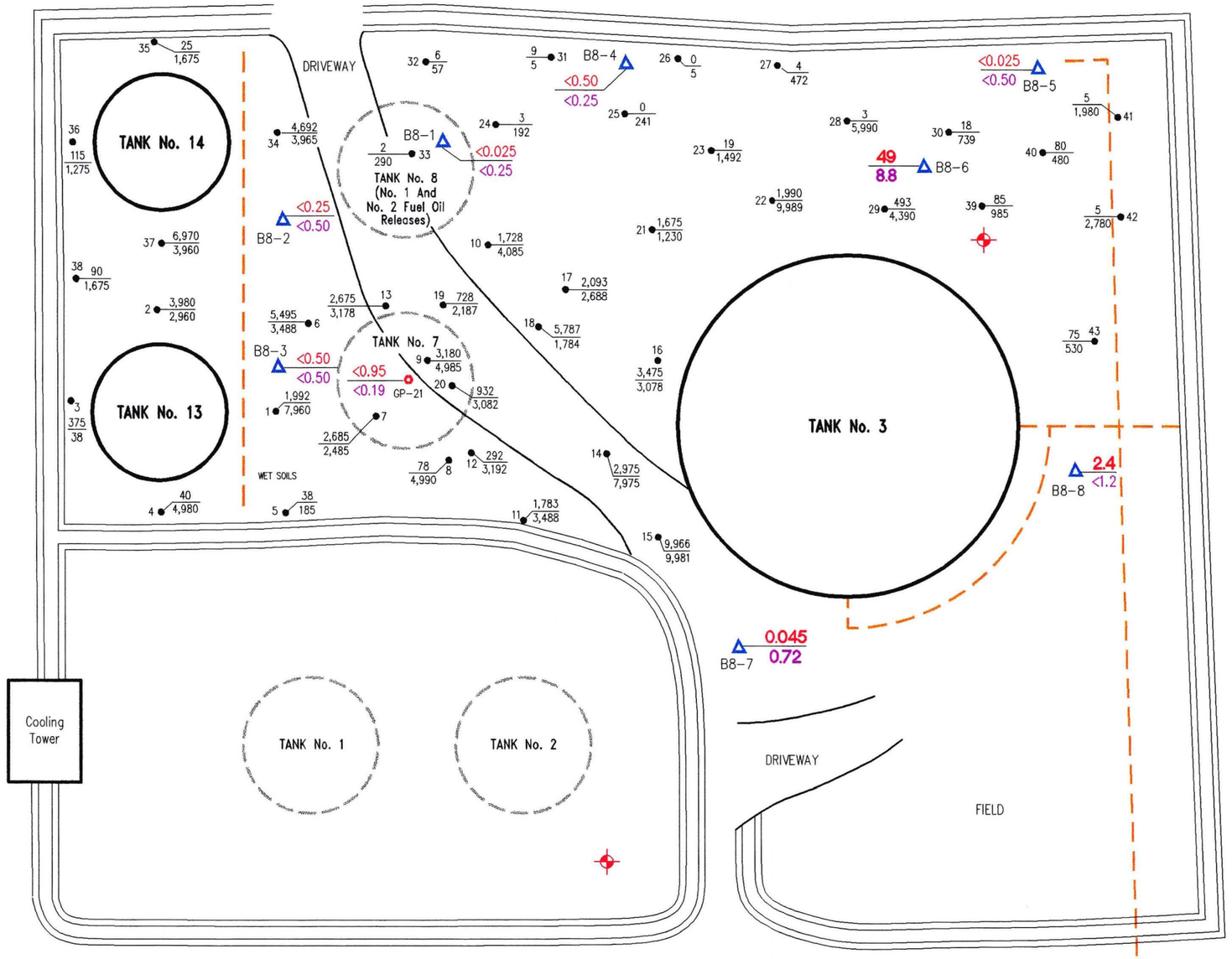


0 20
Approximate Scale In Feet

PRE-EXCAVATION HAND AUGER SAMPLING LOCATIONS AT FORMER TANK NOS. 1 AND 2

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

051999
34265WAT



LEGEND

- GP-21 — *Gannett Fleming Geoprobe Soil Sample Location (July 1998)*
- 39 — *Twin Ports Hand-Auger Field Screening Soil Sample Location (October 1998)*
- B8-5 — *Gannett Fleming Geoprobe Soil Sample Location (December 1998)*
- *Proposed Monitoring Well Location (To Be Installed 6/99)*
- *Aboveground Piping*
- TANK No. 8 — *Former Tank Location*

<0.025 = Benzene Concentration At 1-2 Foot Depth (mg/kg)
<0.50 = Benzene Concentration At 4-5 Foot Depth (mg/kg)

NOTES
Concentrations In **BOLD** Exceed Generic NR 720 RCLs.
NA = Not Analyzed

75 / 530 = FID Reading At 1 Foot Depth / FID Reading At 2 Foot Depth

NOTES

1. *Site Layout And Sample Locations Are Based On Field Measurements And Are To Be Considered Approximate; Site Not Surveyed.*
2. *All Piping At Site Not Shown; Only Piping Which Influenced Sampling Locations Is Depicted.*

0 30
Approximate Scale In Feet

SAMPLE LOCATIONS AND FID READINGS AT FORMER TANK NO. 8

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

052199
34265WAE

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

TABLE 1

ORGANIC VAPOR HEADSPACE RESULTS OF SOIL SAMPLES
COLLECTED BEFORE EXCAVATION IN FORMER TANKS 1 AND 2 BASIN

Sample ID	Date	Depth (feet)	Soil Type (USCS classif.)	Soil Moisture	PID Reading (ppm)
S-1	09/03/98	1.0	Dark brown-black silty clay (CL), trace sand	M	113
S-2	09/03/98	1.0	Dark brown-black sand (SW), well graded, trace silt and gravel	M/W	8
S-3	09/03/98	1.0	Dark brown-black silty clay (CL), trace sand and organics	M	372
S-4	09/03/98	1.0	Dark brown-black silty clay (CL), little gravel	M	58
S-5	09/03/98	1.5	Dark brown-black silty clay (CL), trace sand	M	218
S-6	09/03/98	1.0	Dark brown-black silty clay (CL), little gravel	M	37
S-7	09/03/98	1.0	Brown sand (SW), well graded, little gravel	M	8
S-8	09/03/98	1.0	Red-brown clay (CH)	M	303
S-9	09/03/98	1.0	Brown clay (CH)	M	290
S-10	09/03/98	1.0	Brown sandy clay (CL), little gravel	M	193
S-11	09/03/98	1.0	Black gravel with silt and sand (GM) (hardpan-like)	M	0
S-12	09/03/98	1.5	Brown sand with gravel (SW), trace silt	M	122

NOTES:
Soil samples collected by Twin Ports Testing.
Results obtained from table created by Twin Ports Testing.

PID	= Photoionization detector.
ppm	= Parts per million.
(L)	= Sample submitted for chemical analysis.
tr	= Trace.
gr	= Gravel.
brn	= Brown.
M	= Moist.
D	= Dry.

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

TABLE 2

ORGANIC VAPOR HEADSPACE RESULTS OF SOIL SAMPLES
COLLECTED FROM EXCAVATION IN THE FORMER TANK 1 AND 2 BASIN

Sample ID	Date	Depth (feet)	Soil Type (USCS classif.)	Soil Moisture	PID Reading (ppm)
B-1	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	160
B-2	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	92
B-3	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	806
B-4	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	413
	10/06-07/98	2.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	227
	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	121
B-5	10/06-07/98	2.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	462
	10/06-07/98	3.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	261
	10/06-07/98	4.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	84
	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	84
B-6	10/06-07/98	2.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	77
	10/06-07/98	3.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	246
	10/06-07/98	4*	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	121
B-7	10/06-07/98	2.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	201
	10/06-07/98	3.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	166
	10/06-07/98	4.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	159
	10/06-07/98	5.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	185
	10/06-07/98	6.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	142
	10/06-07/98	7.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	177
	10/06-07/98	8.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	170
	10/06-07/98	10.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	108
	10/06-07/98	12.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	147
	10/06-07/98	14.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	205
	10/06-07/98	15.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	95
	10/06-07/98	17*	Red-brn clay (CL), trace gravel & organics	M	45

Table 2 Continued ...

Sample ID	Date	Depth (feet)	Soil Type (USCS classif.)	Soil Moisture	PID Reading (ppm)
B-8	10/06-07/98	3.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	147
	10/06-07/98	3.5	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	211
	10/06-07/98	4.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	237
	10/06-07/98	4.5*	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	140
B-9	10/06-07/98	4.5*	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	2
B-10	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	369
B-11	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	448
B-12	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	259
B-13	10/06-07/98	4.5* (L)	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	192
SP-1 (Stockpile)	10/06-07/98	(L)	Red-brn clay (CL), trace gravel & organics	M	241
SP-2 (Stockpile)	10/06-07/98	(L)	Red-brn clay (CL), trace gravel & organics	M	151
SP-3 (Stockpile)	10/06-07/98	(L)	Red-brn clay (CL), trace gravel & organics	M	229
T-1	10/06-07/98	1*	Red-brn clay (CL), trace gravel & organics	M	80
T-2	10/06-07/98	1*	Red-brn clay (CL), trace gravel & organics	M	25
T-3	10/06-07/98	0.5*	Red-brn clay (CL), trace gravel & organics	M	237
T-4	10/06-07/98	0.5*	Red-brn clay (CL), trace gravel & organics	M	259
T-5	10/06-07/98	1.5*	Red-brn clay (CL), trace gravel & organics	M	149
T-6	10/06-07/98	1.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	166
T-7	10/06-07/98	1.0	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	211
T-8	10/06-07/98	1.0	Red-brn clay (CL), trace gravel & organics	M	250
T-9	10/06-07/98	0.5*	Red-brn clay (CL), trace gravel & organics	M	261
	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	255
T-10	10/06-07/98	0.5*	Red-brn clay (CL), trace gravel & organics	M	153
	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	149
T-11	10/06-07/98	1.0*	Red-brn clay (CL), trace gravel & organics	M	121
	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	84

Table 2 Continued ...

Sample ID	Date	Depth (feet)	Soil Type (USCS classif.)	Soil Moisture	PID Reading (ppm)
T-12	10/06-07/98	0.5*	Red-brn clay (CL), tr gr & organics, grey mottled fractures	M	82
	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	203
T-13	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	164
T-14	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	121
T-15	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	294
T-16	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	172
T-17	10/06-07/98	2* (L)	Red-brn clay (CL), trace gravel & organics	M	166
T-18	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	642
T-19	10/06-07/98	2.0	Red-brn clay (CL), trace gravel & organics	M	73
T-20	10/06-07/98	2*	Red-brn clay (CL), trace gravel & organics	M	75

NOTES:
Soil samples collected by Twin Ports Testing.
Results obtained from table created by Twin Ports Testing.
B-1 = Base sample #1.
T-1 = Sidewall sample #1.
T-6, 7, 8, 18 & 19 were collected during the excavation work and were not final extent of excavation sidewall samples. Soils at these sample locations were subsequently excavated.
* = Final extent of excavation base or sidewall sample.
PID = Photoionization detector.
ppm = Parts per million.
(L) = Sample submitted to certified laboratory for chemical analysis.
tr = Trace.
gr = Gravel.
brn = Brown.
M = Moist.

