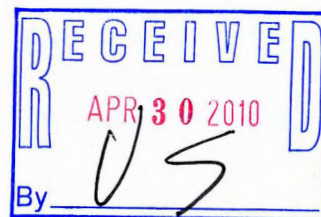




UNION PACIFIC RAILROAD

**Monitoring Well Abandonment and
VELR System Decommissioning
Summary Report**

Union Pacific Railroad
Butler Yard Fueling Facility
4823 North 119th Street
Milwaukee, Wisconsin
BRRS No. 02-41-257209, 02-41-000967, and 02-41-000260
FID No. 241012860



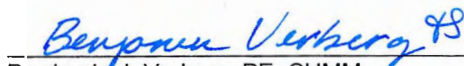
APRIL 2010

**Monitoring Well Abandonment
and VELR System
Decommissioning Summary
Report**

Union Pacific Railroad
Butler Yard Fueling Facility



Toni Schoen
Hydrogeologist



Benjamin J. Verburg, PE, CHMM
Principal Engineer

Prepared for:
Union Pacific Railroad

Prepared by:
ARCADIS
126 North Jefferson Street
Suite 400
Milwaukee
Wisconsin 53202
Tel 414.276.7742
Fax 414.276.7603

Our Ref.:
WI001145.0003

Date:
April 27, 2010

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ARCADIS

Monitoring Well Abandonment and VELR System Decommissioning Summary Report

Union Pacific Railroad
Milwaukee, Wisconsin

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- 2 Site Layout Map, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

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- A Well Abandonment Forms
- B Photographs

Introduction

This Monitoring Well Abandonment and Vacuum-Enhanced Light Nonaqueous Phase Liquid Recovery (VELR) System Decommissioning Summary Report (Summary Report) was prepared for the Union Pacific Railroad (UPRR), Butler Fueling Facility, located at 4823 North 119th Street in the city of Milwaukee, Wisconsin ("Site"). ARCADIS was retained by the UPRR to supervise the abandonment of nine monitoring wells and two recovery trenches and decommission of two VELR systems.

Conditional case closure was granted for the Site by the Wisconsin Department of Natural Resources (WDNR) in a letter dated September 28, 2009. As a requirement for requesting final case closure, ARCADIS prepared this summary report, which documents monitoring well and recovery trench abandonment and VELR system decommissioning.

Site Location and Description

The Site is located at 4823 North 119th Street in the city of Milwaukee, Milwaukee County, Wisconsin and covers an area of about 41 acres. A Site location map is presented as Figure 1.

The Site was originally developed for use as a freight-switching yard, with a diesel locomotive maintenance and fueling facility, by the Chicago and Northwestern Railroad Company. Developments at the site include a diesel shop and associated appurtenances, two fueling system pump houses, a 150,000-gallon diesel fuel AST, administrative building, and yard tracks. During the locomotive fueling activities, diesel fuel is gravity fed from the AST to a pump house through a 475-foot long underground dispensing line. The diesel fuel is then pumped to the fueling area where it is dispensed to the locomotives. A site layout map is presented on Figure 2.

Summary of Site Activities

ARCADIS supervised Hulcher Professional Services Inc., (Hulcher) of Hudson, Wisconsin for monitoring well and recovery trench abandonment and VELR system decommissioning between March 29 and 30, 2010. Below is a summary of the activities completed.

Monitoring Well and Recovery Trench Abandonment

ARCADIS supervised the abandonment of nine monitoring wells and two recovery trench wells in accordance with NR140 Wis. adm. code. Monitoring well and recovery trench locations are presented on Figure 2. Depth to water and depth to bottom measurements were collected prior to sealing the well casing with 3/8" bentonite chips. Once sealed, the flushmount covers and concrete collars were removed and the polychlorinated vinyl (PVC) pipes were removed (Photograph 1). The areas were restored to grade using onsite gravel (Photograph 2). At the direction of Mr. William Paulson, representative of UPRR, the metal flushmount covers were disposed of in an onsite metal recycling bin owned by Midwest Pelman Recycling (MPR), of Cudahy, Wisconsin and miscellaneous debris including the PVC piping and concrete were disposed of in an onsite refuse bin owned by Veolia, of Milwaukee, Wisconsin. The miscellaneous debris will be transported offsite for disposal at Veolia Emerald Park Landfill, in Muskego, Wisconsin. The recycling and refuse bins are transported offsite bimonthly. Well abandonment forms are included in Appendix A. Site photographs are included in Appendix B.

VELR System Description

Two VELR systems were constructed for removal of Light Non-Aqueous Phase Liquid from the subsurface. The VELR systems were constructed of a 6- by 4- by 4-foot precast concrete vault topped with a precast concrete lid (Photograph 3). A 2- by 2-foot aluminum hatch door was located in the center of the lid for access to the vault. The concrete vault was buried below grade with the lid set flush with the grade. A blower and knockout tank were located inside the vault (Photograph 4). A PVC lateral connected the recovery trench well to the knockout tank to the blower to a PVC vent. The PVC vent was run to the surface to discharge emissions to the atmosphere.

VELR System Decommissioning

The VELR systems were decommissioned by Hulcher. The concrete lids and hatch doors were removed (Photograph 5). The concrete vaults contained approximately 350 gallons of water. The water was pumped out and collected in an onsite oil water separator operated and maintained by UPRR. Once the vault was emptied, the piping, wiring, and knockout tank were removed and disposed of in an onsite Veolia refuse bin (Photograph 6). The blowers and hatch doors were disposed of in an onsite MPR metal recycling bin. The concrete lid was crushed onsite and reused as backfill. The PVC lateral and vent pipe were capped with PVC caps and 1-5/8 inch holes were drilled through the base of the vault to provide drainage. The vaults were then backfill

to grade using onsite gravel. Photographs 6 and 7 show the locations of the VELR systems post decommissioning.

Consultant and Contractors

Below is a list of the companies involved in the well abandonments and VELR system decommissioning activities.

Environmental Consultant

ARCADIS U.S. Inc.
126 North Jefferson Street, Suite 400
Milwaukee, WI 53202
414 276.7742

Excavator

Hulcher Services Inc.
1535 East Gostlin St.
Hammond, IN 46327
219.853.0870

Landfill (Demolition Debris Disposal)

Veolia Emerald Park Landfill, LLC
W124 S10629 South 124th Street
Muskego, WI 53150
414 529.1360

Metal Recycling

Midwest Pelman Recycling
5510 S. Whitnall Ave.
Cudahy, WI 53110
414.483.8833

Closing

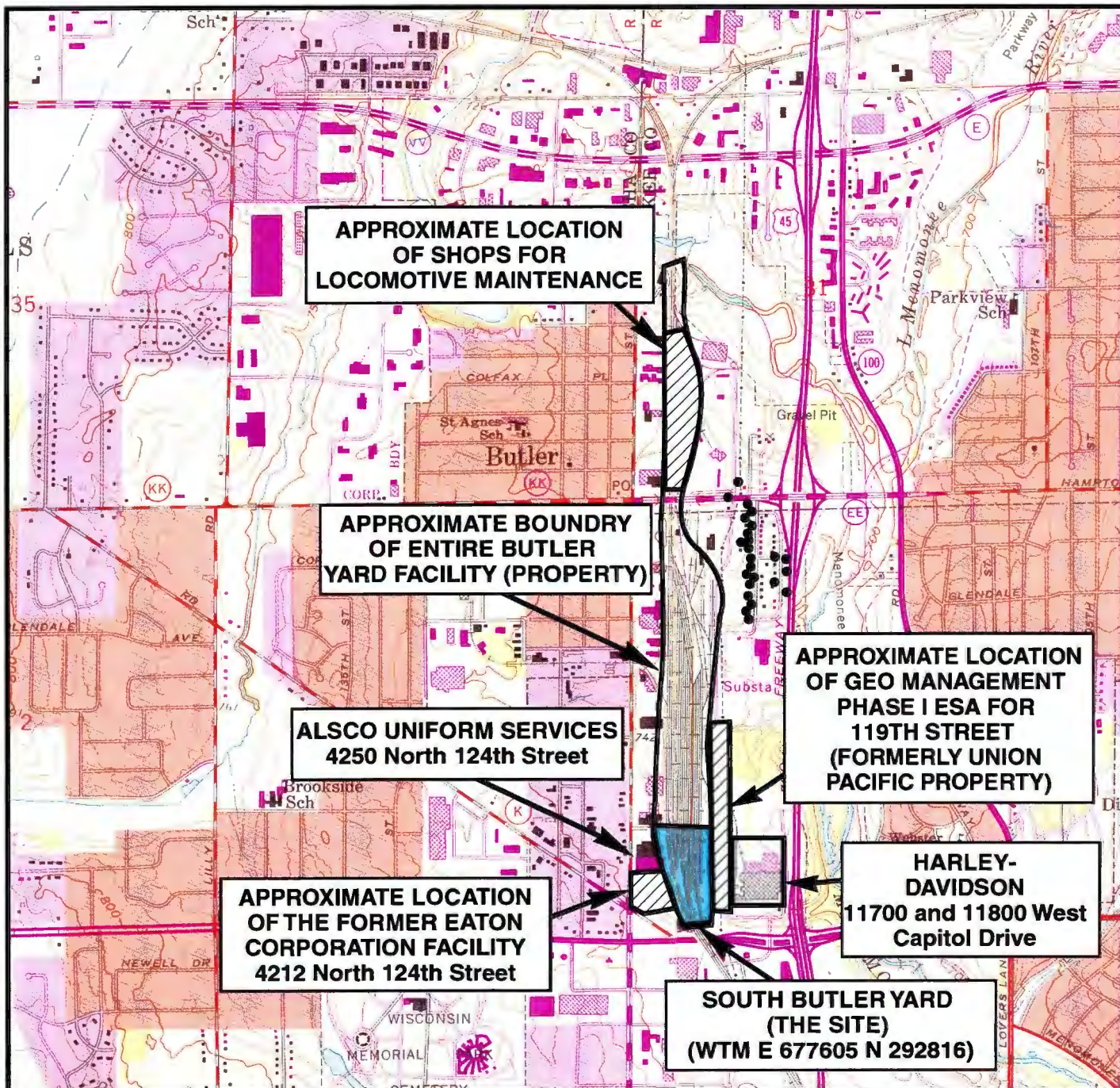
The conditions set forth in the WDNR's Conditional Closure letter dated September 28, 2009 have been satisfied with the submittal of this summary report, which documents monitoring well and recovery trench abandonment and VELR system decommissioning. ARCADIS respectfully requests final case closure with submittal of this report.

References

ARCADIS Geraghty & Miller, Inc., February 2003. Construction Documentation Report and Summary of Six Months Operation.

Wisconsin Administrative Code. Wisconsin Department of Natural Resources. Chapter NR 141 Groundwater Monitoring Well Requirements. March 2000.

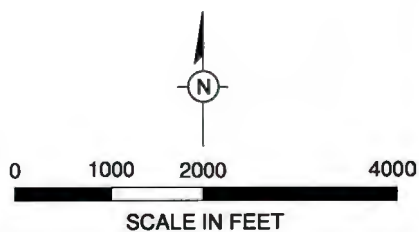
United States Geological Survey (USGS). 1976. 7.5-minute Topographic Map. Wauwatosa, Wisconsin Quadrangle.



SOURCE: USGS 7.5 Minute Topographic Map, WAUWATOSA, WISCONSIN Quadrangle, 1976



• PRIVATE WELL LOCATIONS



UNION PACIFIC BUTLER FACILITY
MILWAUKEE, WISCONSIN

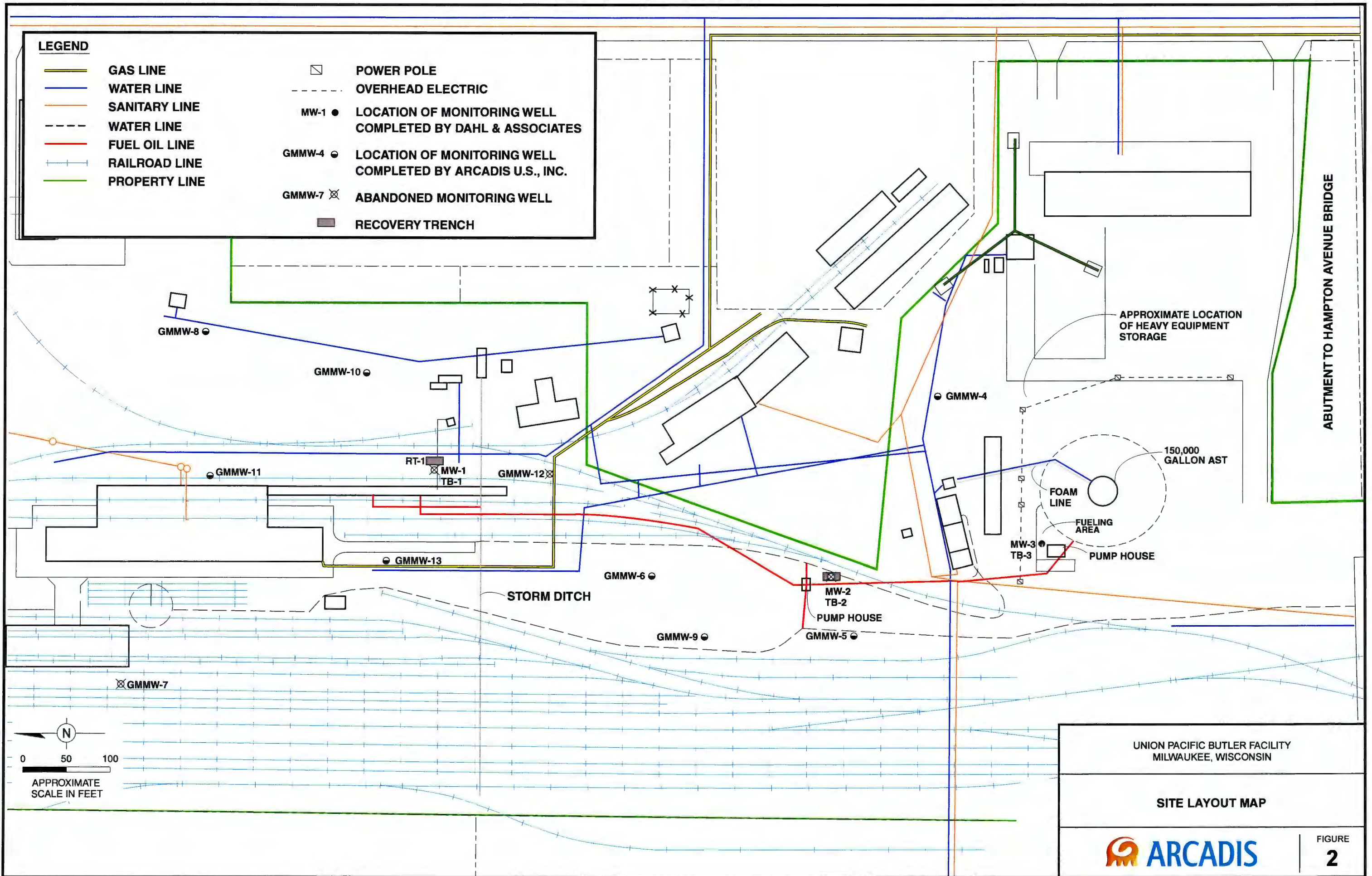
SITE LOCATION MAP



FIGURE

1

13MAY09-ENVIRONMENT-TS-LMB
UPACRRW1145BUTLERGRAPHICSSITE LAYOUTAI



ARCADIS

Appendix A

Well Abandonment Forms

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water

☐ Watershed/Wastewater

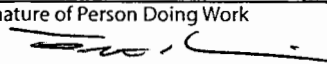
☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ Verification Only of Fill and Seal