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

TABLE 3

ANALYTICAL RESULTS OF SOIL SAMPLES COLLECTED DURING AND AFTER SOIL EXCAVATION AT FORMER TANKS 1 AND 2 BASIN (mg/kg)

Parameter	Sample I.D. and Depth									
	T-9 2 ft	T-10 2 ft	T-11 2 ft	T-12 2 ft	B-4 4.5 ft	B-5 4.5 ft	B-10 4.5 ft	B-11 4.5 ft	B-12 4.5 ft	B-13 4.5 ft
Date Sampled	**10/06/98**	**10/06/98**	**10/06/98**	**10/06/98**	**10/06/98**	**10/06/98**	**10/07/98**	**10/07/98**	**10/07/98**	**10/07/98**
DRO	**1,100**	**890**	**700**	**500**	**250**	220	**300**	**930**	**380**	85
GRO	**880**	**440**	**1,300**	**1,300**	**340**	100	180	**300**	110	72
Benzene	<0.25	<0.25	<1.2	<0.50	<0.25	**0.047**	**0.61**	**0.89**	**0.80**	**0.17**
Toluene	**2.6**	0.57	<1.2	**2.2**	0.5	0.12	0.54	<0.25	<0.25	0.46
Ethylbenzene	**6.1**	0.94	**5.0**	**5.3**	1.3	0.31	1.6	**3.8**	1.5	0.78
Xylenes	**20.3**	**5.0**	**11.0**	**13.13**	**5.7**	0.420	**6.7**	**18.9**	4	**4.3**
Trimethylbenzenes	44	11.7	60	74	16.2	1.44	8.8	23.4	5.9	6
MTBE	<0.25	<0.25	<1.2	<0.50	<0.25	<0.025	<0.25	<0.25	<0.25	<0.12
PAHs										
1-Methyl Naphthalene	11	NA	NA	10	NA	7.6	NA	2.0	<0.047	NA
2-Methyl Naphthalene	18	NA	NA	19	NA	17	NA	3.3	0.36	NA
Acenaphthene	<0.24	NA	NA	<0.24	NA	<0.24	NA	<0.048	<0.048	NA
Acenaphthylene	<0.26	NA	NA	<0.26	NA	<0.26	NA	0.30	0.12	NA
Anthracene	<0.12	NA	NA	<0.12	NA	<0.12	NA	<0.023	<0.023	NA
Benzo(a)anthracene	<0.010	NA	NA	<0.010	NA	<0.010	NA	<0.0020	<0.0020	NA
Benzo(a)pyrene	<0.0075	NA	NA	<0.0075	NA	<0.0075	NA	<0.0015	<0.0015	NA
Benzo(b)flouranthene	<0.0075	NA	NA	<0.0075	NA	<0.0075	NA	<0.0015	<0.0015	NA
Benzo(g,h,i)perylene	<0.021	NA	NA	<0.021	NA	<0.021	NA	<0.0041	<0.0041	NA
Benzo(k)fluoranthene	0.2	NA	NA	<0.0075	NA	<0.0075	NA	<0.0015	<0.0015	NA
Chrysene	<0.46	NA	NA	<0.46	NA	<0.46	NA	<0.092	<0.092	NA
Dibenzo(a,h)anthracene	<1.2	NA	NA	<1.2	NA	<1.2	NA	<0.23	<0.23	NA
Fluoranthene	<0.025	NA	NA	<0.025	NA	<0.025	NA	<0.0049	0.23	NA
Fluorene	<0.043	NA	NA	<0.043	NA	<0.043	NA	<0.0086	<0.0086	NA
Indeno(1,2,3-cd)pyrene	<0.047	NA	NA	<0.047	NA	<0.047	NA	<0.0094	<0.0094	NA
Naphthalene	1.4	NA	NA	4.5	NA	3.0	NA	0.86	0.076	NA
Phenanthrene	1.9	NA	NA	1.1	NA	0.81	NA	0.52	0.098	NA
Pyrene	5.7	NA	NA	2.7	NA	3.1	NA	1.6	<0.0062	NA

Table 3 Continued ...

Parameter	Sample I.D. and Depth								NR 720 RCL
	T-13 2 ft	T-14 2 ft	T-15 2 ft	T-16 2 ft	T-17 2 ft	SP-1 stockpile	SP-2 stockpile	SP-3 stockpile	
Date Sampled	**10/07/98**	**10/07/98**	**10/07/98**	**10/07/98**	**10/07/98**	**10/06/98**	**10/07/98**	**10/07/98**	
DRO	230	160	**2,000**	130	**560**	**2,100**	170	140	250
GRO	48	120	**570**	47	190	**890**	43	100	250
Benzene	<0.050	**5.52**	<0.25	**0.43**	<0.050	<0.25	**0.63**	**0.34**	0.0055
Toluene	<0.050	<0.050	0.32	<0.050	0.11	**1.6**	<0.025	<0.050	1.5
Ethylbenzene	0.11	2.3	**8.3**	1.0	0.36	**4.2**	0.74	1.3	2.9
Xylenes	0.278	0.172	**37.4**	1.567	1.21	**16.2**	3.9	2.43	4.1
Trimethylbenzenes	1.44	12.7	64	3.9	4	57	3.54	9.9	
MTBE	<0.050	<0.050	<0.25	<0.050	<0.050	<0.25	<0.025	<0.050	
PAHs									
1-Methyl Naphthalene	1.1	NA	NA	1.2	NA	NA	NA	NA	
2-Methyl Naphthalene	1.6	NA	NA	2.2	NA	NA	NA	NA	
Acenaphthene	<0.048	NA	NA	<0.048	NA	NA	NA	NA	
Acenaphthylene	0.10	NA	NA	<0.051	NA	NA	NA	NA	
Anthracene	<0.023	NA	NA	<0.023	NA	NA	NA	NA	
Benzo(a)anthracene	<0.0020	NA	NA	<0.0020	NA	NA	NA	NA	
Benzo(a)pyrene	<0.0015	NA	NA	0.056	NA	NA	NA	NA	
Benzo(b)flouranthene	<0.0015	NA	NA	<0.0015	NA	NA	NA	NA	
Benzo(g,h,i)perylene	<0.0041	NA	NA	<0.0041	NA	NA	NA	NA	
Benzo(k)fluoranthene	<0.0015	NA	NA	<0.0015	NA	NA	NA	NA	
Chrysene	<0.092	NA	NA	<0.092	NA	NA	NA	NA	
Dibenzo(a,h)anthracene	<0.23	NA	NA	<0.23	NA	NA	NA	NA	
Fluoranthene	0.71	NA	NA	0.63	NA	NA	NA	NA	
Fluorene	<0.0086	NA	NA	<0.0086	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	<0.0094	NA	NA	<0.0094	NA	NA	NA	NA	
Naphthalene	<0.031	NA	NA	<0.031	NA	NA	NA	NA	
Phenanthrene	0.57	NA	NA	0.29	NA	NA	NA	NA	
Pyrene	2.2	NA	NA	0.99	NA	NA	NA	NA	

NOTES:
Results reported in units of milligrams per kilogram (mg/kg).
Soil samples collected by Twin Ports Testing.
Results obtained from table created by Twin Ports Testing.
PAHs = Polynuclear aromatic hydrocarbons.
NA = Not analyzed.
B-4 = Base sample #4.
T-9 = Sidewall sample #9.

MURPHY OIL USA, INC
SUPERIOR, WISCONSIN

TABLE 4

ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM TANK 8 BASIN (mg/kg)

Parameter	Sample I.D. and Depth											
	B8-1		B8-2		B8-3		B8-4		B8-5		B8-6	
	1-2 ft.	4-5 ft.	1-2 ft.	4-5 ft.	1-2 ft.	4-5 ft.	1-2 ft.	4-5 ft.	1-2 ft.	4-5 ft.	1-2 ft.	4-5 ft.
DRO	120	**720**	**1,000**	**710**	**2,800**	**2,000**	**1,900**	**1,200**	**400**	**360**	**330**	140
Benzene	<0.025	<0.25	<0.25	<0.50	<0.50	<0.50	<0.50	<0.25	<0.025	<0.50	**49**	**8.8**
Ethylbenzene	<0.025	2	**3.3**	**3.9**	**5.4**	2.2	2.7	1.4	0.1	**4**	**19**	**13**
Toluene	<0.025	0.44	0.93	<0.50	<0.50	<0.50	<0.50	<0.25	0.059	<0.50	<0.50	<0.25
Total Xylenes	<0.050	**7.5**	**7.8**	**3.9**	**24.5**	**4.8**	**12.3**	**4.8**	0.27	**12**	**56**	**74**
Trimethylbenzenes	<0.050	47	37	19.9	48	43	34	23	0.5	45	134	49
MTBE	<0.025	<0.25	<0.25	<0.50	<0.50	<0.50	<0.50	<0.25	<0.025	<0.50	<0.50	0.59
Detected Polycyclic Aromatic Hydrocarbons												
Benzo(a)pyrene	0.054	<0.0075	<0.0075	<0.0030	<0.038	<0.015	<0.0015	<0.0030	<0.0015	<0.0015	<0.0075	<0.0015
Benzo(b)fluoranthene	0.034	<0.0075	<0.0075	<0.0030	<0.038	<0.015	0.16	<0.0030	<0.0015	<0.0015	<0.0075	<0.0015
Chrysene	<0.092	<0.46	<0.46	<0.18	<2.3	<0.92	<0.092	<0.18	<0.092	<0.092	<0.46	<0.092
Fluoranthene	<0.0049	1.6	2.1	0.55	5.9	<0.049	<0.0049	0.68	<0.0049	0.68	1.5	0.29
Fluorene	<0.0086	<0.043	<0.043	<0.017	<0.22	<0.086	<0.0086	<0.017	<0.0086	<0.0086	<0.043	<0.0086
Phenanthrene	<0.0035	0.5	0.78	0.27	**2.9**	0.81	<0.0035	0.22	<0.0035	0.3	0.96	0.069
Pyrene	0.014*	1.8	2.4	0.59	6.5	2.1	0.032	0.7	<0.0062	0.75	<0.031	0.52
Naphthalene	<0.031	**0.93**	**2.7**	0.17	**8.6**	0.39	<0.031	**0.6**	<0.031	**0.73**	**5.1**	0.17
1-methyl naphthalene	<0.047	5.1	13	3.8	**41**	9	<0.047	2.3	<0.047	2.6	11	0.45
2-methyl naphthalene	<0.031	7.3	11	3	**40**	10	<0.031	3.3	<0.031	3.4	13	0.75

Table 4 Continued ...

Parameter	B8-7		B8-8		GP-21		NR 720 RCL
	1-2 ft.	4-5 ft.	1-2 ft.	4-5 ft.	1-1.5 ft.	4.5-5 ft.	
DRO	38	**1,300**	98	110	**1,200**	**500**	250
Benzene	**0.045**	**0.72***	**2.4**	<1.2	<0.95	<0.19	0.0055
Ethylbenzene	0.21	**8**	**3.9**	**5.3**	<0.55	<0.11	2.9
Toluene	<0.025	<0.50	0.37	<1.2	<0.55	<0.11	1.5
Total Xylenes	0.2	**30**	**14**	**27**	<1.7	<0.34	4.1
Trimethylbenzenes	0.56	64	13	19	58	8.3	
MTBE	<0.025	<0.50	<0.25	<1.2	<0.45	<0.090	
Detected Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	<0.0015	<0.0075	<0.0015	<0.0015	<0.0015	<0.0015	
Benzo(b)fluoranthene	0.31	<0.0075	<0.0015	<0.0015	<0.0015	<0.0015	
Chrysene	0.22*	<0.46	<0.092	<0.092	<0.092	<0.092	
Fluoranthene	0.28	1.1	0.073	0.081	<0.0049	<0.0049	
Fluorene	<0.0086	<0.043	<0.0086	<0.0086	0.89	0.48	
Phenanthrene	0.13	0.24	<0.0035	<0.0035	0.72	0.4	
Pyrene	0.71	1.6	0.066	0.069	<0.0062	<0.0062	
Naphthalene	<0.031	<0.16	<0.031	0.11	2.9	1.3	
1-methyl naphthalene	0.51	1.2	<0.047	<0.047	7.2	4.2	
2-methyl naphthalene	0.44	2.3	0.081*	0.18	11	5.9	

NOTES:
Sample GP-21 collected in July 1998.
Samples B8-1 through B8-8 collected in December 1998.
Results reported in units of milligrams per kilogram (mg/kg) on a dry weight basis.
Results in bold exceed its applicable NR 720 RCL.
NR 720 RCL = Wisconsin Administrative Code NR 720 residual contaminant level.
* = Reported concentration below the Qunantitation Limit.