1. Well Location Information				2. Facility / Owner Information			
County Milwaukee		WI Unique Well No. Removed Well MW-3		Facility Name Union Pacific Railroad/Butler Yard		Common Well Name	
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W		Method Code (see instructions) ____		Facility ID (FID or PWS) 241012860		License/Permit/Monitoring #	
1/4 1/4 SW 1/4 SW or Gov't Lot #		Section 31	Township 8 N	Range 21	☒ E ☐ W		
Well Street Address 4823 North 119th Street				Original Well Owner Union Pacific Railroad			
Well City, Village or Town Milwaukee				Present Well Owner Union Pacific Railroad			
Subdivision Name				Mailing Address of Present Owner 4823 North 119th Street			
Well ZIP Code 53225				City of Present Owner Milwaukee		State WI	ZIP Code 53225
4. Pump, Liner, Screen, Casing & Sealing Material							
Reason For Removal From Service Site Closure				WI Unique Well # of Replacement Well _____			
3. Well/Drillhole/Borehole Information				Pump and piping removed? ☐ Yes ☐ No ☒ N/A Liner(s) removed? ☐ Yes ☐ No ☒ N/A Screen removed? ☐ Yes ☒ No ☐ N/A Casing left in place? ☒ Yes ☐ No ☐ N/A Was casing cut off below surface? ☒ Yes ☐ No ☐ N/A Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☒ N/A			
☒ Monitoring Well		Original Construction Date (mm/dd/yyyy)					
☐ Water Well		If a Well Construction Report is available, please attach.					
☐ Borehole / Drillhole							
Construction Type:							
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug							
☐ Other (specify): _____							
Formation Type:							
☒ Unconsolidated Formation ☐ Bedrock							
Total Well Depth From Groundsurface (ft.) 13.10				Casing Diameter (in.) 2			
Lower Drillhole Diameter (in.) 8.25				Casing Depth (ft.) 13.10			
Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown							
If yes, to what depth (feet)?				Depth to Water (feet) 8.05			
5. Material Used to Fill Well / Drillhole							
From (ft.)		To (ft.)		No. Yards, Sacks Sealant or Volume (circle one)		Mix Ratio or Mud Weight	
Surface		13.10		25 lbs			
6. Comments							

7. Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing ARCADIS		License #	Date of Filling & Sealing (mm/dd/yyyy) 03/30/2010	Date Received	Noted By
Street or Route 126 N. Jefferson Street, Suite 400		Telephone Number 414-276-7742		Comments	
City Milwaukee	State WI	ZIP Code 53202	Signature of Person Doing Work 	Date Signed 4/14/10	

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ Verification Only of Fill and Seal

1. Well Location Information

County Milwaukee	WI Unique Well No. Removed Well GMMW-4
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W	Method Code (see instructions) ____
1/4 1/4 SW 1/4 SW or Gov't Lot #	Section 31
	Township 8 N
	Range 21 E ☒ E ☐ W

Well Street Address

4823 North 119th Street

Well City, Village or Town

Milwaukee

Well ZIP Code

53225

Subdivision Name

Lot #

Reason For Removal From Service

Site Closure

WI Unique Well # of Replacement Well

3. Well/Drillhole/Borehole Information

☒ Monitoring Well

☐ Water Well

☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy)

If a Well Construction Report is available, please attach.

Construction Type:

☒ Drilled

☐ Driven (Sandpoint)

☐ Dug

☐ Other (specify): _____

Formation Type:

☒ Unconsolidated Formation

☐ Bedrock

Total Well Depth From Groundsurface (ft.)

18.60

Casing Diameter (in.)

2

Lower Drillhole Diameter (in.)

8.25

Casing Depth (ft.)

18.60

Was well annular space grouted?

☐ Yes

☐ No

☒ Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

6.60

5. Material Used to Fill Well / Drillhole

3/8" Bentonite Chips

2. Facility / Owner Information

Facility Name
Union Pacific Railroad/Butler Yard

Common Well Name

Facility ID (FID or PWS)

241012860

License/Permit/Monitoring #

Original Well Owner

Union Pacific Railroad

Present Well Owner

Union Pacific Railroad

Mailing Address of Present Owner

4823 North 119th Street

City of Present Owner

Milwaukee

State

WI

ZIP Code

53225

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?

☐ Yes

☐ No

☒ N/A

Liner(s) removed?

☐ Yes

☐ No

☒ N/A

Screen removed?

☒ Yes

☐ No

☐ N/A

Casing left in place?

☐ Yes

☒ No

☐ N/A

Was casing cut off below surface?

☐ Yes

☐ No

☒ N/A

Did sealing material rise to surface?

☒ Yes

☐ No

☐ N/A

Did material settle after 24 hours?

☐ Yes

☒ No

☐ N/A

If yes, was hole retopped?

☐ Yes

☐ No

☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source?

☐ Yes

☐ No

☒ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity

☐ Conductor Pipe-Pumped

☒ Screened & Poured (Bentonite Chips)

☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout

☐ Clay-Sand Slurry (11 lb./gal. wt.)

☐ Sand-Cement (Concrete) Grout

☐ Bentonite-Sand Slurry " "

☐ Concrete

☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☒ Bentonite Chips

☐ Bentonite - Cement Grout

☐ Granular Bentonite

☐ Bentonite - Sand Slurry

From (ft.)

To (ft.)

No. Yards, Sacks Sealant or Volume (circle one)

Mix Ratio or Mud Weight

Surface

18.60

25 lbs

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing

ARCADIS

License #

Date of Filling & Sealing (mm/dd/yyyy)

03/30/2010

Street or Route

126 N. Jefferson Street, Suite 400

Telephone Number

414-276-7742

City **Milwaukee**

State **WI**

ZIP Code **53202**

Signature of Person Doing Work

Date Signed

4/14/10

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ **Verification Only of Fill and Seal**

1. Well Location Information

County Milwaukee	WI Unique Well No. Removed Well GMMW-5
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W	
Method Code (see instructions) SW SW Section 31 Township 8 Range 21 ☒ E ☐ W	
1/4 / 1/4 or Gov't Lot #	

Well Street Address

4823 North 119th Street

Well City, Village or Town

Milwaukee

Well ZIP Code

53225

Subdivision Name

Lot #

2. Facility / Owner Information

Facility Name Union Pacific Railroad/Butler Yard	Common Well Name
Facility ID (FID or PWS) 241012860	
License/Permit/Monitoring #	
Original Well Owner Union Pacific Railroad	
Present Well Owner Union Pacific Railroad	
Mailing Address of Present Owner 4823 North 119th Street	
City of Present Owner Milwaukee	State WI ZIP Code 53225

Reason For Removal From Service

Site Closure

WI Unique Well # of Replacement Well

3. Well/Drillhole/Borehole Information

☒ Monitoring Well	Original Construction Date (mm/dd/yyyy)
☐ Water Well	If a Well Construction Report is available, please attach.
☐ Borehole / Drillhole	
Construction Type:	
☒ Drilled	☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____	

Formation Type:

☒ Unconsolidated Formation

☐ Bedrock

Total Well Depth From Groundsurface (ft.)

16.93

Casing Diameter (in.)

2

Lower Drillhole Diameter (in.)

8.25

Casing Depth (ft.)

16.93

Was well annular space grouted?

☐ Yes

☐ No

☒ Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

9.68

Pump and piping removed?

☐ Yes

☐ No

☒ N/A

Liner(s) removed?

☐ Yes

☐ No

☒ N/A

Screen removed?

☒ Yes

☐ No

☐ N/A

Casing left in place?

☐ Yes

☒ No

☐ N/A

Was casing cut off below surface?

☐ Yes

☐ No

☒ N/A

Did sealing material rise to surface?

☒ Yes

☐ No

☐ N/A

Did material settle after 24 hours?

☐ Yes

☒ No

☐ N/A

If yes, was hole retopped?

☐ Yes

☐ No

☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source?

☐ Yes

☐ No

☒ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity

☐ Conductor Pipe-Pumped

☒ Screened & Poured (Bentonite Chips)

☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout

☐ Clay-Sand Slurry (11 lb./gal. wt.)

☐ Sand-Cement (Concrete) Grout

☐ Bentonite-Sand Slurry "

☐ Concrete

☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☒ Bentonite Chips

☐ Bentonite - Cement Grout

☐ Granular Bentonite

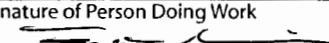
☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	16.93	50 lbs	

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing ARCADIS	License #	Date of Filling & Sealing (mm/dd/yyyy) 03/30/2010	DNR Use Only	
Street or Route 126 N. Jefferson Street, Suite 400		Telephone Number 414-276-7742	Date Received	Noted By
City Milwaukee	State WI	ZIP Code 53202	Comments	
Signature of Person Doing Work 			Date Signed 4/14/10	

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water

☐ Watershed/Wastewater

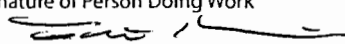
☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ **Verification Only of Fill and Seal**

1. Well Location Information				2. Facility / Owner Information			
County Milwaukee		WI Unique Well No. Removed Well GMMW-6		Facility Name Union Pacific Railroad/Butler Yard		Common Well Name	
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W		Method Code (see instructions) ____		Facility ID (FID or PWS) 241012860		License/Permit/Monitoring #	
1/4 1/4 SW 1/4 SW or Gov't Lot #		Section 31	Township 8 N	Range 21	☒ E ☐ W		
Well Street Address 4823 North 119th Street				Original Well Owner Union Pacific Railroad			
Well City, Village or Town Milwaukee				Present Well Owner Union Pacific Railroad			
Subdivision Name				Mailing Address of Present Owner 4823 North 119th Street			
Well ZIP Code 53225				City of Present Owner Milwaukee		State WI	ZIP Code 53225
Reason For Removal From Service Site Closure				4. Pump, Liner, Screen, Casing & Sealing Material			
WI Unique Well # of Replacement Well _____				Pump and piping removed?		☐ Yes	☐ No ☒ N/A
				Liner(s) removed?		☐ Yes	☐ No ☒ N/A
				Screen removed?		☒ Yes	☐ No ☐ N/A
				Casing left in place?		☐ Yes	☒ No ☐ N/A
				Was casing cut off below surface?		☐ Yes	☐ No ☒ N/A
				Did sealing material rise to surface?		☒ Yes	☐ No ☐ N/A
				Did material settle after 24 hours?		☐ Yes	☒ No ☐ N/A
				If yes, was hole retopped?		☐ Yes	☐ No ☒ N/A
				If bentonite chips were used, were they hydrated with water from a known safe source?		☐ Yes	☐ No ☒ N/A
3. Well/Drillhole/Borehole Information				Required Method of Placing Sealing Material			
☒ Monitoring Well		Original Construction Date (mm/dd/yyyy)		☐ Conductor Pipe-Gravity		☐ Conductor Pipe-Pumped	
☐ Water Well				☒ Screened & Poured (Bentonite Chips)		☐ Other (Explain): _____	
☐ Borehole / Drillhole		If a Well Construction Report is available, please attach.					
Construction Type:				Sealing Materials			
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug				☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)			
☐ Other (specify): _____				☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "			
				☐ Concrete ☒ Bentonite Chips			
Formation Type:				For Monitoring Wells and Monitoring Well Boreholes Only:			
☒ Unconsolidated Formation ☐ Bedrock				☒ Bentonite Chips ☐ Bentonite - Cement Grout			
				☐ Granular Bentonite ☐ Bentonite - Sand Slurry			
Total Well Depth From Groundsurface (ft.) 18.50		Casing Diameter (in.) 2		From (ft.)		To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)
Lower Drillhole Diameter (in.) 8.25		Casing Depth (ft.) 18.50		Surface		18.50	50 lbs
Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown							
If yes, to what depth (feet)?		Depth to Water (feet) 7.79					
5. Material Used to Fill Well / Drillhole							
3/8" Bentonite Chips							
6. Comments							

7. Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing ARCADIS		License #	Date of Filling & Sealing (mm/dd/yyyy) 03/30/2010	Date Received	Noted By
Street or Route 126 N. Jefferson Street, Suite 400		Telephone Number 414-276-7742		Comments	
City Milwaukee	State WI	ZIP Code 53202	Signature of Person Doing Work 	Date Signed 4/14/10	

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Route to:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ **Verification Only of Fill and Seal**

1. Well Location Information

County Milwaukee	WI Unique Well No. Removed Well _____	GMMW-9	
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W		Method Code (see instructions) _____	
1/4 / 1/4 or Gov't Lot #	Section 31	Township 8 N	Range 21 E ☒ E ☐ W

Well Street Address

4823 North 119th Street

Well City, Village or Town

Milwaukee

Subdivision Name

Well ZIP Code

53225

Lot #

Reason For Removal From Service

Site Closure

WI Unique Well # of Replacement Well

3. Well/Drillhole/Borehole Information

☒ Monitoring Well

☐ Water Well

☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy)

If a Well Construction Report is available, please attach.