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

TABLE 5

ORGANIC CARBON FRACTION AND PERMEABILITY
IN SOIL SAMPLES COLLECTED FROM TANK 8 BASIN

Sample I.D.	Sample Depth (ft)	Organic Carbon Fraction	Sample Depth (ft)	Soil Permeability (cm/sec)
B8-4	0-1.25	0.0814	2-4	4.10E-06
	1.25-3.5	0.0272		
	2.5-3.75	0.0184		
	3.75-5	0.0161		

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-1**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
Feet ☐ N ☐ S Feet ☐ E ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	36		0	SILTY CLAYEY SAND with organic material, no odor	SP SC CL					M				
			1	Black-red CLAY with some organic material, no odor										
			2											
			3											
3.5-7	36		4	Red CLAY, little fractures, brittle, petroleum-like odor						M				
			5											
			6											
			7	End of boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm Gannett Fleming, Inc.
8025 Excelsior Drive Madison, WI 53717
Tel: (608)836-1500 Fax: (608)831-3337

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-2**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
Feet ☐ N ☐ S Feet ☐ E ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	30		1	Black-red FILL, gravel, clay and sand, petroleum-like odor						M				
			2	Gray-red CLAY, brittle, trace fine gravel and coarse sand										
			3											
3.5-7	30		4	Same as above, less brittle, more moist, trace fractures						M				
			5											
			6											
			7	End of boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm Gannett Fleming, Inc.
8025 Excelsior Drive Madison, WI 53717
Tel: (608)836-1500 Fax: (608)831-3337

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-3**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
☐ N ☐ E
Feet ☐ S Feet ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	30		1	Black-red FILL, sand, silt, clay and gravel, petroleum-like odor, trace organic material	CL					M				
			2	Black-red CLAY, petroleum-like odor										
			3											
3.5-7	36		4	Red CLAY, brittle, trace coarse sand, trace fractures, petroleum-like odor						M				
			5											
			6											
			7	End of boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

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8025 Excelsior Drive Madison, WI 53717
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State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-4**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
☐ N ☐ E
Feet ☐ S Feet ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	36		1	Black-red CLAY with organic material, no odor, trace coarse sand Red CLAY, trace fractures, slightly brittle, petroleum-like odor	CL					M				
3.5-7	36		4	Same as above, slight petroleum-like odor						M				
			7	End of boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm Gannett Fleming, Inc.
8025 Excelsior Drive Madison, WI 53717
Tel: (608)836-1500 Fax: (608)831-3337

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State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-5**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
☐ N ☐ E
Feet ☐ S Feet ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	20		1	Black-red CLAY, brittle, no odor	CL					M				
			2											
			3											
3.5-7	36		4	Red CLAY, slight petroleum-like odor						M				
			5											
			6											
			7	End of boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
	Gannett Fleming, Inc. 8025 Excelsior Drive Madison, WI 53717 Tel: (608)836-1500 Fax: (608)831-3337

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State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-6**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
Feet ☐ N ☐ S Feet ☐ E ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	20		1	FILL, sand, silt, and clay, petroleum-like odor						M				
			1	Red CLAY, petroleum-like odor	CL									
			2											
			3											
3.5-7	20		4							M				
			5											
			6											
			7	End of boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Jeff Fleming

Firm Gannett Fleming, Inc.
8025 Excelsior Drive Madison, WI 53717
Tel: (608)836-1500 Fax: (608)831-3337

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State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-7**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
☐ N ☐ E
Feet ☐ S Feet ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	20		1	FILL, silty sand						M				
			2	Red CLAY, petroleum-like odor	CL									
3.5-7	36		3	Same as above, slightly brittle						M				
			4											
			5											
			6											
			7	End of boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Jeff Fina

Firm Gannett Fleming, Inc.
8025 Excelsior Drive Madison, WI 53717
Tel: (608)836-1500 Fax: (608)831-3337

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State of Wisconsin
Department of Natural Resources

Route To:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

Soil Boring Log Information
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Murphy Oil USA, Inc.		**B8-8**

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Soil Essentials (Dave Paulson)	**12/15/98**	**12/15/98**	**Geoprobe**

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	**2.3** Inches

Boring Location
State Plane N, E
NE 1/4 of **NW** 1/4 of Section **36** T **49** N,R **14 W**
Lat ° ' "
Long ° ' "

Local Grid Location (If applicable)
☐ N ☐ E
Feet ☐ S Feet ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	**16**	**Superior**

Sample Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	RQD/ Comments
0-3.5	20		1 2 3	Red CLAY, slight petroleum-like odor	CL					M				
3.5-7	20		4 5 6 7	End of boring						M				

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm Gannett Fleming, Inc.
8025 Excelsior Drive Madison, WI 53717
Tel: (608)836-1500 Fax: (608)831-3337

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State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 ; T. 49 N; R. 14 ☐ E ☒ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location

_____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA, Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior WI 53717

Facility Well No. and/or Name (If Applicable): B 8-1

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)

Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown

If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Soil Essentials + Gannett Fleming

Signature of Person Doing Work: Jeff Zins of GF

Date Signed: 4/14/99

Street or Route: 3025 Excelsior Dr.

Telephone Number: (608) 836-1500

City, State, Zip Code: Superior, WI 53717

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B
Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 ; T. 49 N; R. 14 ☐ E ☒ W

(If applicable)

_____ Gov't Lot _____ Grid Number

Grid Location

_____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA, Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior WI 53717

Facility Well No. and/or Name (If Applicable): B8-2

WI Unique Well No.: _____

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)

Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work: Soil Essentials + Gannett Fleming

Signature of Person Doing Work: Jeff Zmi of GF

Date Signed: 4/14/99

Street or Route: 8025 Excelsior Dr.

Telephone Number: (608) 836-1500

City, State, Zip Code: Superior, WI 53717

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 ; T. 49 N; R. 14 ☐ E ☒ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior WI 53717

Facility Well No. and/or Name (If Applicable): B8-3

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)

Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown

If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work: Soil Essentials + Garnett Fleming

Signature of Person Doing Work: Jeff Zins of GF

Date Signed: 4/14/99

Street or Route: 8025 Excelsior Dr.

Telephone Number: (608) 836-1500

City, State, Zip Code: Superior, WI 53717

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B
Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 : T. 49 N; R. 14 ☐ E ☒ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA, Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior, WI 53717

Facility Well No. and/or Name (If Applicable): B8-4

WI Unique Well No. _ _ _ _ _ _

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)

Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

9) Name of Person or Firm Doing Sealing Work: Soil Essentials + Gannett Fleming

Signature of Person Doing Work: Jeff Bing of GF

Date Signed: 4/14/99

Street or Route: 8025 Excelsior Dr.

Telephone Number: (608) 836-1500

City, State, Zip Code: Superior, WI 53717

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 ; T. 49 N; R. 14 ☐ E ☒ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location

_____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior WI 53717

Facility Well No. and/or Name (If Applicable): B8-5

WI Unique Well No.: _____

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)

Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown

If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material

☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials

☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only

☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work: Soil Essentials + Garnett Fleming

Signature of Person Doing Work: Jeff Zins of GF

Date Signed: 4/14/99

Street or Route: 8025 Excelsior Dr.

Telephone Number: (608) 836-1500

City, State, Zip Code: Superior, WI 53717

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B
Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 : T. 49 N; R. 14 ☐ E ☒ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior, WI 53717

Facility Well No. and/or Name (If Applicable): B8-6

WI Unique Well No.

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)

Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Soil Essentials + Gannett Fleming

Signature of Person Doing Work: Jeff Smith of GF
Date Signed: 4/14/99
Street or Route: 8025 Excelsior Dr.
Telephone Number: (608) 836-1500
City, State, Zip Code: Superior, WI 53717

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 ; T. 49 N; R. 14 ☐ E ☒ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA, Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior WI 53717

Facility Well No. and/or Name (If Applicable): B8-7

WI Unique Well No.: _____

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface)

Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown

If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material

☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials

☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only

☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work: Soil Essentials + Gannett Fleming

Signature of Person Doing Work: Jeff Zinn of GF

Date Signed: 4/14/99

Street or Route: 8025 Excelsior Dr.

Telephone Number: (608) 836-1500

City, State, Zip Code: Superior, WI 53717

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

Department of Natural Resources | Form 3300-5B | Rev. 12-91

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: County: Douglas

NE 1/4 of NW 1/4 of Sec. 36 ; T. 49 N; R. 14 ☐ E ☒ W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well: 2407 Stinson Ave

City, Village: Superior

(2) FACILITY NAME

Original Well Owner (If Known)

Present Well Owner: Murphy Oil USA Inc.

Street or Route: 2407 Stinson Ave

City, State, Zip Code: Superior, WI 53717

Facility Well No. and/or Name (If Applicable): B8-8

WI Unique Well No. _ _ _ _ _ _

Reason For Abandonment: Samples collected, no longer needed

Date of Abandonment: 12/15/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 12/15/98

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (Specify) Geoprobe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 7 (From groundsurface) Casing Diameter (ins.) 2.25

Casing Depth (ft.) _____

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) ~4

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☒ Yes	☐ No	☐ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☐ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
Granular Bentonite	Surface	7	12 lbs	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work: Soil Essentials + Garrett Fleming

Signature of Person Doing Work: Jeff Zais of GF — Date Signed: 4/14/99

Street or Route: 8025 Excelsior Dr. — Telephone Number: (608) 836-1500

City, State, Zip Code: Superior, WI 53717

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

Report Submitted By: HSC
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224287 **Sample Description:** B8-1 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	69.7	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	<0.025	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	<0.025	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.025	mg/kg		0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	<0.025	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	<0.025	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	<0.025	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	<0.025	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	120	mg/kg	L	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	<0.047	mg/kg		0.047	0.16	12/22/98	12/30/98	PML	EPA 8310
2-Methyl Naphthalene	<0.031	mg/kg		0.031	0.10	12/22/98	12/30/98	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/22/98	12/30/98	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/22/98	12/30/98	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/22/98	12/30/98	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/22/98	12/30/98	PML	EPA 8310
Benzo(a)pyrene	0.054	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Benzo(b)fluoranthene	0.034	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/22/98	12/30/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	12/22/98	12/30/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/22/98	12/30/98	PML	EPA 8310
Fluoranthene	<0.0049	mg/kg		0.004	0.016	12/22/98	12/30/98	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/22/98	12/30/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/22/98	12/30/98	PML	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	12/22/98	12/30/98	PML	EPA 8310
Phenanthrene	<0.0035	mg/kg		0.003	0.012	12/22/98	12/30/98	PML	EPA 8310
Pyrene	0.014	mg/kg	J	0.006	0.021	12/22/98	12/30/98	PML	EPA 8310