Construction Type:

☒ Drilled

☐ Driven (Sandpoint)

☐ Dug

☐ Other (specify): _____

Formation Type:

☒ Unconsolidated Formation

☐ Bedrock

Total Well Depth From Groundsurface (ft.)

17.79

Casing Diameter (in.)

2

Lower Drillhole Diameter (in.)

8.25

Casing Depth (ft.)

17.79

Was well annular space grouted?

☐ Yes

☐ No

☒ Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

9.28

5. Material Used to Fill Well / Drillhole

3/8" Bentonite Chips

2. Facility / Owner Information

Facility Name
Union Pacific Railroad/Butler Yard

Common Well Name

Facility ID (FID or PWS)

241012860

License/Permit/Monitoring #

Original Well Owner

Union Pacific Railroad

Present Well Owner

Union Pacific Railroad

Mailing Address of Present Owner

4823 North 119th Street

City of Present Owner

Milwaukee

State

WI

ZIP Code

53225

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?

☐ Yes

☐ No

☒ N/A

Liner(s) removed?

☐ Yes

☐ No

☒ N/A

Screen removed?

☒ Yes

☐ No

☐ N/A

Casing left in place?

☐ Yes

☒ No

☐ N/A

Was casing cut off below surface?

☐ Yes

☐ No

☒ N/A

Did sealing material rise to surface?

☒ Yes

☐ No

☐ N/A

Did material settle after 24 hours?

☐ Yes

☒ No

☐ N/A

If yes, was hole retopped?

☐ Yes

☐ No

☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source?

☐ Yes

☐ No

☒ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity

☐ Conductor Pipe-Pumped

☒ Screened & Poured (Bentonite Chips)

☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout

☐ Clay-Sand Slurry (11 lb./gal. wt.)

☐ Sand-Cement (Concrete) Grout

☐ Bentonite-Sand Slurry " "

☐ Concrete

☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☒ Bentonite Chips

☐ Bentonite - Cement Grout

☐ Granular Bentonite

☐ Bentonite - Sand Slurry

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing

ARCADIS

License #

Date of Filling & Sealing (mm/dd/yyyy)

03/30/2010

Street or Route

126 N. Jefferson Street, Suite 400

Telephone Number

414-276-7742

City **Milwaukee**

State **WI**

ZIP Code **53202**

Signature of Person Doing Work

Date Signed

4/14/10

DNR Use Only

Date Received

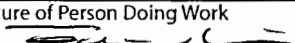
Noted By

Comments

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ Verification Only of Fill and Seal	Route to:	
	☐ Drinking Water	☐ Watershed/Wastewater ☒ Remediation/Redevelopment
	☐ Waste Management	☐ Other: _____

1. Well Location Information				2. Facility / Owner Information			
County Milwaukee		WI Unique Well No. Removed Well		GMMW-10		Facility Name Union Pacific Railroad/Butler Yard	
Latitude / Longitude (Degrees and Minutes)		Method Code (see instructions)		Facility ID (FID or PWS) 241012860		Common Well Name	
1/4 1/4 SW 1/4 SW		Section 31 Township 8 N Range 21 E		License/Permit/Monitoring #		Original Well Owner Union Pacific Railroad	
Well Street Address 4823 North 119th Street		Well ZIP Code 53225		Present Well Owner Union Pacific Railroad		Mailing Address of Present Owner 4823 North 119th Street	
Well City, Village or Town Milwaukee		Subdivision Name		City of Present Owner Milwaukee		State WI	
		Lot #		ZIP Code 53225			
3. Well/Drillhole/Borehole Information							
Reason For Removal From Service Site Closure		WI Unique Well # of Replacement Well		Pump and piping removed? ☐ Yes ☐ No ☒ N/A Liner(s) removed? ☐ Yes ☐ No ☒ N/A Screen removed? ☐ Yes ☒ No ☐ N/A Casing left in place? ☒ Yes ☐ No ☐ N/A			
☒ Monitoring Well ☐ Water Well ☐ Borehole / Drillhole		Original Construction Date (mm/dd/yyyy)		Was casing cut off below surface? ☒ Yes ☐ No ☐ N/A Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☒ N/A			
Construction Type:		If a Well Construction Report is available, please attach.		Required Method of Placing Sealing Material			
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify): _____				☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped ☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____			
Formation Type:				Sealing Materials			
☒ Unconsolidated Formation ☐ Bedrock				☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.) ☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " " ☐ Concrete ☒ Bentonite Chips			
Total Well Depth From Groundsurface (ft.) 17.23		Casing Diameter (in.) 2		For Monitoring Wells and Monitoring Well Boreholes Only:			
Lower Drillhole Diameter (in.) 8.25		Casing Depth (ft.) 17.23		☒ Bentonite Chips ☐ Bentonite - Cement Grout ☐ Granular Bentonite ☐ Bentonite - Sand Slurry			
Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown		Depth to Water (feet) 12.12					
5. Material Used to Fill Well / Drillhole							
3/8" Bentonite Chips		From (ft.) Surface		To (ft.) 17.23		No. Yards, Sacks Sealant or Volume (circle one) 25 lbs	
						Mix Ratio or Mud Weight	
6. Comments							

7. Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing ARCADIS		License #	Date of Filling & Sealing (mm/dd/yyyy) 03/30/2010	Date Received	Noted By
Street or Route 126 N. Jefferson Street, Suite 400		Telephone Number 414-276-7742		Comments	
City Milwaukee	State WI	ZIP Code 53202	Signature of Person Doing Work 	Date Signed 4/14/10	

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water☐ Watershed/Wastewater☒ Remediation/Redevelopment☐ Waste Management☐ Other: _____☐ Verification Only of Fill and Seal

1. Well Location Information

County Milwaukee	WI Unique Well No. Removed Well _____	GMMW-11	
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W		Method Code (see instructions) _____	
1/4 / 1/4 or Gov't Lot #	SW 1/4 SW	Section 31	Township 8 N
		Range 21	☒ E ☐ W

Well Street Address

4823 North 119th Street

Well City, Village or Town

Milwaukee

Well ZIP Code

53225

Subdivision Name

Lot #

2. Facility / Owner Information

Facility Name Union Pacific Railroad/Butler Yard	Common Well Name _____
Facility ID (FID or PWS) 241012860	
License/Permit/Monitoring # _____	
Original Well Owner Union Pacific Railroad	
Present Well Owner Union Pacific Railroad	
Mailing Address of Present Owner 4823 North 119th Street	
City of Present Owner Milwaukee	State WI
ZIP Code 53225	

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☒ No	☐ N/A
Casing left in place?	☒ Yes	☐ No	☐ N/A
Was casing cut off below surface?	☒ Yes	☐ No	☐ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	☒ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity	☐ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips)	☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout	☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout	☐ Bentonite-Sand Slurry " "
☐ Concrete	☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

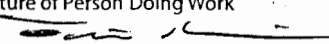
☒ Bentonite Chips	☐ Bentonite - Cement Grout
☐ Granular Bentonite	☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	13.80	25 lbs	

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing ARCADIS	License # _____	Date of Filling & Sealing (mm/dd/yyyy) 03/30/2010	DNR Use Only	
Street or Route 126 N. Jefferson Street, Suite 400			Telephone Number 414-276-7742	Date Received _____
City Milwaukee			State WI	Noted By _____
ZIP Code 53202			Signature of Person Doing Work 	Comments _____
			Date Signed 4/14/10	

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ **Verification Only of Fill and Seal**

1. Well Location Information

County Milwaukee	WI Unique Well No. Removed Well GMMW-13
Latitude / Longitude (Degrees and Minutes) Method Code (see instructions)	
° ' N ° ' W	
1/4 / 1/4 SW 1/4 SW	Section Township Range
or Gov't Lot #	31 8 N 21 ☒ E ☐ W

Well Street Address

4823 North 119th Street

Well City, Village or Town

Milwaukee

Well ZIP Code

53225

Subdivision Name

Lot #

2. Facility / Owner Information

Facility Name Union Pacific Railroad/Butler Yard	Common Well Name
Facility ID (FID or PWS) 241012860	
License/Permit/Monitoring #	
Original Well Owner Union Pacific Railroad	
Present Well Owner Union Pacific Railroad	
Mailing Address of Present Owner 4823 North 119th Street	
City of Present Owner Milwaukee	State ZIP Code WI 53225

Reason For Removal From Service

Site Closure

WI Unique Well # of Replacement Well

3. Well/Drillhole/Borehole Information

☒ Monitoring Well	Original Construction Date (mm/dd/yyyy)
☐ Water Well	If a Well Construction Report is available, please attach.
☐ Borehole / Drillhole	
Construction Type:	
☒ Drilled	☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____	

Formation Type:

☒ Unconsolidated Formation

☐ Bedrock

Total Well Depth From Groundsurface (ft.)

13.18

Casing Diameter (in.)

2

Lower Drillhole Diameter (in.)

8.25

Casing Depth (ft.)

13.18

Was well annular space grouted?

☐ Yes

☐ No

☒ Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

5.45

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes ☐ No ☒ N/A
Liner(s) removed?	☐ Yes ☐ No ☒ N/A
Screen removed?	☐ Yes ☒ No ☐ N/A
Casing left in place?	☒ Yes ☐ No ☐ N/A
Was casing cut off below surface?	☒ Yes ☐ No ☐ N/A
Did sealing material rise to surface?	☒ Yes ☐ No ☐ N/A
Did material settle after 24 hours?	☐ Yes ☒ No ☐ N/A
If yes, was hole retopped?	☐ Yes ☐ No ☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes ☐ No ☒ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity	☐ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips)	☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout	☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout	☐ Bentonite-Sand Slurry " "
☐ Concrete	☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

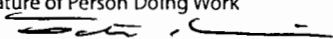
☒ Bentonite Chips	☐ Bentonite - Cement Grout
☐ Granular Bentonite	☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	13.18	25 lbs	

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing ARCADIS	License #	Date of Filling & Sealing (mm/dd/yyyy) 03/30/2010	DNR Use Only	
Street or Route 126 N. Jefferson Street, Suite 400		Telephone Number 414-276-7742	Date Received	Noted By
City Milwaukee	State WI	ZIP Code 53202	Comments	
Signature of Person Doing Work 			Date Signed 4/14/10	

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Route to:

☐ Drinking Water

☐ Watershed/Wastewater

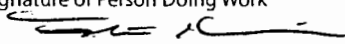
☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ **Verification Only of Fill and Seal**

1. Well Location Information				2. Facility / Owner Information			
County Milwaukee		WI Unique Well No. Removed Well RT-1		Facility Name Union Pacific Railroad/Butler Yard			Common Well Name
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W		Method Code (see instructions) ____		Facility ID (FID or PWS) 241012860			License/Permit/Monitoring #
1/4 / 1/4 or Gov't Lot #	SW	Section 31	Township 8 N	Range 21	☒ E ☐ W	Original Well Owner Union Pacific Railroad	
Well Street Address 4823 North 119th Street				Present Well Owner Union Pacific Railroad			
Well City, Village or Town Milwaukee				Mailing Address of Present Owner 4823 North 119th Street			
Subdivision Name				Well ZIP Code 53225	City of Present Owner Milwaukee		State WI
				ZIP Code 53225			
4. Pump, Liner, Screen, Casing & Sealing Material							
Reason For Removal From Service Site Closure				WI Unique Well # of Replacement Well _____			
3. Well/Drillhole/Borehole Information							
☒ Monitoring Well		Original Construction Date (mm/dd/yyyy)		Pump and piping removed? ☐ Yes ☐ No ☒ N/A			
☐ Water Well				Liner(s) removed? ☐ Yes ☐ No ☒ N/A			
☐ Borehole / Drillhole		If a Well Construction Report is available, please attach.		Screen removed? ☐ Yes ☒ No ☐ N/A			
Construction Type:				Casing left in place? ☒ Yes ☐ No ☐ N/A			
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug				Was casing cut off below surface? ☒ Yes ☐ No ☐ N/A			
☐ Other (specify): _____				Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A			
Formation Type:				Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A			
☒ Unconsolidated Formation ☐ Bedrock				If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A			
Total Well Depth From Groundsurface (ft.) 13.22				If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☒ N/A			
Lower Drillhole Diameter (in.) 8.25				Required Method of Placing Sealing Material			
Casing Diameter (in.) 4				☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped			
Casing Depth (ft.) 13.22				☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____			
Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown				Sealing Materials			
If yes, to what depth (feet)?				☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)			
Depth to Water (feet) 6.60				☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "			
				☐ Concrete ☒ Bentonite Chips			
5. Material Used to Fill Well / Drillhole				For Monitoring Wells and Monitoring Well Boreholes Only:			
3/8" Bentonite Chips				☒ Bentonite Chips ☐ Bentonite - Cement Grout			
				☐ Granular Bentonite ☐ Bentonite - Sand Slurry			
				From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
				Surface	13.22	150 lbs	
6. Comments							

7. Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing ARCADIS		License #	Date of Filling & Sealing (mm/dd/yyyy) 03/30/2010	Date Received	Noted By
Street or Route 126 N. Jefferson Street, Suite 400		Telephone Number 414-276-7742	Comments		
City Milwaukee	State WI	ZIP Code 53202	Signature of Person Doing Work 	Date Signed 4/14/10	

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Route to:

☐ Drinking Water

☐ Watershed/Wastewater

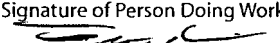
☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

☐ Verification Only of Fill and Seal

1. Well Location Information					2. Facility / Owner Information								
County Milwaukee		WI Unique Well No. Removed Well		RT-2		Facility Name Union Pacific Railroad/Butler Yard			Common Well Name				
Latitude / Longitude (Degrees and Minutes) ____° ____' ____" N ____° ____' ____" W				Method Code (see instructions)		Facility ID (FID or PWS) 241012860			License/Permit/Monitoring #				
1/4 / 1/4 SW 1/4 SW		Section 31		Township 8 N		Range 21		☒ E ☐ W		Original Well Owner Union Pacific Railroad			
Well Street Address 4823 North 119th Street						Present Well Owner Union Pacific Railroad							
Well City, Village or Town Milwaukee						Mailing Address of Present Owner 4823 North 119th Street							
Subdivision Name						City of Present Owner Milwaukee			State WI		ZIP Code 53225		
Reason For Removal From Service Site Closure						4. Pump, Liner, Screen, Casing & Sealing Material							
WI Unique Well # of Replacement Well						Pump and piping removed? ☐ Yes ☐ No ☒ N/A							
						Liner(s) removed? ☐ Yes ☐ No ☒ N/A							
						Screen removed? ☐ Yes ☒ No ☐ N/A							
						Casing left in place? ☒ Yes ☐ No ☐ N/A							
						Was casing cut off below surface? ☒ Yes ☐ No ☐ N/A							
						Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A							
						Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A							
						If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A							
						If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☒ N/A							
3. Well/Drillhole/Borehole Information						Required Method of Placing Sealing Material							
☒ Monitoring Well		Original Construction Date (mm/dd/yyyy)				☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped							
☐ Water Well		If a Well Construction Report is available, please attach.				☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____							
☐ Borehole / Drillhole													
Construction Type:						Sealing Materials							
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug						☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)							
☐ Other (specify): _____						☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "							
						☐ Concrete ☒ Bentonite Chips							
Formation Type:						For Monitoring Wells and Monitoring Well Boreholes Only:							
☒ Unconsolidated Formation ☐ Bedrock						☒ Bentonite Chips ☐ Bentonite - Cement Grout							
						☐ Granular Bentonite ☐ Bentonite - Sand Slurry							
Total Well Depth From Groundsurface (ft.) 10.82			Casing Diameter (in.) 4			From (ft.) Surface		To (ft.) 10.82		No. Yards, Sacks Sealant or Volume (circle one) 150 lbs		Mix Ratio or Mud Weight	
Lower Drillhole Diameter (in.) 8.25			Casing Depth (ft.) 10.82										
Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown													
If yes, to what depth (feet)?						Depth to Water (feet) 5.89							
5. Material Used to Fill Well / Drillhole													
3/8" Bentonite Chips													
6. Comments													

7. Supervision of Work					DNR Use Only	
Name of Person or Firm Doing Filling & Sealing ARCADIS			License #	Date of Filling & Sealing (mm/dd/yyyy) 03/29/2010		Date Received
Street or Route 126 N. Jefferson Street, Suite 400			Telephone Number 414-276-7742		Noted By	
City Milwaukee			State WI	ZIP Code 53202	Comments	
Signature of Person Doing Work 					Date Signed 4/14/10	

ARCADIS

Appendix B

Photographs



PHOTOGRAPH 1: MW-3 well abandonment.



PHOTOGRAPH 2: MW-3 post-abandonment.



PHOTOGRAPH 3: VELR System #2 looking south, pre-decommissioning.



PHOTOGRAPH 4: VELR System #1 pre-decommissioning.



PHOTOGRAPH 5: VELR System #2 lid being removed.



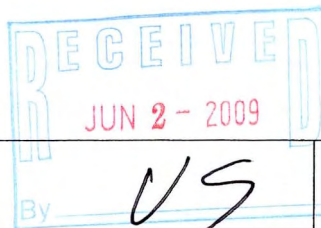
PHOTOGRAPH 6: Blower and knock out tank removed at VELR System #1.



PHOTOGRAPH 7: VELR System #1 post-decommissioning.



PHOTOGRAPH 8: VELR System #2 post-decommissioning.



State of Wisconsin
Department of Natural Resources
<http://dnr.wi.gov>

GIS Registry Checklist

Form 4400-245 (R 4/08)

Page 1 of 3

This Adobe Fillable form is intended to provide a list of information that is required for evaluation for case closure. It is to be used in conjunction with Form 4400-202, Case Closure Request. The closure of a case means that the Department has determined that no further response is required at that time based on the information that has been submitted to the Department.

NOTICE: Completion of this form is mandatory for applications for case closure pursuant to ch. 292, Wis. Stats. and ch. NR 726, Wis. Adm. Code, including cases closed under ch. NR 746 and ch. NR 726. The Department will not consider, or act upon your application, unless all applicable sections are completed on this form and the closure fee and any other applicable fees, required under ch. NR 749, Wis. Adm. Code, Table 1 are included. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than reviewing closure requests and determining the need for additional response action. The Department may provide this information to requesters as required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

BRRTS #: 02-41-257209, 02-41-000967, 02-41-000260

ACTIVITY NAME: UNION PACIFIC BUTLER YARD FACILITY

WTM COORDINATES: X: 677585 Y: 294478

CLOSURE DOCUMENTS (the Department adds these items to the final GIS packet for posting on the Registry)

- ☐ Closure Letter
- ☐ Maintenance Plan (if activity is closed with a land use limitation or condition (land use control) under s. 292.12, Wis. Stats.)
- ☐ Conditional Closure Letter
- ☐ Certificate of Completion (COC) for VPLE sites

SOURCE LEGAL DOCUMENTS

- ☒ **Deed:** The most recent deed as well as legal descriptions, for the **Source Property** (where the contamination originated). Deeds for other, off-source (off-site) properties are located in the **Notification** section.

Note: If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.

- ☒ **Certified Survey Map:** 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. (lots on subdivided or platted property (e.g. lot 2 of xyz subdivision)).

Figure #: **Title:** Donahue Certified Survey Map No. 1957

- ☒ **Signed Statement:** A statement signed by the Responsible Party (RP), which states that he or she believes that the attached legal description accurately describes the correct contaminated property.

MAPS (meeting the visual aid requirements of s. NR 716.15(2)(h))

Maps must be no larger than 8.5 x 14 inches unless the map is submitted electronically.

- ☒ **Location Map:** A map outlining all properties within the contaminated site boundaries on a U.S.G.S. topographic map or plat map in sufficient detail to permit easy location of all parcels. If groundwater standards are exceeded, include the location of all potable wells within 1200 feet of the site.

Note: Due to security reasons municipal wells are not identified on GIS Packet maps. However, the locations of these municipal wells must be identified on Case Closure Request maps.

Figure #: 1 **Title: Property and Site Location Map**

- ☒ **Detailed Site Map:** A map that shows all relevant features (buildings, roads, individual property boundaries, contaminant sources, utility lines, monitoring wells and potable wells) within the contaminated area. This map is to show the location of all contaminated public streets, and highway and railroad rights-of-way in relation to the source property and in relation to the boundaries of groundwater contamination exceeding a ch. NR 140 Enforcement Standard (ES), and/or in relation to the boundaries of soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Levels (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.

Figure #: 2 **Title: Site Layout Map**

- ☒ **Soil Contamination Contour Map:** For sites closing with residual soil contamination, this map is to show the location of all contaminated soil and a single contour showing the horizontal extent of each area of contiguous residual soil contamination that exceeds a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.

Figure #: 8 thru 12 **Title: Soil Figures**

BRRTS #: 02-41-257209, 02-41-000967, 02-41-000260

ACTIVITY NAME: UNION PACIFIC BUTLER YARD FACILITY

MAPS (continued)

- ☒ **Geologic Cross-Section Map:** A map showing the source location and vertical extent of residual soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL). If groundwater contamination exceeds a ch. NR 140 Enforcement Standard (ES) when closure is requested, show the source location and vertical extent, water table and piezometric elevations, and locations and elevations of geologic units, bedrock and confining units, if any.

Figure #: 4 Title: Geologic Cross-Section A-A'

Figure #: 5 Title: Geologic Cross-Section B-B'

- ☒ **Groundwater Isoconcentration Map:** For sites closing with residual groundwater contamination, this map shows the horizontal extent of all groundwater contamination exceeding a ch. NR140 Preventive Action Limit (PAL) and an Enforcement Standard (ES). Indicate the direction and date of groundwater flow, based on the most recent sampling data.

Note: This is intended to show the total area of contaminated groundwater.

Figure #: 15 Title: Summary of Groundwater VOC and PAH Analytical Results

- ☒ **Groundwater Flow Direction Map:** A map that represents groundwater movement at the site. If the flow direction varies by more than 20° over the history of the site, submit 2 groundwater flow maps showing the maximum variation in flow direction.

Figure #: 6 Title: Estimated Groundwater Elevation Map January 3, 2007

Figure #: Title:

TABLES (meeting the requirements of s. NR 716.15(2)(h)(3))

Tables must be no larger than 8.5 x 14 inches unless the table is submitted electronically. Tables must not contain shading and/or cross-hatching. The use of **BOLD** or *ITALICS* is acceptable.

- ☒ **Soil Analytical Table:** A table showing remaining soil contamination with analytical results and collection dates.
Note: This is one table of results for the contaminants of concern. Contaminants of concern are those that were found during the site investigation, that remain after remediation. It may be necessary to create a new table to meet this requirement.

Table #: 1, 2, 3 Title: Summary of Soil Analytical Results

- ☒ **Groundwater Analytical Table:** Table(s) that show the most recent analytical results and collection dates, for all monitoring wells and any potable wells for which samples have been collected.

Table #: 4, 5 Title: Summary of Groundwater Analytical Results

- ☒ **Water Level Elevations:** Table(s) that show the previous four (at minimum) water level elevation measurements/dates from all monitoring wells. If present, free product is to be noted on the table.

Table #: 6 Title: Groundwater Elevation Data

IMPROPERLY ABANDONED MONITORING WELLS

For each monitoring well not properly abandoned according to requirements of s. NR 141.25 include the following documents.

Note: If the site is being listed on the GIS Registry for only an improperly abandoned monitoring well you will only need to submit the documents in this section for the GIS Registry Packet.

☐ **Not Applicable**

☐ **Site Location Map:** A map showing all surveyed monitoring wells with specific identification of the monitoring wells which have not been properly abandoned.

Note: If the applicable monitoring wells are distinctly identified on the Detailed Site Map this Site Location Map is not needed.

Figure #: Title:

☐ **Well Construction Report:** Form 4440-113A for the applicable monitoring wells.

☐ **Deed:** The most recent deed as well as legal descriptions for each property where a monitoring well was not properly abandoned.

☐ **Notification Letter:** Copy of the notification letter to the affected property owner(s).

BRRTS #: 02-41-257209, 02-41-000967, 02-41-000260

ACTIVITY NAME: UNION PACIFIC BUTLER YARD FACILITY

NOTIFICATIONS

Source Property

- ☐ **Letter To Current Source Property Owner:** If the source property is owned by someone other than the person who is applying for case closure, include a copy of the letter notifying the current owner of the source property that case closure has been requested.
- ☐ **Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying current source property owner.

Off-Source Property

Group the following information per individual property and label each group according to alphabetic listing on the "Impacted Off-Source Property" attachment.

- ☐ **Letter To "Off-Source" Property Owners:** Copies of all letters sent by the Responsible Party (RP) to owners of properties with groundwater exceeding an Enforcement Standard (ES), and to owners of properties that will be affected by a land use control under s. 292.12, Wis. Stats.

Note: Letters sent to off-source properties regarding residual contamination must contain standard provisions in Appendix A of ch. NR 726.

Number of "Off-Source" Letters:

- ☐ **Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying any off-source property owner.
- ☐ **Deed of "Off-Source" Property:** The most recent deed(s) as well as legal descriptions, for all affected deeded **off-source** property(ies). This does not apply to right-of-ways.
Note: If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.
- ☐ **Letter To "Governmental Unit/Right-Of-Way" Owners:** Copies of all letters sent by the Responsible Party (RP) to a city, village, municipality, state agency or any other entity responsible for maintenance of a public street, highway, or railroad right-of-way, within or partially within the contaminated area, for contamination exceeding a groundwater Enforcement Standard (ES) and/or soil exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL).

Number of "Governmental Unit/Right-Of-Way Owner" Letters:

...and the said parties of the first part, for and in consideration of the sum of Two Hundred Eighty one and 2/3 Dollars, in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, and the said party of the second part forever released and discharged therefrom, have granted, bargained, sold, remised, released, conveyed, aliened and confirmed and by these presents do grant, bargain, sell, remise, release, convey, alien and confirm unto the said party of the second part, and to his successors and assigns forever, all the following described lot piece or parcel of land situated in the County of Milwaukee and State of Wisconsin and known and described as follows to wit: The South West quarter of the South West quarter of Section Thirty one (31) in Township number Eight (8) North Range number Twenty one (21) East containing Twenty one and one eighth (21 1/8) acres more or less. Reserving however the buildings thereon, with right to remove same, on or before March 1st 1910. Together with all and singular the hereditaments and appurtenances thereto belonging or in any way appertaining, and the recreation and diversions, some other and some different, uses and profits thereof and all the estate, right, title, interest, claim and demand whatever, of the said party of the first part, within the foregoing specified limits above said.

Witness my hand and seal this 19th day of October A.D. 1909.
 at 10th 61st St. W.
 Chas. W. Register
 Public Register Deputy

John M. Clarke
 Notary Public
 Mil. Co. Wis.
 Seal My Commission expires Oct 24, 1917

J. M. Gross & wife

to Mil. Sparta & N. Co. Ry. Co.
 Ch. W.

This Indenture, made this 19th day of October in the year of our Lord one thousand nine hundred and nine between Jacob Weston Gross and Elabona Gross his wife of the town of Granville in the County of Milwaukee and State of Wisconsin parties of the first part, and the Milwaukee Sparta and Northwestern Railway Company party of the second part. Witnesseth That the said parties of the first part, for and in consideration of the sum of Two Hundred Eighty one and 2/3 Dollars, in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, and the said party of the second part forever released and discharged therefrom, have granted, bargained, sold, remised, released, conveyed, aliened and confirmed and by these presents do grant, bargain, sell, remise, release, convey, alien and confirm unto the said party of the second part, and to his successors and assigns forever, all the following described lot piece or parcel of land situated in the County of Milwaukee and State of Wisconsin and known and described as follows to wit: The South West quarter of the South West quarter of Section Thirty one (31) in Township number Eight (8) North Range number Twenty one (21) East containing Twenty one and one eighth (21 1/8) acres more or less. Reserving however the buildings thereon, with right to remove same, on or before March 1st 1910. Together with all and singular the hereditaments and appurtenances thereto belonging or in any way appertaining, and the recreation and diversions, some other and some different, uses and profits thereof and all the estate, right, title, interest, claim and demand whatever, of the said party of the first part, within the foregoing specified limits above said.

...the first part of the second part its successors and assigns for ever and the said Jacob Martin Gross and Sabina Gross his wife parties of the first part for themselves their heirs, executors and administrators do consent grant bargain and agree to and with the said party of the second part its successors and assigns that at the time of the unsealing and delivery of these presents they are well seized of the premises above conveyed as of a good sure perfect absolute and indefeasible estate of inheritance in law in fee simple and have good right full power and lawful authority to grant bargain sell and convey the same in manner and form aforesaid and that the same are free and clear from all former and other grants bargains sales leases, estates, covenants and encumbrances of what kind or nature soever and the above bargained premises in the quiet and peaceable possession of the said party of the second part its successors and assigns against all and every other person or persons lawfully claiming or to claim the whole or any part thereof the said parties of the first part shall and will warrant and defend. And the said parties of the first part hereby expressly waive and release any and all right of homestead in the premises hereinbefore described and any and all benefits privileges advantages and exemptions under and by virtue of the Statutes of the State of Wisconsin in reference to homesteads and as damages to the lands of said parties of the first part which have been or may hereafter be caused by reason of the construction maintenance and operation of a railroad on said granted premises or by reason of any lawful use whatsoever of said granted premises by said party of the second part its successors or assigns. In Witness Whereof the said parties of the first part have hereunto set their hands and seals the day and year first above written.

Signed sealed and Delivered

in Presence of

J. M. Clarke

Jacob Martin Gross (seal)

H. M. Cleveland

Sabina Gross (seal)

State of Wisconsin ss

County of Milwaukee } I, John M. Clarke a Notary Public in and for said County in the State aforesaid Do hereby Certify that Jacob Martin Gross and Sabina Gross his wife personally known to me to be the identical persons named and described in and whose names are subscribed to the foregoing instrument as grantors and who appeared before me the day in person and acknowledged to me that they signed sealed and delivered said instrument as and that the same is their free and voluntary act and deed for the uses and purposes therein set forth including the release and waiver of right of homestead surrounding land and material and this first day of

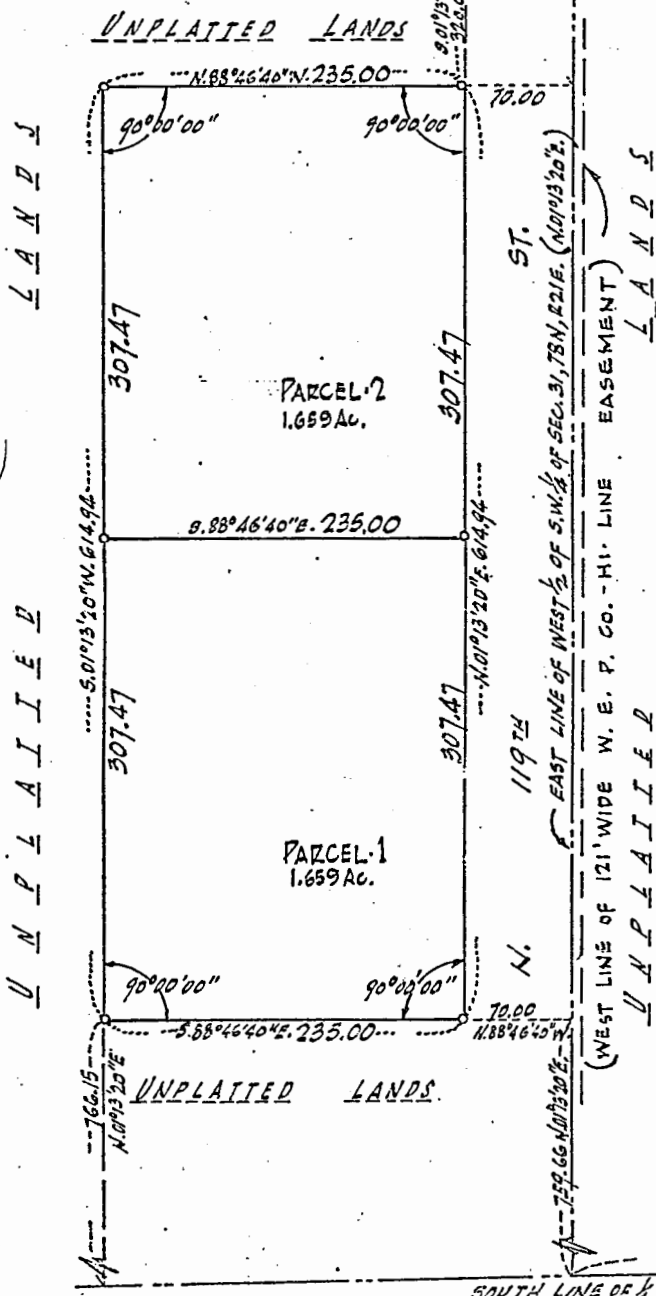
(Signed) John M. Clarke

Witnessed Oct 18-1899
J. M. Clarke a. M.
H. M. Cleveland
Sabina Gross (seal)

RECORDED
CERTIFIED SURVEY MAP
COPIED FROM
RECORDING RECEIPT
DATE RECORDED 11/23/72
MAP NO. 957
DOCUMENT NO. 8723022
REEL
IMAGE
DEPT. OF CITY DEVELOPMENT

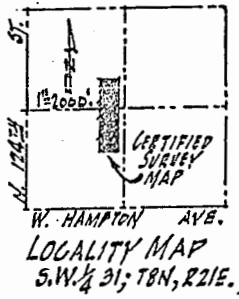
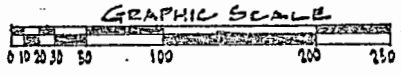
ONAHUE CERTIFIED SURVEY MAP NO. 1957
TAX KEY NO. 218-9991-113
BEING A DIVISION OF LANDS IN THE WEST 1/2 OF THE S W 1/4 OF SECTION 31,
T 8 N, R 21 E, IN THE CITY OF MILWAUKEE, MILWAUKEE COUNTY, WISCONSIN.

ZONING IND. - D - 40



0 - DENOTES 1 INCH DIA. IRON
PIPE, 24 INCHES IN LENGTH,
WGT. 1.13 LBS. PER LINEAL FOOT.
DIMENSIONS SHOWN ARE MEA-
SURED TO THE NEAREST HUND-
REDTH OF A FOOT.

NATIONAL SURVEY SERVICE, INC.
CIVIL ENGINEERS AND SURVEYORS
3470 N. 127TH ST. (414) 781-3010
BROOKFIELD, WISCONSIN 53005



SCALE
1" = 100'

S.E. CORNER
S.W. 1/4 SEC. 31;
T8N, R21E.

--- DUE WEST 1368.84 ---

SOUTH LINE OF 1/4 SEC. ALSO C. OF W. HAMPTON AVE.

RECEIVED

OCT 4 1972

DEPT. OF
CITY DEVELOPMENT

CITY FEE DEPOSITED
5⁰⁰ OCT. 4 1972 G.E.S.

DEPT. OF CITY
DEVELOPMENT
OF MILWAUKEE
OCT 4 1972
STAFF
APPROVED
Carl H. Quast

BUREAU OF ENGINEERS
APPROVED
10-13-72
CHIEF DRAFTSMAN
IN CHARGE SEWER ENGR. DIV.
CITY ENGINEER
10/13/72

DONAHUE CERTIFIED SURVEY MAP NO. _____

TAX KEY NO. 218-9991-118

BEING A DIVISION OF LANDS IN THE WEST 1/2 OF THE S W 1/4 OF SECTION 31,
T 8 N, R 21 E, IN THE CITY OF MILWAUKEE, MILWAUKEE COUNTY, WISCONSIN.

SURVEYOR'S CERTIFICATE
STATE OF WISCONSIN

:SS
MILWAUKEE COUNTY [

I, KENNETH E BERKE, registered Wisconsin Land Surveyor, being
first duly sworn, on oath do hereby depose and say:

THAT I have surveyed, divided and mapped a part of the West 1/2
of the S W 1/4 of Section 31, T 8 N, R 21 E, in the City of Milwaukee,
Milwaukee County, Wisconsin, which is bounded and described as follows:

Commencing at a point on the center line of the Chicago and Northwestern
Railway Company Spur Track ICC No. 213, as said spur track is now located
distant 70.00 ft. North 88° 46' 40" West, measured at right angles from
the East line of said West 1/2 of the S W 1/4 of Section 31; thence
South 01° 13' 20" West and parallel with said East line a distance of 320.0
ft. to the point of beginning of the parcel of land herein described;
thence North 88° 46' 40" West at right angles to the last described course
a distance of 235.00 ft.; thence South 01° 13' 20" West 614.94 ft. and
parallel with said East line to a point on a line drawn at right angles to
said East line at a point thereon distant 766.15 ft. North 01° 13' 20" East
from its intersection with the South line of said Section; thence
South 88° 46' 40" East along said last described right angle a distance
of 235.00 ft. to a point distant 70.00 ft. North 88° 46' 40" West, measured
at right angles from the East line of the West 1/2 of the S W 1/4 of
Section 31; thence North 01° 13' 20" East 614.94 ft. and parallel with
said East line to the point of beginning.

THAT I have made such survey, land division and map by the direc-
tion of MARY A DONAHUE, owner of said land.

THAT such map is a correct representation of all the exterior
boundaries of the land surveyed and the land-division thereof made..

THAT I have fully complied with the provisions of Chapter 236
of the Wisconsin Statutes and Chapter 9 of the Milwaukee Code of Ordinances
in surveying, dividing and mapping the same.

Subscribed and sworn to before me this

2 day of October, 1972..

Irene M Metzger

Irene M Metzger, Notary Public
My Commission Expires August 18, 1974.

Kenneth E Berke

Kenneth E Berke, Surveyor S 107

OWNER'S CERTIFICATE

AS OWNER, I hereby certify that I caused the land described on
this map to be surveyed, divided and mapped as represented on this map in
accordance with the requirements of Section 9-3.5 of the City of Milwaukee
Code of Ordinances.

DONAHUE CERTIFIED SURVEY MAP NO. _____

TAX KEY NO. 218-9991-118

BEING A DIVISION OF LANDS IN THE WEST 1/2 OF THE S W 1/4 OF SECTION 31,
T 8 N, R 21 E, IN THE CITY OF MILWAUKEE, MILWAUKEE COUNTY, WISCONSIN.

In consideration of the approval of the map by the Common Council,
the undersigned covenants and agrees to and with the City of Milwaukee that
no lot or parcel as hereon set forth shall at any time subsequent to the
recording of this map be in any manner divided, described, or conveyed so
as to result in lots, parcels of building sites having dimensions, area or
courses other than as herein set forth, unless said divisions, descriptions
or conveyances are first approved by the Common Council of the City of
Milwaukee, and that such restrictions are binding on the undersigned, his,
her, or their heirs and assigns. Such approval, however, shall not be
required for the taking of land for public purposes.

THAT all utility lines to provide electric power and telephone
service to all lots in the Certified Survey Map shall be installed under-
ground in easements provided therefore.

WITNESS the hand and seal of said owner this 2nd day of October,
1972.

In The Presence of:

Betty J. Blackley

x Mary Donahue
Mary Donahue

John C. Bergman

STATE OF WISCONSIN

:SS

MILWAUKEE COUNTY [

PERSONALLY came before me this 2nd day of October, 1972, the
above named MARY DONAHUE, to me known to be the person who executed the fore-
going instrument and acknowledged the same.

Louise Neustadter [SEAL]

Notary Public, State of Wisconsin
My Commission Expires 3-2-75

My Commission is Permanent.