Sample I.D. #: 224288 **Sample Description:** B8-1 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.0	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	28	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	19	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.25	mg/kg	V	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	2.0	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	6.4	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	1.1	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	0.44	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	720	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	5.1	mg/kg	V	0.047	0.16	12/22/98	12/30/98	PML	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctieny.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224288 **Sample Description:** B8-1 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	7.3	mg/kg		0.031	0.10	12/22/98	12/30/98	PML	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	12/22/98	12/30/98	PML	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	12/22/98	12/30/98	PML	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	12/22/98	12/30/98	PML	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	12/22/98	12/30/98	PML	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	12/22/98	12/30/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	12/22/98	12/30/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	12/22/98	12/30/98	PML	EPA 8310
Fluoranthene	1.6	mg/kg		0.004	0.016	12/22/98	12/30/98	PML	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	12/22/98	12/30/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	12/22/98	12/30/98	PML	EPA 8310
Naphthalene	0.93	mg/kg		0.031	0.10	12/22/98	12/30/98	PML	EPA 8310
Phenanthrene	0.50	mg/kg		0.003	0.012	12/22/98	12/30/98	PML	EPA 8310
Pyrene	1.8	mg/kg		0.006	0.021	12/22/98	12/30/98	PML	EPA 8310

Sample I.D. #: 224289 **Sample Description:** B8-2 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.6	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	10	mg/kg	D	0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	27	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.25	mg/kg	V	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	3.3	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	6.6	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	1.2	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	0.93	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	1000	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	13	mg/kg	V	0.047	0.16	12/22/98	12/30/98	PML	EPA 8310
2-Methyl Naphthalene	11	mg/kg		0.031	0.10	12/22/98	12/30/98	PML	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	12/22/98	12/30/98	PML	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	12/22/98	12/30/98	PML	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	12/22/98	12/30/98	PML	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	12/22/98	12/30/98	PML	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	12/22/98	12/30/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	12/22/98	12/30/98	PML	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	12/22/98	12/30/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	12/22/98	12/30/98	PML	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224289 **Sample Description:** B8-2 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Fluoranthene	2.1	mg/kg		0.004	0.016	12/22/98	12/30/98	PML	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	12/22/98	12/30/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	12/22/98	12/30/98	PML	EPA 8310
Naphthalene	2.7	mg/kg		0.031	0.10	12/22/98	12/30/98	PML	EPA 8310
Phenanthrene	0.78	mg/kg		0.003	0.012	12/22/98	12/30/98	PML	EPA 8310
Pyrene	2.4	mg/kg		0.006	0.021	12/22/98	12/30/98	PML	EPA 8310

Sample I.D. #: 224290 **Sample Description:** B8-2 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	71.0	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	12	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	7.9	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.50	mg/kg	V	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	3.9	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	3.4	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	<0.50	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	<0.50	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	710	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	3.8	mg/kg	V	0.047	0.16	12/22/98	12/31/98	PML	EPA 8310
2-Methyl Naphthalene	3.0	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Acenaphthene	<0.096	mg/kg		0.048	0.16	12/22/98	12/31/98	PML	EPA 8310
Acenaphthylene	<0.10	mg/kg		0.051	0.17	12/22/98	12/31/98	PML	EPA 8310
Anthracene	<0.046	mg/kg		0.023	0.077	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)anthracene	<0.0040	mg/kg		0.002	0.006	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)pyrene	<0.0030	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(b)fluoranthene	<0.0030	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0082	mg/kg		0.004	0.014	12/22/98	12/31/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.0030	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Chrysene	<0.18	mg/kg		0.092	0.31	12/22/98	12/31/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.46	mg/kg		0.23	0.77	12/22/98	12/31/98	PML	EPA 8310
Fluoranthene	0.55	mg/kg		0.004	0.016	12/22/98	12/31/98	PML	EPA 8310
Fluorene	<0.017	mg/kg		0.008	0.029	12/22/98	12/31/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.019	mg/kg		0.009	0.031	12/22/98	12/31/98	PML	EPA 8310
Naphthalene	0.17	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Phenanthrene	0.27	mg/kg		0.003	0.012	12/22/98	12/31/98	PML	EPA 8310
Pyrene	0.59	mg/kg		0.006	0.021	12/22/98	12/31/98	PML	EPA 8310

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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224291 **Sample Description:** B8-3 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	73.7	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	18	mg/kg	D	0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	30	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.50	mg/kg	V	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	5.4	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	18	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	6.5	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	<0.50	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	2800	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	41	mg/kg	V	0.047	0.16	12/22/98	12/31/98	PML	EPA 8310
2-Methyl Naphthalene	40	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Acenaphthene	<1.2	mg/kg		0.048	0.16	12/22/98	12/31/98	PML	EPA 8310
Acenaphthylene	<1.3	mg/kg		0.051	0.17	12/22/98	12/31/98	PML	EPA 8310
Anthracene	<0.58	mg/kg		0.023	0.077	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)anthracene	<0.050	mg/kg		0.002	0.006	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)pyrene	<0.038	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(b)fluoranthene	<0.038	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.10	mg/kg		0.004	0.014	12/22/98	12/31/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.038	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Chrysene	<2.3	mg/kg		0.092	0.31	12/22/98	12/31/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<5.8	mg/kg		0.23	0.77	12/22/98	12/31/98	PML	EPA 8310
Fluoranthene	5.9	mg/kg		0.004	0.016	12/22/98	12/31/98	PML	EPA 8310
Fluorene	<0.22	mg/kg		0.008	0.029	12/22/98	12/31/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.24	mg/kg		0.009	0.031	12/22/98	12/31/98	PML	EPA 8310
Naphthalene	8.6	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Phenanthrene	2.9	mg/kg		0.003	0.012	12/22/98	12/31/98	PML	EPA 8310
Pyrene	6.5	mg/kg		0.006	0.021	12/22/98	12/31/98	PML	EPA 8310

Sample I.D. #: 224292 **Sample Description:** B8-3 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.2	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	27	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	16	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.50	mg/kg	D	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	2.2	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	6.4	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	2.6	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	<0.50	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	2000	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	9.0	mg/kg	V	0.047	0.16	12/22/98	12/31/98	PML	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: HOC
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224292 **Sample Description:** B8-3 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	10	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Acenaphthene	<0.48	mg/kg		0.048	0.16	12/22/98	12/31/98	PML	EPA 8310
Acenaphthylene	<0.51	mg/kg		0.051	0.17	12/22/98	12/31/98	PML	EPA 8310
Anthracene	<0.23	mg/kg		0.023	0.077	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)anthracene	<0.020	mg/kg		0.002	0.006	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)pyrene	<0.015	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(b)fluoranthene	<0.015	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.041	mg/kg		0.004	0.014	12/22/98	12/31/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.015	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Chrysene	<0.92	mg/kg		0.092	0.31	12/22/98	12/31/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<2.3	mg/kg		0.23	0.77	12/22/98	12/31/98	PML	EPA 8310
Fluoranthene	<0.049	mg/kg		0.004	0.016	12/22/98	12/31/98	PML	EPA 8310
Fluorene	<0.086	mg/kg		0.008	0.029	12/22/98	12/31/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.094	mg/kg		0.009	0.031	12/22/98	12/31/98	PML	EPA 8310
Naphthalene	0.39	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Phenanthrene	0.81	mg/kg		0.003	0.012	12/22/98	12/31/98	PML	EPA 8310
Pyrene	2.1	mg/kg		0.006	0.021	12/22/98	12/31/98	PML	EPA 8310

Sample I.D. #: 224293 **Sample Description:** B8-4 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	73.0	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	14	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	20	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.50	mg/kg	V	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	2.7	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	5.2	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	7.1	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	<0.50	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	1900	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	<0.047	mg/kg		0.047	0.16	12/22/98	12/31/98	PML	EPA 8310
2-Methyl Naphthalene	<0.031	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/22/98	12/31/98	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/22/98	12/31/98	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(b)fluoranthene	0.16	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/22/98	12/31/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	12/22/98	12/31/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/22/98	12/31/98	PML	EPA 8310

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1230 Lange Court
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Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224293 **Sample Description:** B8-4 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Fluoranthene	<0.0049	mg/kg		0.004	0.016	12/22/98	12/31/98	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/22/98	12/31/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/22/98	12/31/98	PML	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Phenanthrene	<0.0035	mg/kg		0.003	0.012	12/22/98	12/31/98	PML	EPA 8310
Pyrene	0.032	mg/kg		0.006	0.021	12/22/98	12/31/98	PML	EPA 8310

Sample I.D. #: 224294 **Sample Description:** B8-4 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	75.8	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	14	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	9.0	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.25	mg/kg	V	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	1.4	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	3.6	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	1.2	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	<0.25	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	1200	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	2.3	mg/kg	V	0.047	0.16	12/22/98	12/31/98	PML	EPA 8310
2-Methyl Naphthalene	3.3	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Acenaphthene	<0.10	mg/kg		0.048	0.16	12/22/98	12/31/98	PML	EPA 8310
Acenaphthylene	<0.10	mg/kg		0.051	0.17	12/22/98	12/31/98	PML	EPA 8310
Anthracene	<0.046	mg/kg		0.023	0.077	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)anthracene	<0.0040	mg/kg		0.002	0.006	12/22/98	12/31/98	PML	EPA 8310
Benzo(a)pyrene	<0.0030	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(b)fluoranthene	<0.0030	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0082	mg/kg		0.004	0.014	12/22/98	12/31/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.0030	mg/kg		0.001	0.005	12/22/98	12/31/98	PML	EPA 8310
Chrysene	<0.18	mg/kg		0.092	0.31	12/22/98	12/31/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.46	mg/kg		0.23	0.77	12/22/98	12/31/98	PML	EPA 8310
Fluoranthene	0.68	mg/kg		0.004	0.016	12/22/98	12/31/98	PML	EPA 8310
Fluorene	<0.017	mg/kg		0.008	0.029	12/22/98	12/31/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.019	mg/kg		0.009	0.031	12/22/98	12/31/98	PML	EPA 8310
Naphthalene	0.60	mg/kg		0.031	0.10	12/22/98	12/31/98	PML	EPA 8310
Phenanthrene	0.22	mg/kg		0.003	0.012	12/22/98	12/31/98	PML	EPA 8310
Pyrene	0.70	mg/kg		0.006	0.021	12/22/98	12/31/98	PML	EPA 8310

Commonwealth Technology, Inc.
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224295 **Sample Description:** B8-5 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	75.9	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	0.29	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	0.21	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.025	mg/kg		0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	0.10	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	0.18	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	0.086	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	0.059	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	400	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	<0.047	mg/kg		0.047	0.16	12/28/98	01/01/99	PML	EPA 8310
2-Methyl Naphthalene	<0.031	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/28/98	01/01/99	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/28/98	01/01/99	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/28/98	01/01/99	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	12/28/98	01/01/99	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/28/98	01/01/99	PML	EPA 8310
Fluoranthene	<0.0049	mg/kg		0.004	0.016	12/28/98	01/01/99	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/28/98	01/01/99	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/28/98	01/01/99	PML	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Phenanthrene	<0.0035	mg/kg		0.003	0.012	12/28/98	01/01/99	PML	EPA 8310
Pyrene	<0.0062	mg/kg		0.006	0.021	12/28/98	01/01/99	PML	EPA 8310

Sample I.D. #: 224296 **Sample Description:** B8-5 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	70.7	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	31	mg/kg		0.015	0.053	12/18/98	12/22/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	14	mg/kg		0.010	0.030	12/18/98	12/22/98	RDW	EPA 8020
Benzene	<0.50	mg/kg	V	0.009	0.029	12/18/98	12/22/98	RDW	EPA 8020
Ethylbenzene	4.0	mg/kg		0.009	0.028	12/18/98	12/22/98	RDW	EPA 8020
m & p- Xylene	11	mg/kg		0.017	0.053	12/18/98	12/22/98	RDW	EPA 8020
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	12/18/98	12/22/98	RDW	EPA 8020
o-Xylene	0.74	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Toluene	<0.50	mg/kg		0.008	0.026	12/18/98	12/22/98	RDW	EPA 8020
Diesel Range Organics	360	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	2.6	mg/kg		0.047	0.16	12/28/98	01/01/99	PML	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224296 **Sample Description:** B8-5 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	3.4	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/28/98	01/01/99	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/28/98	01/01/99	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/28/98	01/01/99	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	12/28/98	01/01/99	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/28/98	01/01/99	PML	EPA 8310
Fluoranthene	0.68	mg/kg		0.004	0.016	12/28/98	01/01/99	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/28/98	01/01/99	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/28/98	01/01/99	PML	EPA 8310
Naphthalene	0.73	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Phenanthrene	0.30	mg/kg		0.003	0.012	12/28/98	01/01/99	PML	EPA 8310
Pyrene	0.75	mg/kg		0.006	0.021	12/28/98	01/01/99	PML	EPA 8310

Sample I.D. #: 224297 **Sample Description:** B8-6 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	73.2	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	82	mg/kg	D	0.015	0.053	12/18/98	12/23/98	DJW	EPA 8020
1,3,5-Trimethylbenzene	52	mg/kg		0.010	0.030	12/18/98	12/23/98	DJW	EPA 8020
Benzene	49	mg/kg	V	0.009	0.029	12/18/98	12/23/98	DJW	EPA 8020
Ethylbenzene	19	mg/kg		0.009	0.028	12/18/98	12/23/98	DJW	EPA 8020
m & p- Xylene	44	mg/kg		0.017	0.053	12/18/98	12/23/98	DJW	EPA 8020
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	12/18/98	12/23/98	DJW	EPA 8020
o-Xylene	12	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Toluene	<0.50	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Diesel Range Organics	330	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	11	mg/kg	V	0.047	0.16	12/28/98	01/01/99	PML	EPA 8310
2-Methyl Naphthalene	13	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	12/28/98	01/01/99	PML	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	12/28/98	01/01/99	PML	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(g,h,i)perylene	<0.020	mg/kg		0.004	0.014	12/28/98	01/01/99	PML	EPA 8310
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	12/28/98	01/01/99	PML	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	12/28/98	01/01/99	PML	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
Laboratory Division
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: HSC
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224297 **Sample Description:** B8-6 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Fluoranthene	1.5	mg/kg		0.004	0.016	12/28/98	01/01/99	PML	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	12/28/98	01/01/99	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	12/28/98	01/01/99	PML	EPA 8310
Naphthalene	5.1	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Phenanthrene	0.96	mg/kg		0.003	0.012	12/28/98	01/01/99	PML	EPA 8310
Pyrene	<0.031	mg/kg		0.006	0.021	12/28/98	01/01/99	PML	EPA 8310

Sample I.D. #: 224298 **Sample Description:** B8-6 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	70.6	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	32	mg/kg	D	0.015	0.053	12/18/98	12/23/98	DJW	EPA 8020
1,3,5-Trimethylbenzene	17	mg/kg		0.010	0.030	12/18/98	12/23/98	DJW	EPA 8020
Benzene	8.8	mg/kg	V	0.009	0.029	12/18/98	12/23/98	DJW	EPA 8020
Ethylbenzene	13	mg/kg		0.009	0.028	12/18/98	12/23/98	DJW	EPA 8020
m & p- Xylene	54	mg/kg		0.017	0.053	12/18/98	12/23/98	DJW	EPA 8020
Methyl t-Butyl Ether	0.59	mg/kg		0.011	0.034	12/18/98	12/23/98	DJW	EPA 8020
o-Xylene	20	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Toluene	<0.25	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Diesel Range Organics	140	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	0.45	mg/kg		0.047	0.16	12/28/98	01/01/99	PML	EPA 8310
2-Methyl Naphthalene	0.75	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/28/98	01/01/99	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/28/98	01/01/99	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/28/98	01/01/99	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	12/28/98	01/01/99	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/28/98	01/01/99	PML	EPA 8310
Fluoranthene	0.29	mg/kg		0.004	0.016	12/28/98	01/01/99	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/28/98	01/01/99	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/28/98	01/01/99	PML	EPA 8310
Naphthalene	0.17	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Phenanthrene	0.069	mg/kg		0.003	0.012	12/28/98	01/01/99	PML	EPA 8310
Pyrene	0.52	mg/kg		0.006	0.021	12/28/98	01/01/99	PML	EPA 8310

Commonwealth Technology, Inc.
Laboratory Division
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctieny.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224299 **Sample Description:** B8-7 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.7	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	0.31	mg/kg		0.015	0.053	12/18/98	12/23/98	DJW	EPA 8020
1,3,5-Trimethylbenzene	0.25	mg/kg		0.010	0.030	12/18/98	12/23/98	DJW	EPA 8020
Benzene	0.045	mg/kg		0.009	0.029	12/18/98	12/23/98	DJW	EPA 8020
Ethylbenzene	0.21	mg/kg		0.009	0.028	12/18/98	12/23/98	DJW	EPA 8020
m & p- Xylene	0.17	mg/kg		0.017	0.053	12/18/98	12/23/98	DJW	EPA 8020
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	12/18/98	12/23/98	DJW	EPA 8020
o-Xylene	<0.025	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Toluene	<0.025	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Diesel Range Organics	38	mg/kg		1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	0.51	mg/kg		0.047	0.16	12/28/98	01/01/99	PML	EPA 8310
2-Methyl Naphthalene	0.44	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/28/98	01/01/99	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/28/98	01/01/99	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(b)fluoranthene	0.31	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/28/98	01/01/99	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Chrysene	0.22	mg/kg	J	0.092	0.31	12/28/98	01/01/99	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/28/98	01/01/99	PML	EPA 8310
Fluoranthene	0.28	mg/kg		0.004	0.016	12/28/98	01/01/99	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/28/98	01/01/99	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/28/98	01/01/99	PML	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Phenanthrene	0.13	mg/kg		0.003	0.012	12/28/98	01/01/99	PML	EPA 8310
Pyrene	0.71	mg/kg		0.006	0.021	12/28/98	01/01/99	PML	EPA 8310

Sample I.D. #: 224300 **Sample Description:** B8-7 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.9	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	43	mg/kg		0.015	0.053	12/18/98	12/23/98	DJW	EPA 8020
1,3,5-Trimethylbenzene	21	mg/kg		0.010	0.030	12/18/98	12/23/98	DJW	EPA 8020
Benzene	0.72	mg/kg	VJ	0.009	0.029	12/18/98	12/23/98	DJW	EPA 8020
Ethylbenzene	8.0	mg/kg		0.009	0.028	12/18/98	12/23/98	DJW	EPA 8020
m & p- Xylene	29	mg/kg		0.017	0.053	12/18/98	12/23/98	DJW	EPA 8020
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	12/18/98	12/23/98	DJW	EPA 8020
o-Xylene	1.2	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Toluene	<0.50	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Diesel Range Organics	1300	mg/kg	K	1.4	4.7	12/17/98	12/20/98	LLN	WDNR DRO
1-Methyl Naphthalene	1.2	mg/kg	V	0.047	0.16	01/02/99	12/28/98	PML	EPA 8310

WI DNR Lab Certification Number: 157066030 DATCP Certification Number: 000289

Commonwealth Technology, Inc.
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224300 **Sample Description:** B8-7 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	2.3	mg/kg		0.031	0.10	01/02/99	12/28/98	PML	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	01/02/99	12/28/98	PML	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	01/02/99	12/28/98	PML	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	01/02/99	12/28/98	PML	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	01/02/99	12/28/98	PML	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	01/02/99	12/28/98	PML	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	01/02/99	12/28/98	PML	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	01/02/99	12/28/98	PML	EPA 8310
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	01/02/99	12/28/98	PML	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	01/02/99	12/28/98	PML	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	01/02/99	12/28/98	PML	EPA 8310
Fluoranthene	1.1	mg/kg		0.004	0.016	01/02/99	12/28/98	PML	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	01/02/99	12/28/98	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	01/02/99	12/28/98	PML	EPA 8310
Naphthalene	<0.16	mg/kg		0.031	0.10	01/02/99	12/28/98	PML	EPA 8310
Phenanthrene	0.24	mg/kg		0.003	0.012	01/02/99	12/28/98	PML	EPA 8310
Pyrene	1.6	mg/kg		0.006	0.021	01/02/99	12/28/98	PML	EPA 8310

Sample I.D. #: 224301 **Sample Description:** B8-8 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.5	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	7.6	mg/kg		0.015	0.053	12/18/98	12/23/98	DJW	EPA 8020
1,3,5-Trimethylbenzene	5.4	mg/kg		0.010	0.030	12/18/98	12/23/98	DJW	EPA 8020
Benzene	2.4	mg/kg	V	0.009	0.029	12/18/98	12/23/98	DJW	EPA 8020
Ethylbenzene	3.9	mg/kg		0.009	0.028	12/18/98	12/23/98	DJW	EPA 8020
m & p- Xylene	12	mg/kg		0.017	0.053	12/18/98	12/23/98	DJW	EPA 8020
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	12/18/98	12/23/98	DJW	EPA 8020
o-Xylene	2.1	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Toluene	0.37	mg/kg		0.008	0.026	12/18/98	12/23/98	DJW	EPA 8020
Diesel Range Organics	98	mg/kg	K	1.4	4.7	12/17/98	12/19/98	LLN	WDNR DRO
1-Methyl Naphthalene	<0.047	mg/kg		0.047	0.16	12/28/98	01/01/99	PML	EPA 8310
2-Methyl Naphthalene	0.081	mg/kg	J	0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/28/98	01/01/99	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/28/98	01/01/99	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/28/98	01/01/99	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	12/28/98	01/01/99	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/28/98	01/01/99	PML	EPA 8310

Commonwealth Technology, Inc.
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224301 **Sample Description:** B8-8 1-2' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Fluoranthene	0.073	mg/kg		0.004	0.016	12/28/98	01/01/99	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/28/98	01/01/99	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/28/98	01/01/99	PML	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Phenanthrene	<0.0035	mg/kg		0.003	0.012	12/28/98	01/01/99	PML	EPA 8310
Pyrene	0.066	mg/kg		0.006	0.021	12/28/98	01/01/99	PML	EPA 8310