CERTIFICATE OF CITY TREASURER

STATE OF WISCONSIN

:SS

MILWAUKEE COUNTY [

I, JOSEPH J. KRUEGER, being the duly elected, qualified, and acting
City Treasurer of the City of Milwaukee, do hereby certify that in accordance
with the records in the office of the City Treasurer of the City of Milwaukee
there are no unpaid taxes and that the method of payment on any special
assessments relating to the land included in this Certified Survey Map has
been agreed upon between the Owner and the City of Milwaukee.

October 23, 1972
Date

Joseph J. Krueger [SEAL]
Joseph J. Krueger, City Treasurer

466
408
44
DONAHUE CERTIFIED SURVEY MAP NO. _____

TAX KEY NO. 218-9991-118.

BEING A DIVISION OF LANDS IN THE WEST 1/2 OF THE S W 1/4 OF SECTION 31,
T 8 N, R 21 E, IN THE CITY OF MILWAUKEE, MILWAUKEE COUNTY, WISCONSIN.

COMMON COUNCIL RESOLUTION

Be it noted that this Certified Survey Map, submitted under File
No. 72-973, being a division of lands in the West 1/2 of the
S W 1/4 of Section 31 T 8 N, R 21 E, in the City of Milwaukee, Milwaukee
County, Wisconsin, having been approved by the Department of City Develop-
ment, has been approved by the Milwaukee Common Council.

I hereby certify that the foregoing Certified Survey Map was
approved by Common Council Resolution on NOV 14 1972

Allen R. Schumpp
City Clerk, City of Milwaukee.

Henry W. Maier
Henry Maier, Mayor

May 14, 2009

Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
Southeast Region
2300 North Dr. Martin Luther King, Jr. Drive
Milwaukee, Wisconsin 53212

To the Bureau for Remediation and Redevelopment:

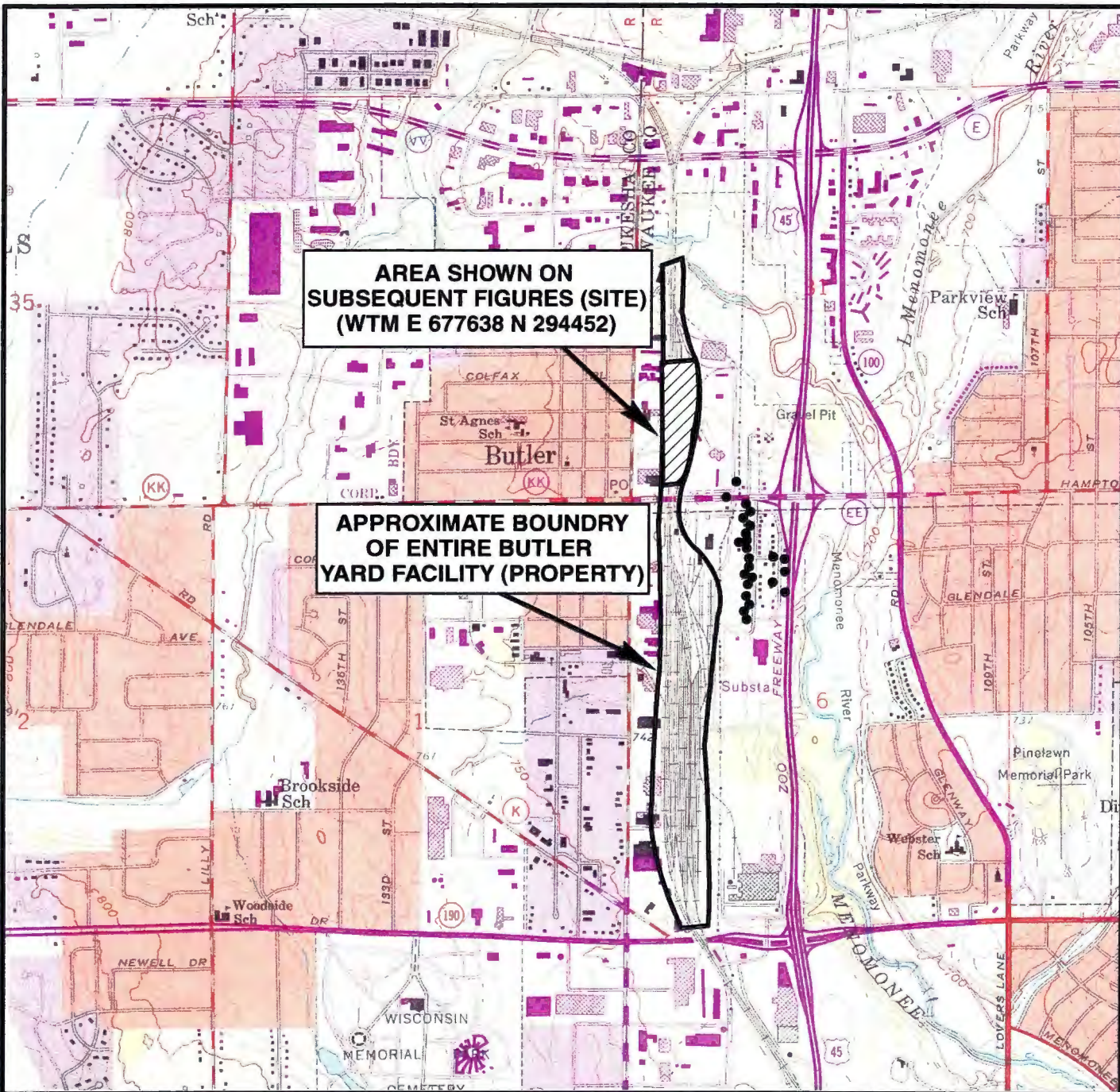
Union Pacific Railroad believes that legal descriptions for all of the properties within or partially within the contaminated site's boundaries that have soil contamination exceeding generic or site-specific residual contaminant levels as determined under ss. NR 720.09, 720.11 and 720.19, at the time that case closure is requested, other than public street or highway rights-of-way or railroad rights-of-way, have been submitted to the agency with administrative authority for the site as an attachment to this letter and part of the soil GIS registry to the case close out report.

If you have any questions about Union Pacific Railroad's position in this matter, please contact the undersigned at (281) 350-7197, at your earliest convenience.