Sample I.D. #: 224302 **Sample Description:** B8-8 4-5' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.0	%					12/17/98	ECO	EPA 5030
1,2,4-Trimethylbenzene	12	mg/kg		0.015	0.053		12/27/98	RDW	EPA 8020
1,3,5-Trimethylbenzene	6.8	mg/kg		0.010	0.030		12/27/98	RDW	EPA 8020
Benzene	<1.2	mg/kg	V	0.009	0.029		12/27/98	RDW	EPA 8020
Ethylbenzene	5.3	mg/kg		0.009	0.028		12/27/98	RDW	EPA 8020
m & p- Xylene	25	mg/kg		0.017	0.053		12/27/98	RDW	EPA 8020
Methyl t-Butyl Ether	<1.2	mg/kg		0.011	0.034		12/27/98	RDW	EPA 8020
o-Xylene	1.8	mg/kg		0.008	0.026		12/27/98	RDW	EPA 8020
Toluene	<1.2	mg/kg		0.008	0.026		12/27/98	RDW	EPA 8020
Diesel Range Organics	110	mg/kg	K	1.4	4.7	12/17/98	12/19/98	LLN	WDNR DRO
1-Methyl Naphthalene	<0.047	mg/kg		0.047	0.16	12/28/98	01/01/99	PML	EPA 8310
2-Methyl Naphthalene	0.18	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	12/28/98	01/01/99	PML	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	12/28/98	01/01/99	PML	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	12/28/98	01/01/99	PML	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	12/28/98	01/01/99	PML	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	12/28/98	01/01/99	PML	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	12/28/98	01/01/99	PML	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	12/28/98	01/01/99	PML	EPA 8310
Fluoranthene	0.081	mg/kg		0.004	0.016	12/28/98	01/01/99	PML	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	12/28/98	01/01/99	PML	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	12/28/98	01/01/99	PML	EPA 8310
Naphthalene	0.11	mg/kg		0.031	0.10	12/28/98	01/01/99	PML	EPA 8310
Phenanthrene	<0.0035	mg/kg		0.003	0.012	12/28/98	01/01/99	PML	EPA 8310
Pyrene	0.069	mg/kg		0.006	0.021	12/28/98	01/01/99	PML	EPA 8310

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Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LE8000012374
Work Order: 9812000641
Report Date: 01/06/99
Date Received: 12/17/98
Arrival Temperature: On Ice

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY TANK 8** Project Number: **34265**

Sample I.D. #: 224303 **Sample Description:** B8-4 0-1.25 **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
TOC as % Organic Matter	8.14	%		0.01	NA		12/18/98	EMH	MOSA 29.4

Sample I.D. #: 224304 **Sample Description:** B8-4 1.25-2.5 **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
TOC as % Organic Matter	2.72	%		0.01	NA		12/18/98	EMH	MOSA 29.4

Sample I.D. #: 224305 **Sample Description:** B8-4 2.5-3.75 **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
TOC as % Organic Matter	1.84	%		0.01	NA		12/18/98	EMH	MOSA 29.4

Sample I.D. #: 224306 **Sample Description:** B8-4 3.75-5 **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
TOC as % Organic Matter	1.61	%		0.01	NA		12/18/98	EMH	MOSA 29.4

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Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

Data Qualifiers

A	Sample analyzed with a dilution. Surrogates were diluted outside the calibration range. Applies to all analytes for this method.
B	Analyte detected in associated Method Blank.
C	Sample result confirmed by alternate analysis.
D	Results reported from higher dilution.
E	Analyte concentration exceeded calibration range.
F	Unable to analyze due to sample matrix interference. Applies to all analytes for this method.
G	Insufficient sample for analysis. Applies to all analytes for this method.
H	Sample was received past the established holding time. Applies to all analytes for this method.
I	Sample was analyzed past the established holding time. Applies to all analytes for this method.
J	Reported concentration below the Quantitation Limit.
K	Sample contained lighter hydrocarbon fractions.
L	Sample contained heavier hydrocarbon fractions.
M	Matrix Spike and/or Matrix Spike Duplicate outside acceptance limits.
O	Hydrocarbons atypical of gasoline.
P	Hydrocarbons atypical of diesel #2 fuel.
Q	Laboratory Control Sample outside acceptance limits.
S	Surrogate outside acceptance limits. Applies to all analytes for this method.
T	Sample received exceeding proper preservation criteria. Applies to all analytes for this method.
V	Raised Quantitation Limit due to dilution for background interference. Applies to all analytes for this method.
W	Raised Quantitation Limit due to limited sample volume. Applies to all analytes for this method.
Y	Replicate outside acceptance limits.
Z	Calibration criteria exceeded.

1	Safe, No Total Coliform detected.
2	Unsafe, Total Coliform detected, no E. coli detected.
3	Unsafe, Total Coliform detected, E. coli detected.
4	Sample weight was below program minimum. Applies to all analytes for this method.
5	Insufficient oxygen depletion.
6	Complete oxygen depletion.
7	Sliding BOD, toxicity present in sample.

CTI Wisconsin Division Laboratory Certification #'s:
IA DNR: 146
KY Dept. of Environmental Protection: 90110
WI DNR: 157066030
DATCP: 289

H:\MSWORD\DATQUAL.DOC

Commonwealth Technology, Inc.

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1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-2766

1 of 3

641

Nº 5711

Is this a PECFA project? (Please indicate "Yes" or "No") Yes

SAMPLE COLLECTOR: Jeff King (JJK)	COMPANY: Gannett Fleming	TELEPHONE # (include area code): (608) 836-1500
PROJECT NUMBER: 34265	PROJECT NAME: Murphy - Tank 8	

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (must be completed): Liz Landmark, Murphy Oil USA	REPORT ADDRESS (must be completed): Jeff King, Gannett Fleming
DATE & TIME OF RELINQUISHMENT: 12/16/98 13:30	RELINQUISHED BY (signature): Jeff King
DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (signature):
RECEIVED BY (signature):	DATE / TIME OF RECEPTION:
RECEIVED BY LABORATORY (signature): 0.0 ic	DATE / TIME OF RECEPTION: 12-17-98

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION / DESCRIPTION	TYPE OF ANALYSES REQUIRED (please circle)	LAB USE ONLY PROF. W/MeOH? "X" IF YES	NO./TYPE OF CONTAIN-ERS	LAB I.D.
BS-1 (1-2')	12/15/98	PM	Soil	SS	MeOH		(DRO) GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224287
BS-1 (4-5)							DRO GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224288
BS-2 (1-2)							(DRO) GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224289
BS-2 (4-5)							DRO GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224290
BS-3 (1-2)							DRO GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224291
BS-3 (4-5)							(DRO) GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224292
BS-4 (1-2)							(DRO) GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224293
BS-4 (4-5)							(DRO) GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224294

SAMPLE CONDITIONS / COMMENTS:

CHECKED

ARRIVAL TEMPERATURE: on ice

Commonwealth Technology, Inc.

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1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-2766

2 of 3

641

No 5712 **Is this a PECFA project? (Please indicate "Yes" or "No")** Yes

SAMPLE COLLECTOR: Jeff King (JTK)	COMPANY: Gannett Fleming	TELEPHONE # (include area code): (608) 836-1500
PROJECT NUMBER: 34265	PROJECT NAME: Murphy - Tank 8	

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (must be completed): Murphy Oil USA Liz Lundsmark	REPORT ADDRESS (must be completed): Jeff King, Gannett Fleming
DATE & TIME OF RELINQUISHMENT: 12/16/98 13:30	RELINQUISHED BY (signature): Jeff King
DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (signature):
RECEIVED BY (signature):	DATE / TIME OF RECEPTION:
RECEIVED BY LABORATORY (signature): D. Dill	DATE / TIME OF RECEPTION: 12-17-98

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION / DESCRIPTION	TYPE OF ANALYSES REQUIRED (please circle)	LAB USE ONLY PROF. W/MeOH? "X" IF YES	NO./TYPE OF CONTAIN-ERS	LAB I.D.
B8-5 1-2	12/15/98	PM	soil	grab	MeOH		(DRO) GRO GRO/PVOC (PVOC) Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list):		3	224295
B8-5 4-5							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			224296
B8-6 1-2							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			224297
B8-6 4-5							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			224298
B8-7 1-2							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			224299
B8-7 4-5							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			224300
B8-8 1-2							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			224301
B8-8 4-5							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			224302

SAMPLE CONDITIONS / COMMENTS:

CHECKED

ARRIVAL TEMPERATURE: on ice

Commonwealth Technology, Inc.

1-800-228-3012
1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-2766

3 of 3

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Nº 5713

Is this a PECFA project? (Please indicate "Yes" or "No") Yes

SAMPLE COLLECTOR: Jeff King (JJK) | COMPANY: Gannett Fleming | TELEPHONE # (include area code):

PROJECT NUMBER: 34265 | PROJECT NAME: Murphy - Tank 8

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (must be completed): | REPORT ADDRESS (must be completed):

DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (signature):	RECEIVED BY (signature):	DATE / TIME OF RECEPTION:
12/16/98 13:30	Jeff King		
DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (signature):	RECEIVED BY LABORATORY (signature):	DATE / TIME OF RECEPTION:
		D. D. ...	12-17-98

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION / DESCRIPTION	TYPE OF ANALYSES REQUIRED (please circle)	LAB USE ONLY PROF. W/MeOH? "X" IF YES	NO./TYPE OF CONTAINERS	LAB I.D.
B8-4 0-1.25	12/15/98	PM	Soil	grab		Zip-lock	DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): Organic Carbon fraction		1	224303
B8-4 1.25-2.5	↓	↓	↓	↓		↓	DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): ↓		1	224304
B8-4 2.5-3.75	↓	↓	↓	↓		↓	DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): ↓		1	224305
B8-4 3.75-5	↓	↓	↓	↓		↓	DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): ↓		1	224306
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			

SAMPLE CONDITIONS / COMMENTS:

CHECKED ______

ARRIVAL TEMPERATURE: On ice

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

GANNETT FLEMING
JEFF KING
8025 EXCELSIOR DRIVE
MADISON, WI 53717

Customer #: LE8000012374
Work Order: 9812000768
Report Date: 01/05/99
Date Received: 12/22/98
Arrival Temperature: On Ice

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **MURPHY OIL – Tank 8** Project Number: **34265.007**

Sample I.D. #: 224957 **Sample Description:** B8-4, 2-4' **Date Sampled:** 12/15/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Soil Permeability	0.41E-7	cm/s					01/04/98	gjm	MOSA 28-4.2

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Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-2766

№ 5915

Is this a PECFA project? (Please indicate "Yes" or "No") ________

SAMPLE COLLECTOR: Jeff King	COMPANY: Gannett/Fleming	TELEPHONE # (include area code):
PROJECT NUMBER: 34265.007	PROJECT NAME: Murphy Oil	

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (must be completed):	REPORT ADDRESS (must be completed):

DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (signature):	RECEIVED BY (signature):	DATE / TIME OF RECEPTION:
DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (signature):	RECEIVED BY LABORATORY (signature): D. Berger	DATE / TIME OF RECEPTION: 12-18-98 1700

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION / DESCRIPTION	TYPE OF ANALYSES REQUIRED (please circle)	LAB USE ONLY PROF. W/MeOH? "X" IF YES	NO./TYPE OF CONTAINERS	LAB I.D.
B8-4, 2-4'	12/15						DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list): permeability			224957
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			
							DRO GRO GRO/PVOC PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			

SAMPLE CONDITIONS / COMMENTS:	CHECKED	ARRIVAL TEMPERATURE

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

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Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: _____
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215934 **Sample Description:** T-9 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	73.8	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	31	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	13	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	6.1	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	880	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	16	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	4.3	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	2.6	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Diesel Range Organics	1100	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	11	mg/kg	V	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	18	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	0.20	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.025	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	1.4	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	1.9	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	5.7	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215935 **Sample Description:** T-10 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	77.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	5.0	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	6.7	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	0.94	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	440	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	1.8	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	3.2	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	0.57	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO

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Laboratory Division
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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: JHC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215935 **Sample Description:** T-10 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Diesel Range Organics	890	mg/kg	K	1.4	4.7	10/09/98	10/13/98	LLN	WDNR DRO

Sample I.D. #: 215936 **Sample Description:** T-11 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.6	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	32	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	28	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<1.2	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	5.0	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	1300	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	6.9	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<1.2	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	4.1	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	<1.2	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Diesel Range Organics	700	mg/kg	K	1.4	4.7	10/09/98	10/13/98	LLN	WDNR DRO