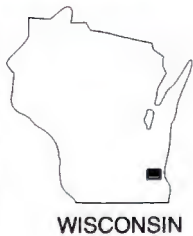
Sincerely,



Geoffrey Reeder
Union Pacific Railroad

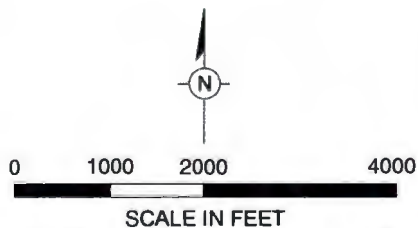


SOURCE: USGS 7.5 Minute Topographic Map, WAUWATOSA, WISCONSIN Quadrangle, 1976



WISCONSIN

• PRIVATE WELL LOCATIONS



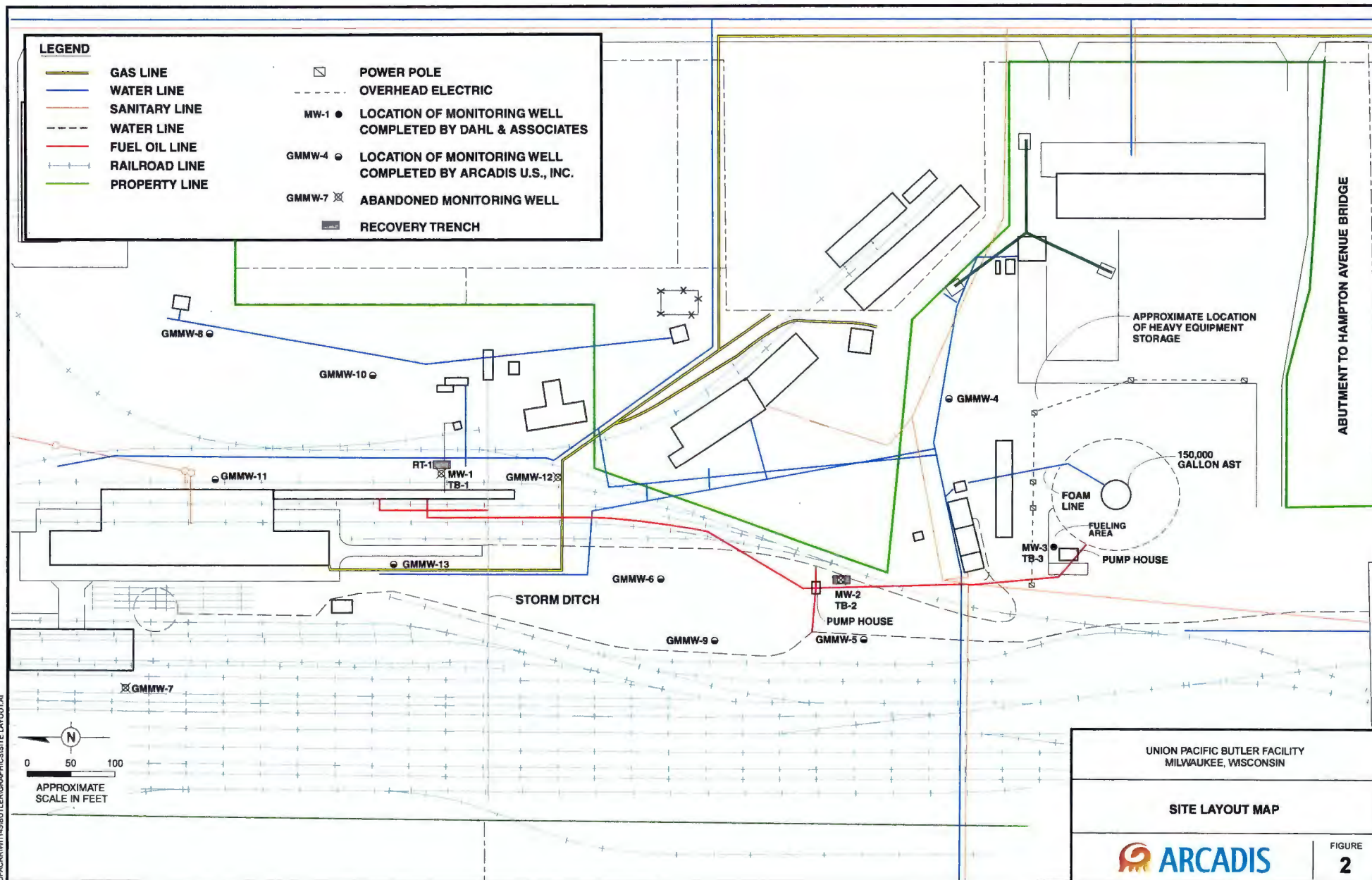
UNION PACIFIC BUTLER FACILITY
MILWAUKEE, WISCONSIN

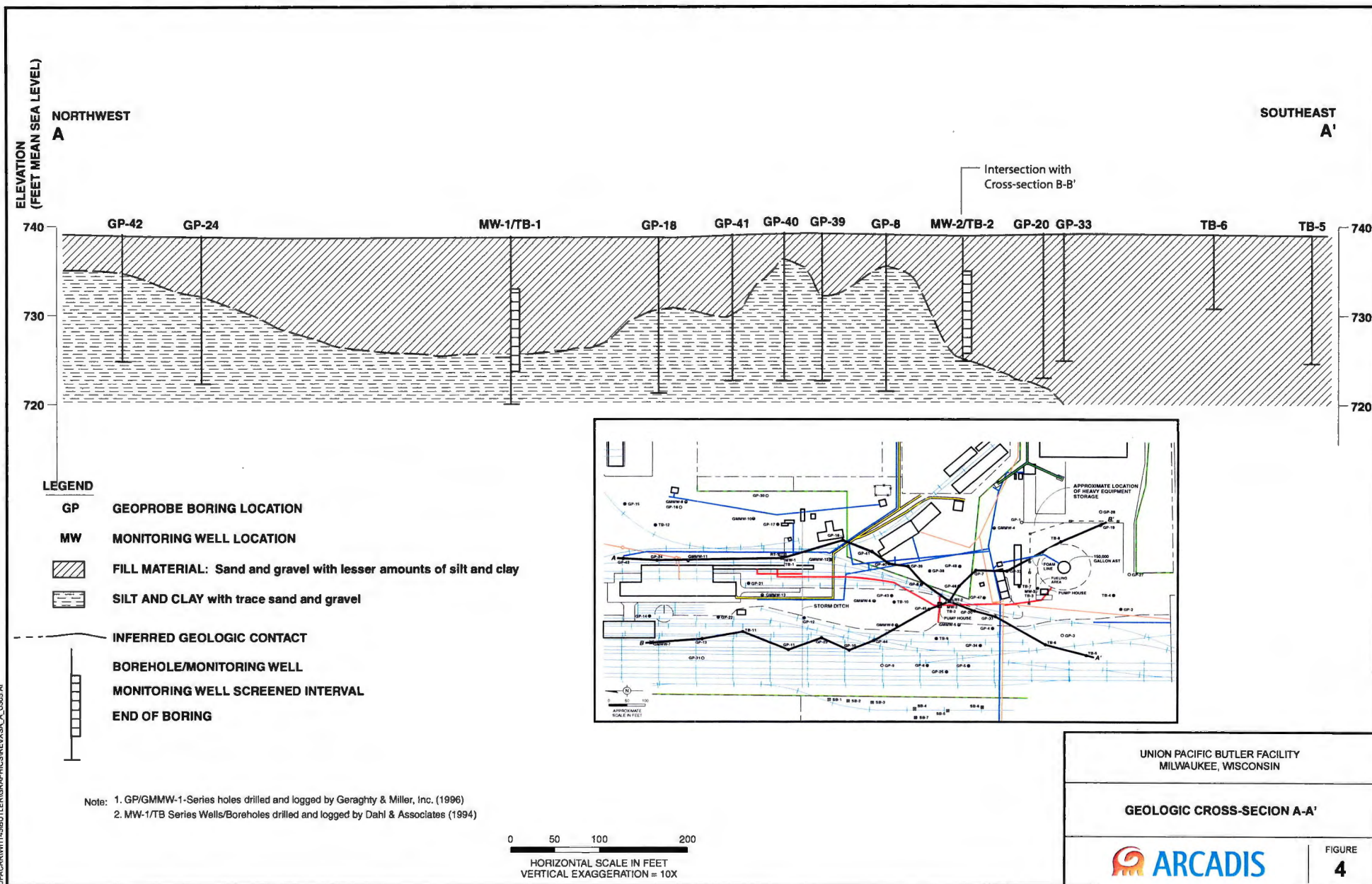
PROPERTY AND SITE LOCATION MAP



FIGURE

1



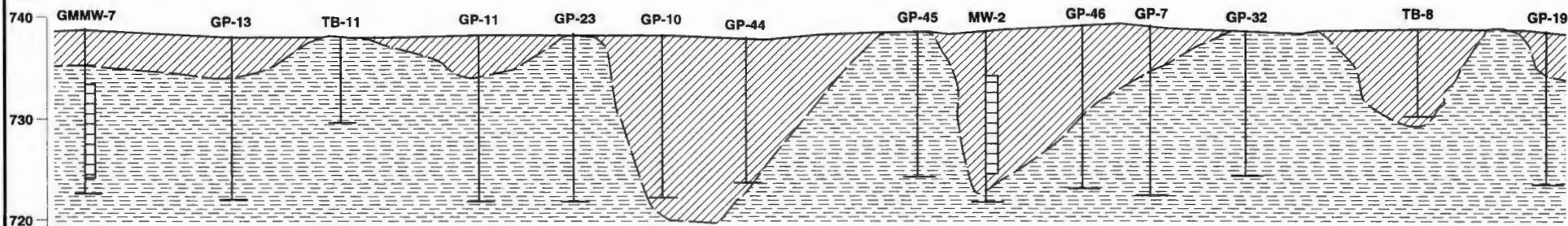


ELEVATION
(FEET MEAN SEA LEVEL)

WEST
B

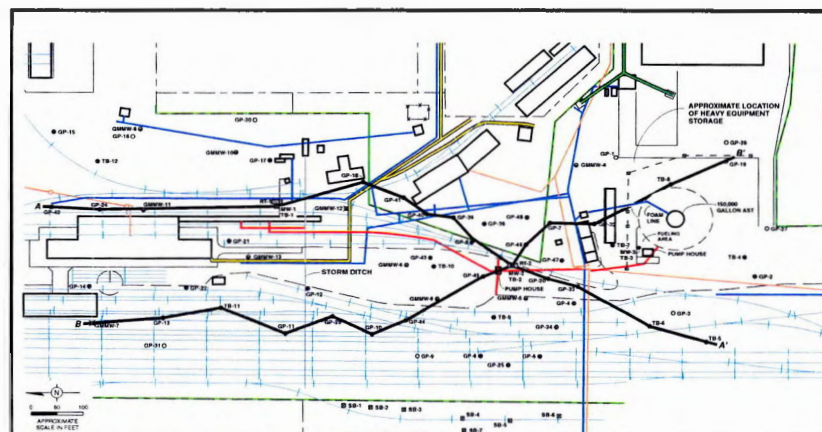
Intersection with
Cross-section A-A'

EAST
B'



LEGEND

- GP GEOPROBE BORING LOCATION
- MW MONITORING WELL LOCATION
- FILL MATERIAL: Sand and gravel with lesser amounts of silt and clay
- SILT AND CLAY with trace sand and gravel
- INFERRED GEOLOGIC CONTACT
- BOREHOLE/MONITORING WELL
- MONITORING WELL SCREENED INTERVAL
- END OF BORING



UNION PACIFIC BUTLER FACILITY
MILWAUKEE, WISCONSIN

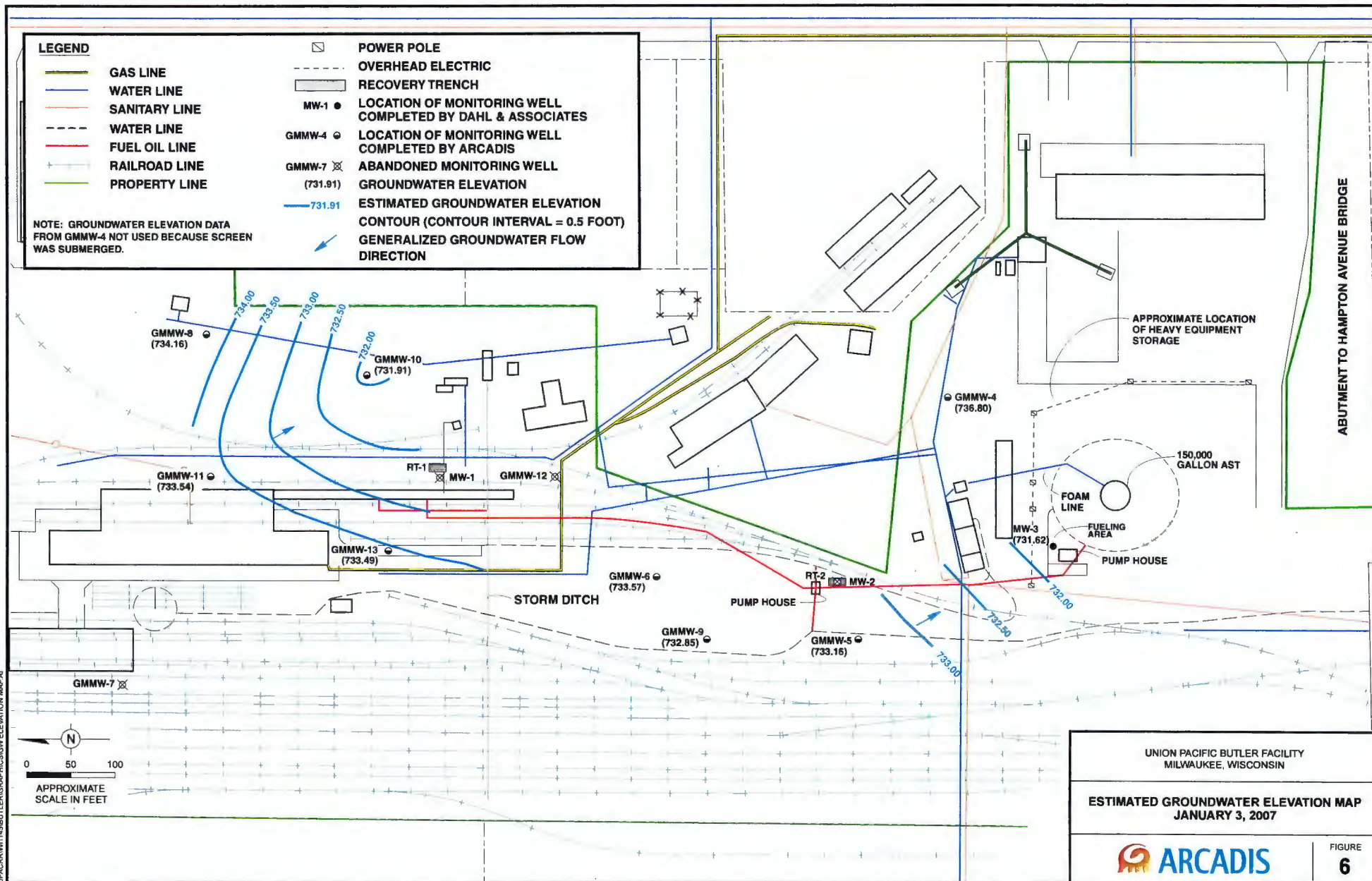
GEOLOGIC CROSS-SECTION B-B'