Sample I.D. #: 215937 **Sample Description:** T-12 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	75.6	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	48	mg/kg		0.015	0.053	10/11/98	10/13/98	RDW	WDNR GRO
1,3,5-Trimethylbenzene	26	mg/kg		0.010	0.030	10/11/98	10/13/98	RDW	WDNR GRO
Benzene	<0.50	mg/kg	V	0.009	0.029	10/11/98	10/13/98	RDW	WDNR GRO
Ethylbenzene	5.3	mg/kg		0.009	0.028	10/11/98	10/13/98	RDW	WDNR GRO
Gasoline Range Organics	1300	mg/kg	L	1.3	4.5	10/11/98	10/13/98	RDW	WDNR GRO
m & p- Xylene	8.5	mg/kg		0.017	0.053	10/11/98	10/13/98	RDW	WDNR GRO
Methyl t-Butyl Ether	<0.50	mg/kg		0.011	0.034	10/11/98	10/13/98	RDW	WDNR GRO
o-Xylene	4.8	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Toluene	2.2	mg/kg		0.008	0.026	10/11/98	10/13/98	RDW	WDNR GRO
Diesel Range Organics	500	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	10	mg/kg	V	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	19	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310

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Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215937 **Sample Description:** T-12 2' **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.025	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	4.5	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	1.1	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	2.7	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215938 **Sample Description:** B-4 4.5 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.0	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	8.4	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	7.8	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	1.3	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	340	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	2.0	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	3.7	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	0.50	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	250	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215939 **Sample Description:** B-5 4.5 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	0.46	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	0.98	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	0.047	mg/kg		0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	0.31	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	100	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	0.36	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	0.060	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	0.12	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	220	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	7.6	mg/kg	V	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310

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1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: JHC
Record Reviewer

Note: None

Project Name: 858-98E Project Number:

Sample I.D. #: 215939 **Sample Description:** B-5 4.5 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	17	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.24	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.26	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.12	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.010	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.021	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0075	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.46	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<1.2	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.025	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.043	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.047	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	3.0	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.81	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	3.1	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215940 **Sample Description:** SP-1 **Date Sampled:** 10/06/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.9	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	32	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	25	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	4.2	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	890	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	1.2	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	15	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	1.6	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	2100	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215941 **Sample Description:** B-10 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	5.9	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	2.9	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	0.61	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO

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T WIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: JHC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215941 **Sample Description:** B-10 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Ethylbenzene	1.6	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	180	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	4.8	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	1.9	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	0.54	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	300	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215942 **Sample Description:** B-11 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.3	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	16	mg/kg		0.015	0.053	10/11/98	10/14/98	RLD	WDNR GRO
1,3,5-Trimethylbenzene	7.4	mg/kg		0.010	0.030	10/11/98	10/14/98	RLD	WDNR GRO
Benzene	0.89	mg/kg	V	0.009	0.029	10/11/98	10/14/98	RLD	WDNR GRO
Ethylbenzene	3.8	mg/kg		0.009	0.028	10/11/98	10/14/98	RLD	WDNR GRO
Gasoline Range Organics	300	mg/kg	L	1.3	4.5	10/11/98	10/14/98	RLD	WDNR GRO
m & p- Xylene	13	mg/kg		0.017	0.053	10/11/98	10/14/98	RLD	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/11/98	10/14/98	RLD	WDNR GRO
o-Xylene	5.9	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Toluene	<0.25	mg/kg		0.008	0.026	10/11/98	10/14/98	RLD	WDNR GRO
Diesel Range Organics	930	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	2.0	mg/kg	S	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	3.3	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	0.30	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	<0.0049	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	0.86	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.52	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	1.6	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

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T WIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HEC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215943 **Sample Description:** B-12 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.2	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	4.6	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.3	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.80	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	1.5	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	110	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	4.0	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	<0.25	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.25	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	380	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	<0.047	mg/kg		0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	0.36	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	0.12	mg/kg	J	0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	0.23	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	0.076	mg/kg	J	0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.098	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	<0.0062	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215944 **Sample Description:** B-13 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	4.6	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.4	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.17	mg/kg	VJ	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	0.78	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	72	mg/kg	L	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	3.2	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.12	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	1.1	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.12	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO

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IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215944 **Sample Description:** B-13 4.5 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Diesel Range Organics	85	mg/kg	KL	1.4	4.7	10/09/98	10/13/98	LLN	WDNR DRO

Sample I.D. #: 215945 **Sample Description:** T-13 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.5	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	0.80	mg/kg		0.015	0.053	10/12/98	10/14/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	0.64	mg/kg		0.010	0.030	10/12/98	10/14/98	LMH	WDNR GRO
Benzene	<0.050	mg/kg	V	0.009	0.029	10/12/98	10/14/98	LMH	WDNR GRO
Ethylbenzene	0.11	mg/kg		0.009	0.028	10/12/98	10/14/98	LMH	WDNR GRO
Gasoline Range Organics	48	mg/kg	L	1.3	4.5	10/12/98	10/14/98	LMH	WDNR GRO
m & p- Xylene	0.20	mg/kg		0.017	0.053	10/12/98	10/14/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/14/98	LMH	WDNR GRO
o-Xylene	0.078	mg/kg		0.008	0.026	10/12/98	10/14/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/14/98	LMH	WDNR GRO
Diesel Range Organics	230	mg/kg	L	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	1.1	mg/kg	S	0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310
2-Methyl Naphthalene	1.6	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	0.10	mg/kg	J	0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	0.71	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.57	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	2.2	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215946 **Sample Description:** T-14 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.8	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	10	mg/kg	D	0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO

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Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215946 **Sample Description:** T-14 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
1,3,5-Trimethylbenzene	2.7	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.16	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	2.3	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	120	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	5.3	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.22	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	160	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215947 **Sample Description:** T-15 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	76.7	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	50	mg/kg	D	0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	14	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	<0.25	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	8.3	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	570	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	36	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.25	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	1.4	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	0.32	mg/kg	J	0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	2000	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215948 **Sample Description:** T-16 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	74.7	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	3.2	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	0.70	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.43	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	1.0	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	47	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	1.5	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.067	mg/kg	J	0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	130	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO
1-Methyl Naphthalene	1.2	mg/kg		0.047	0.16	10/13/98	10/14/98	CMK	EPA 8310

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HGC
Record Reviewer

Note: None

Project Name: **858-98E** Project Number:

Sample I.D. #: 215948 **Sample Description:** T-16 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
2-Methyl Naphthalene	2.2	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthene	<0.048	mg/kg		0.048	0.16	10/13/98	10/14/98	CMK	EPA 8310
Acenaphthylene	<0.051	mg/kg		0.051	0.17	10/13/98	10/14/98	CMK	EPA 8310
Anthracene	<0.023	mg/kg		0.023	0.077	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)anthracene	<0.0020	mg/kg		0.002	0.006	10/13/98	10/14/98	CMK	EPA 8310
Benzo(a)pyrene	0.056	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(b)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Benzo(g,h,i)perylene	<0.0041	mg/kg		0.004	0.014	10/13/98	10/14/98	CMK	EPA 8310
Benzo(k)fluoranthene	<0.0015	mg/kg		0.001	0.005	10/13/98	10/14/98	CMK	EPA 8310
Chrysene	<0.092	mg/kg		0.092	0.31	10/13/98	10/14/98	CMK	EPA 8310
Dibenzo(a,h)anthracene	<0.23	mg/kg		0.23	0.77	10/13/98	10/14/98	CMK	EPA 8310
Fluoranthene	0.63	mg/kg		0.004	0.016	10/13/98	10/14/98	CMK	EPA 8310
Fluorene	<0.0086	mg/kg		0.008	0.029	10/13/98	10/14/98	CMK	EPA 8310
Indeno(1,2,3-cd)pyrene	<0.0094	mg/kg		0.009	0.031	10/13/98	10/14/98	CMK	EPA 8310
Naphthalene	<0.031	mg/kg		0.031	0.10	10/13/98	10/14/98	CMK	EPA 8310
Phenanthrene	0.29	mg/kg		0.003	0.012	10/13/98	10/14/98	CMK	EPA 8310
Pyrene	0.99	mg/kg		0.006	0.021	10/13/98	10/14/98	CMK	EPA 8310

Sample I.D. #: 215949 **Sample Description:** T-17 2' **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	77.7	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	2.8	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.2	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	<0.050	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	0.36	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	190	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	0.85	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.36	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	0.11	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	560	mg/kg	K	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215950 **Sample Description:** SP-2 **Date Sampled:** 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	72.6	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	2.8	mg/kg		0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	0.74	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.63	mg/kg		0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO

Commonwealth Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

ANALYTICAL REPORT

Customer #: LT7000003487
Work Order: 9810000311
Report Date: 10/21/98
Date Received: 10/08/98
Arrival Temperature: On Ice

TWIN PORTS TESTING
IRVIN G. MOSSBERGER
1301 N THIRD ST
SUPERIOR, WI 54880

Report Submitted By: HOC
Record Reviewer

Note: None

Project Name: **858-98E**

Project Number:

Sample I.D. #: 215950 **Sample Description:** SP-2

Date Sampled: 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Ethylbenzene	0.74	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	43	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	2.9	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.025	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	1.0	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.025	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	170	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Sample I.D. #: 215951 **Sample Description:** SP-3

Date Sampled: 10/07/98

Analyte	Result	Units	Qualifier	LOD	LOQ	Date Extracted	Date Analyzed	Analyst	Method
Total Percent Solids	71.2	%					10/12/98	DJW	EPA 5030
1,2,4-Trimethylbenzene	8.4	mg/kg	D	0.015	0.053	10/12/98	10/13/98	LMH	WDNR GRO
1,3,5-Trimethylbenzene	1.5	mg/kg		0.010	0.030	10/12/98	10/13/98	LMH	WDNR GRO
Benzene	0.34	mg/kg	V	0.009	0.029	10/12/98	10/13/98	LMH	WDNR GRO
Ethylbenzene	1.3	mg/kg		0.009	0.028	10/12/98	10/13/98	LMH	WDNR GRO
Gasoline Range Organics	100	mg/kg	KL	1.3	4.5	10/12/98	10/13/98	LMH	WDNR GRO
m & p- Xylene	2.2	mg/kg		0.017	0.053	10/12/98	10/13/98	LMH	WDNR GRO
Methyl t-Butyl Ether	<0.050	mg/kg		0.011	0.034	10/12/98	10/13/98	LMH	WDNR GRO
o-Xylene	0.23	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Toluene	<0.050	mg/kg		0.008	0.026	10/12/98	10/13/98	LMH	WDNR GRO
Diesel Range Organics	140	mg/kg	KL	1.4	4.7	10/09/98	10/14/98	LLN	WDNR DRO

Commonwealth
Technology, Inc.
Laboratory Division
Accredited Lab Data for Today's Environment

1230 Lange Court
Baraboo, WI 53913-3901
Phone: 800-228-3012
Fax: 608-356-2766
email: fyi@ctienv.com

Data Qualifiers

A	Sample analyzed with a dilution. Surrogates were diluted outside the calibration range. Applies to all analytes for this method.
B	Analyte detected in associated Method Blank.
C	Sample result confirmed by alternate analysis.
D	Results reported from higher dilution.
E	Analyte concentration exceeded calibration range.
F	Unable to analyze due to sample matrix interference. Applies to all analytes for this method.
G	Insufficient sample for analysis. Applies to all analytes for this method.
H	Sample was received past the established holding time. Applies to all analytes for this method.
I	Sample was analyzed past the established holding time. Applies to all analytes for this method.
J	Reported concentration below the Quantitation Limit.
K	Sample contained lighter hydrocarbon fractions.
L	Sample contained heavier hydrocarbon fractions.
M	Matrix Spike and/or Matrix Spike Duplicate outside acceptance limits.
O	Hydrocarbons atypical of gasoline.
P	Hydrocarbons atypical of diesel #2 fuel.
Q	Laboratory Control Sample outside acceptance limits.
S	Surrogate outside acceptance limits. Applies to all analytes for this method.
T	Sample received exceeding proper preservation criteria. Applies to all analytes for this method.
V	Raised Quantitation Limit due to dilution for background interference. Applies to all analytes for this method.
W	Raised Quantitation Limit due to limited sample volume. Applies to all analytes for this method.
Y	Replicate outside acceptance limits.
Z	Calibration criteria exceeded.
1	Safe, No Total Coliform detected.
2	Unsafe, Total Coliform detected, no E. coli detected.
3	Unsafe, Total Coliform detected, E. coli detected.
4	Sample weight was below program minimum. Applies to all analytes for this method.
5	Insufficient oxygen depletion.
6	Complete oxygen depletion.
7	Sliding BOD, toxicity present in sample.

CTI Wisconsin Division Laboratory Certification #'s:
IA DNR: 146
KY Dept. of Environmental Protection: 90110
WI DNR: 157066030
DATCP: 289

H:\MSWORD\DATQUAL.DOC

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Commonwealth Technology, Inc.

1-800-228-3012
1230 Lange Court
Baraboo, WI 53913
(608) 356-2760
FAX: (608) 356-2766

No 5359

Is this a PECFA project? (Please indicate "Yes" or "No") Yes

SAMPLE COLLECTOR: Irvin Mossberger	COMPANY: Twin Ports Testing	TELEPHONE # (include area code): (715) 392-7114
PROJECT NUMBER: 858-98E	PROJECT NAME: TK [redacted] 1+2	

I HEREBY CERTIFY THAT I RECEIVED, PROPERLY HANDLED, AND DISPOSED OF THESE SAMPLES AS NOTED BELOW:

INVOICE ADDRESS (must be completed): Murphy O.I P.O. Box 2066, Superior, WI 54880	REPORT ADDRESS (must be completed): Irvin Mossberger Twin Ports Testing, 1301 N. 3rd St., Superior, WI 54880
DATE & TIME OF RELINQUISHMENT: 10/7/98 3:15 PM	RELINQUISHED BY (signature): [signature]
DATE & TIME OF RELINQUISHMENT:	RELINQUISHED BY (Signature):

RECEIVED BY (signature):

DATE / TIME OF RECEPTION:

RECEIVED BY LABORATORY (signature): P. Munger M

DATE / TIME OF RECEPTION: 10-9-98 [redacted] 7:3

FIELD ID NUMBER	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE	SAMPLE DEVICE	PRESERV. TYPE	LOCATION / DESCRIPTION	TYPE OF ANALYSES REQUIRED (please circle)	LAB USE ONLY PROF. W/MeOH? "X" IF YES	NO./TYPE OF CONTAIN-ERS	LAB I.D.
T-9 2'	10/06/98	2:30	So.1		MeOH		DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list): T-9			215934
T-10 2'		2:35								215935
T-11 2'		2:40					DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list): T-12			215936
T-12 2'		2:45								215937
B-4 4.5'		2:50					DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list): B-5			215938
B-5 4.5'		2:55								215939
SP-1		3:00					DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list): SP-1: TCLP Benzene if Benzene>10ppm B-11	[redacted]		215940
B-10 4.5'	10/07/98	9:10								215941
B-11 4.5'		9:15								215942
B-12 4.5'		9:20					DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list): B-12			215943
B-13 4.5'		9:25								215944
T-13 2'		9:30					DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list): T-13			215945
T-14 2'		9:35					DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER PAH Other (please list):			215946
T-15 2'		9:40								215947
T-16 2'		9:45					DRO GRO (GRO/PVOC) PVOC Pb Cd % SOLIDS FLASHPOINT VOC-LUST VOC-8021 SIEVE #200 SIEVE PAINT FILTER (PAH) Other (please list): T-16			215948
T-17 2'		9:50								215949
~~SAMPLE CONDITIONS / COMMENTS:~~ SP-2		9:55					DRO (GRO/PVOC) 215950 TCLP Benzene if Benzene>10ppm	CHECKED 215951		ARRIVAL TEMPERATURE
SP-3		10:00								

Department of Natural Resources

LEAKING UNDERGROUND STORAGE TANK (Case Tracking)
Form 4400-146 Rev. 2-93

02-16-190549

ERP (Not cust)

UID Number: | **FID Number:** | **PMN Number:**

County: Douglas
Site Name: Murphy Oil USA
Address: 2400 Stinson Ave

Municipality: Superior
Legal Descript.: ___ 1/4 ___ 1/4 sec. ___ T ___ N R ___ (E/W)
Lat.: _____ Long.: _____

Initial Contact Date: 5/26/98
Date RPLetter Sent: ___/___/___
Date Closure Approved: ___/___/___

Person/Firm Reporting: Bill Gustafson, Murphy Oil USA
Phone Number: (715) 398-3533

Priority Screening
___ 1 = High
___ 2 = Medium
___ 3 = Low
___ 4 = Unknown

Scoring Criteria
1. _____
2. _____
3. _____
4. _____
5. _____

Score: _____ Init.: _____ Date: ___/___/___

Funding Source
___ 1 = RP
___ 2 = LTF
___ 3 = EF
___ 4 = Other

Effective Date
___/___/___
___/___/___
___/___/___
___/___/___

LUST Trust Eligible
___ 1 = Federal
___ 2 = Non-Federal

Case Status

	Start Date	End Date
___ (F) Free Product Removal	___/___/___	___/___/___
___ (E) RP Emergency Response	___/___/___	___/___/___
___ (R) LTF Emergency Response	___/___/___	___/___/___
___ (L) Long Term Monitoring	___/___/___	___/___/___

Responsible Party
Contact Person: Bill Gustafson
Company Name: Murphy Oil USA
Address: 2400 Stinson Ave
Superior WI 54880
Phone Number: (715) 398-3533

CC's: →

Impacts
Enter "P" for potential and "K" for known
___ (1) Fire/Explosion Threat
___ (2) Contaminated Private Well(s) _____ # of Wells
___ (3) Contaminated Public Well
___ (4) Groundwater Contamination
K (5) Soil Contamination
___ (6) Other: _____
___ (7) Surface Water Impacts
___ (9) Floating Product

Consultant
Contact Name: _____
Company Name:: _____
Address: _____
Telephone: ( )

Substances	# Tank(s)	Size
___ (1) Leaded Gas		
___ (2) Unleaded Gas		
___ (3) Diesel		
___ (4) Fuel Oil		
___ (5) Unkwn Hydrocrbn		
✓ (8) Other Petroleum		
___ (12) Waste Oil		

REMARKS:

PLEASE PRINT

State of Wisconsin Substance Release Notification Form

24-Hour Emergency Hotline Number: 1-800-943-0003 — **Form 4400-91 Rev. 11-95**

Date and Mil. Time of Incident	Date and Mil. Time Reported
5-24-98	5-26-98 - 11:00

Person Reporting Bill Gustafson	**Telephone #** (715) 398-3533
Representing Agency, Firm, or Citizen Murphy Oil USA	
Responsible Party Murphy Oil USA	
Contact Name Bill Gustafson	**Telephone #** ( )
Address 2400 Stinson Ave	**City, State, Zip Code** Superior, WI 54880

Substance Involved	Amount & Units Released	Amt. Recovered	Is this a 304 (11004 42 USC) spill?
Petroleum	unknown	100-150 yds³	☐ Yes ☐ No ☐ Unknown

☐ Solid ☐ Semisolid ☐ Liquid ☐ Gas Color _____ Odor _____

Exact Location (inc. address, facility name, mileage, bldg. #, etc.)
Forms Tank 1 and 2, East of No 2 Cooling Tower

City	County	Lat/long
Superior	Douglas	
DNR Region NOR	¼ ¼ sec T NR (E/W)	**Weather Cond.**

Cause of Incident unknown, Gustafson seeked past historical spillage

Spilled Substance Impact To:
Check (✓) all that apply
- ☐ Air ☐ Potential
- ☒ Soil ☐ Potential
- ☐ Groundwater ☐ Potential
- ☐ Surface Water ☐ Potential
  Name: _____
- ☐ Storm Sewer ☐ Potential
- ☐ Sanitary Sewer ☐ Potential
- ☐ Concrete/Asphalt ☐ Potential
- ☐ Private Well ☐ Potential
- ☐ Contained/Recovered
- ☐ Other: _____

Spill Source:
- ☐ Transportation Accident, Fuel Supply Tank Spill
- ☐ Transportation Accident, Load Spill
- ☐ Industrial Facility ☐ Paper Mill ☐ Chemical Co.
- ☐ Ag Coop/Facility/Food Factory/Facility
- ☐ Gas/Service Station/Garage/Auto Dealer, Repair Shop
- ☒ Pipeline, Terminal, Tank Farm, Oil Jobber/Wholesaler
- ☐ Public Property (city, state, church, school, etc.)
- ☐ Utility Co., Power Generating/Transfer Facility
- ☐ Private Property (home/farm)
- ☐ Construction, Excavation, Wrecking, Quarry, Mine
- ☐ Airport Facility ☐ Railroad Facility
- ☐ Other _____

Action Taken By Spiller
- ☐ No Action Taken
- ☐ No Action Needed
- ☐ Monitor
- ☒ Cleanup Method: excavation
- ☐ Waste Destination: _____
- ☐ Containment
- ☐ Contractor Hired
  Name: _____
- ☐ Other: _____

Injuries? ☐ Yes ☒ No If yes, how many? ____ | Has an evacuation occurred? ☐ Yes ☒ No Potential? ☐ Yes ☐ No

Are there any resource damages? ☐ Yes ☒ No What kinds? _____

Other Agencies Notified (✓ first column if notified); Check (✓) both columns if on scene

☐ ☐ Fire Department/Hazmat	☒ ☐ Local DNR	☐ ☐ EPA
☐ ☐ Local Law Enforcement	☐ ☐ Div. Emer. Gov.	☐ ☐ Nat'l Resp. Ctr. 800-442-8802
☐ ☐ LEPC or Local Emer. Gov.	☐ ☐ DATCP 608-224-4500	☐ ☐ Chemtrec 800-424-9300
☐ ☐ Regional Response Team	☐ ☐ DHSS 608-266-2830	☐ ☐ Other _____

Incident Commander, if known: _____
Phone: _____

Prepared By: (Print) Jim Hasch	(Sign) James C. Hasch	**Date:** 5/26/98	**Rpt'd to DATCP?** ☐ Yes ☒ No
Person Notified:	**Region Notified:**	**Time:**	**Date:**
Invstgtd By: (Print)	(Sign)	**Date:**	**Site Closed?** ☐ Yes ☒ No
Spill Coordinator Signoff: James C. Hasch	**Date:**	**Transferred to ERP?** ☐ No ☒ Yes; Case # _____	**NFA Letter Sent?** ☐ Yes ☑ No **Spill Packet Sent?** ☐ Yes ☑ No

☐ Additional Comments on Reverse

PLEASE PRINT

State of Wisconsin Substance Release Report (Con't)
Form 4400-91 Rev. 11-95

Date and Military Time of Incident	Responsible Party

Additional Comments:

Hasch informed Gustafson that he needs to call 1800 943-0003 to report spills.