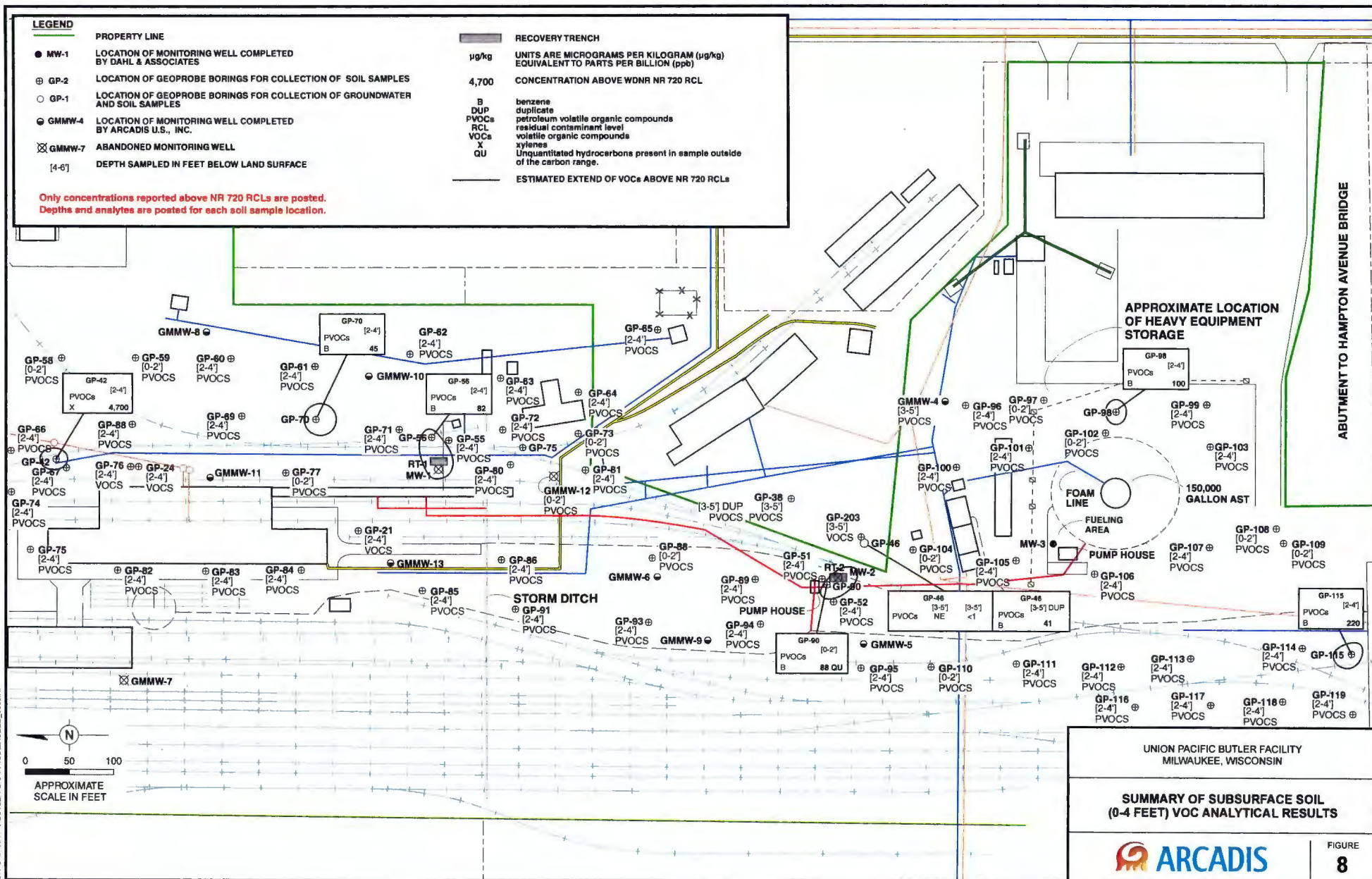


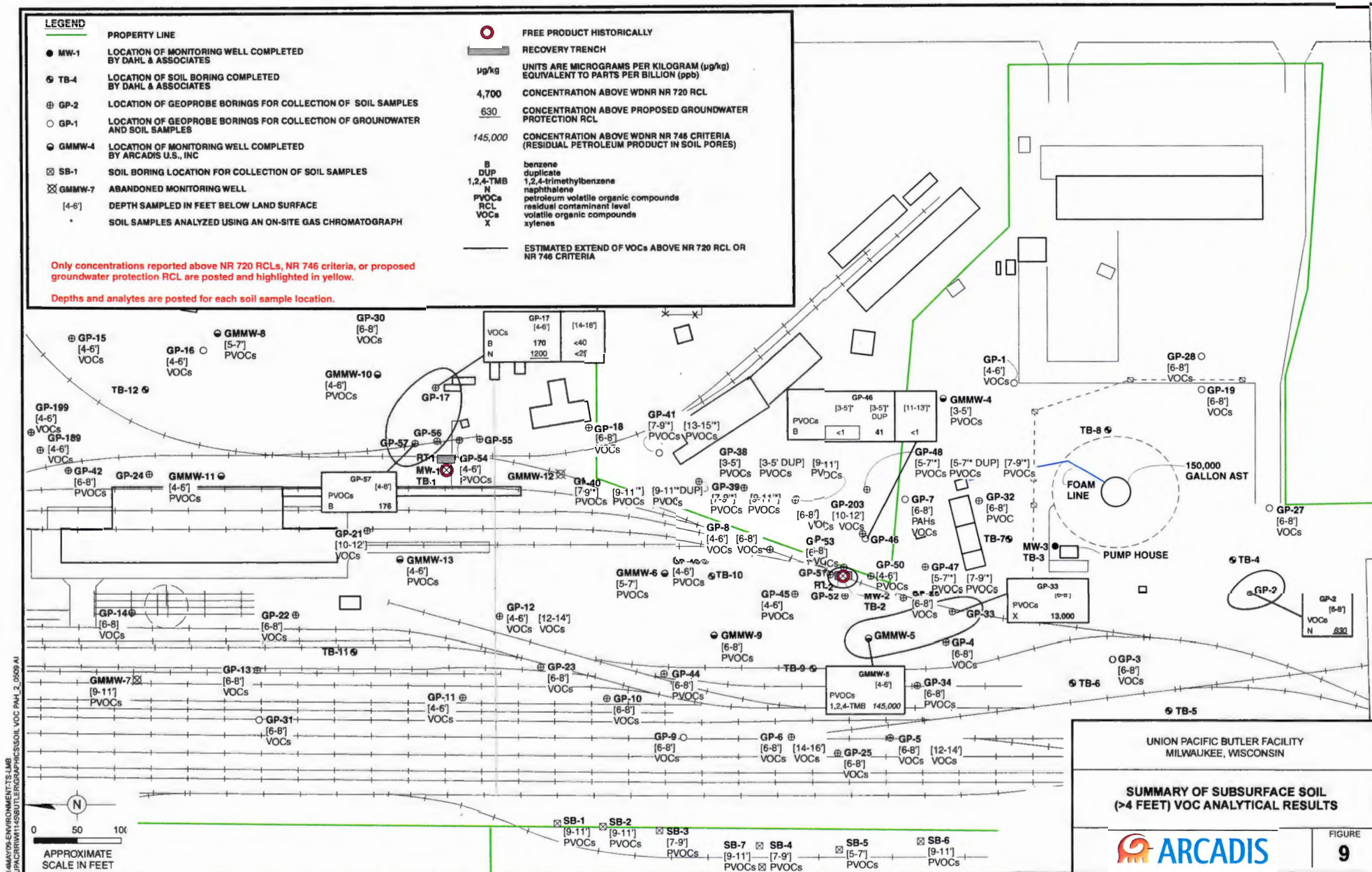
FIGURE
5

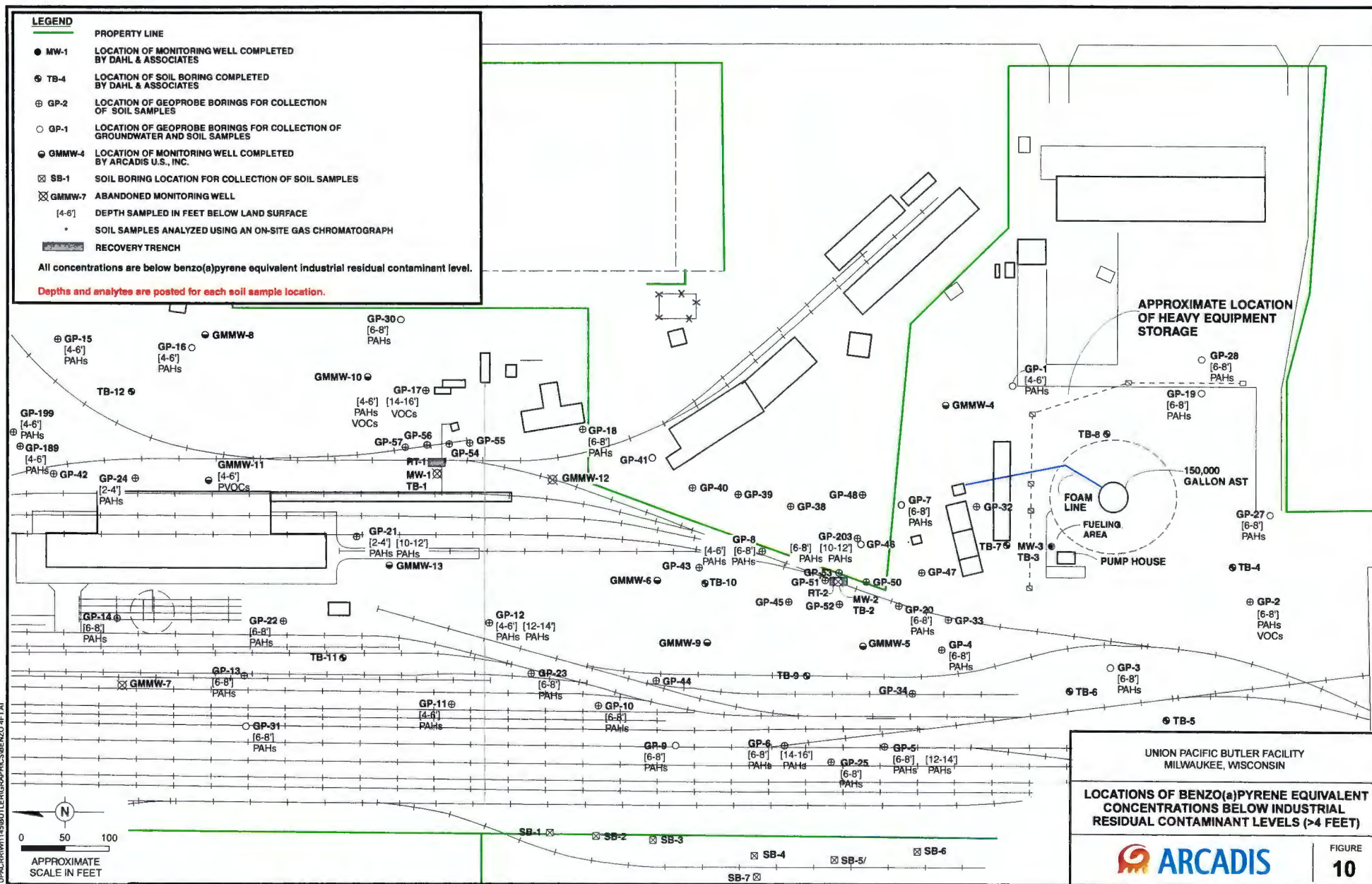
Note: 1. GP/GMMW-1-Series holes drilled and logged by Geraghty & Miller, Inc. (1996)
2. MW-1/TB Series Wells/Boreholes drilled and logged by Dahl & Associates (1994)

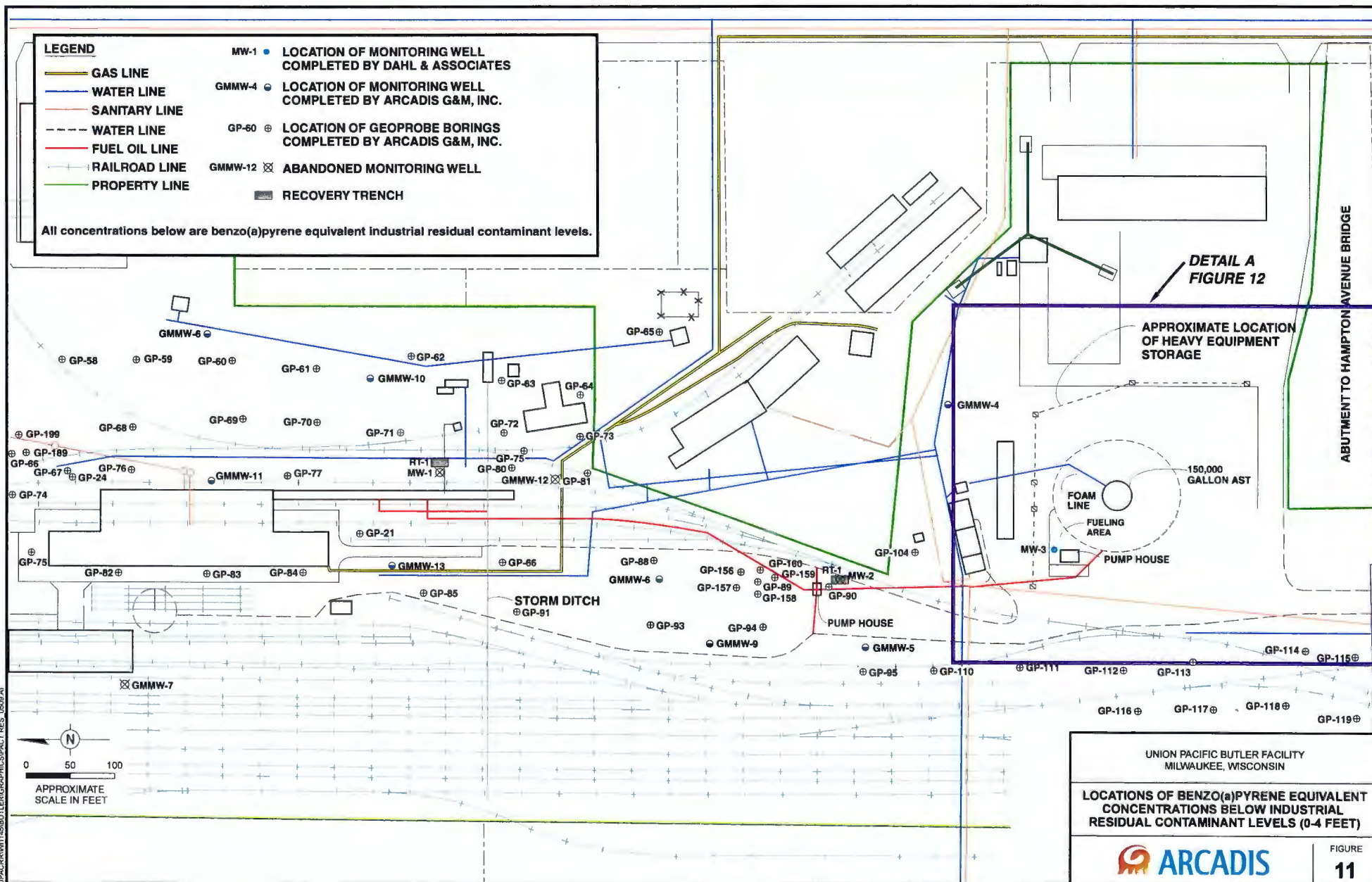
0 50 100 200
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 10X











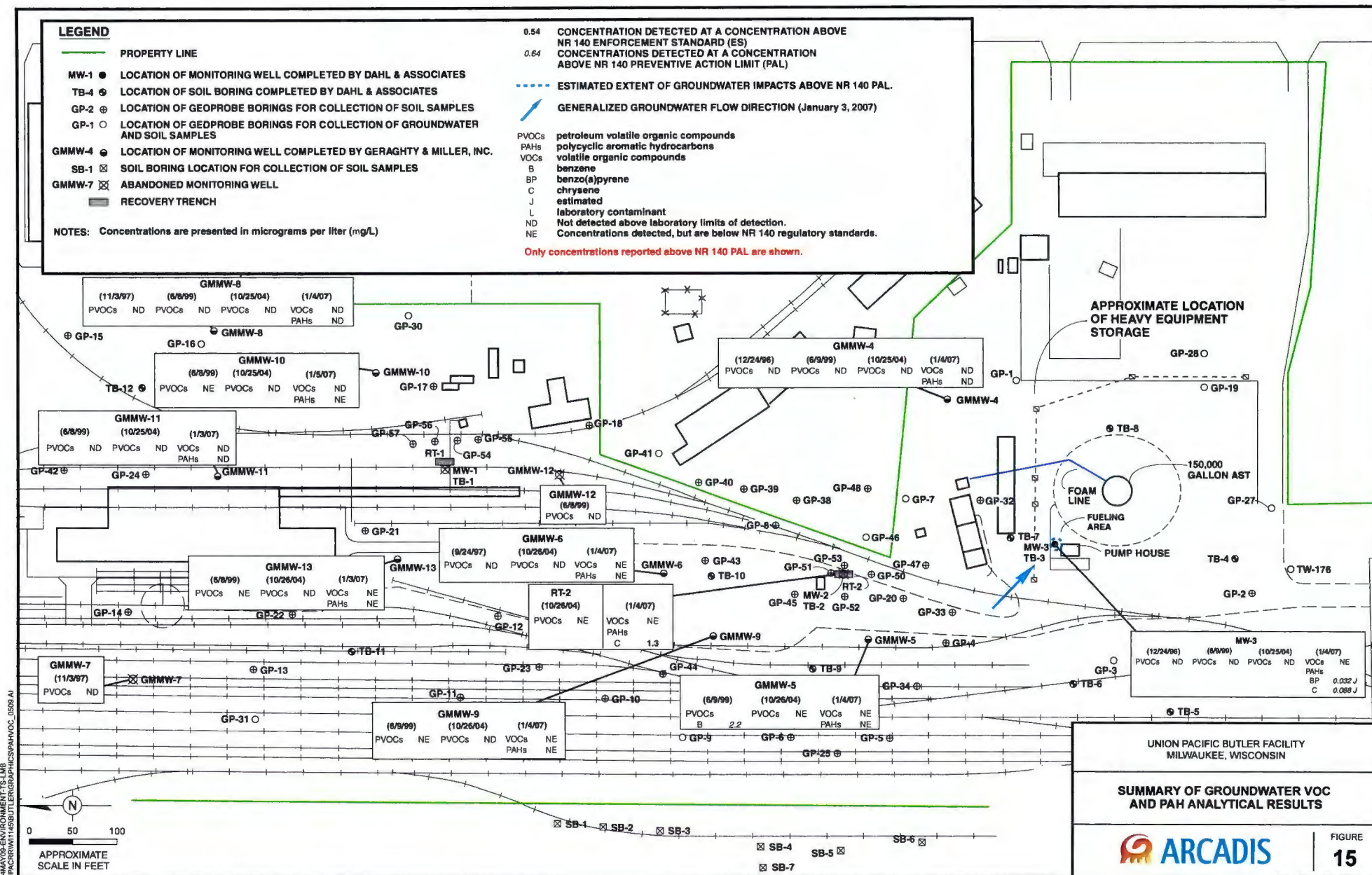
LEGEND

- PROPERTY LINE
- MW-1 ● LOCATION OF MONITORING WELL COMPLETED BY DAHL & ASSOCIATES
- TB-4 ● LOCATION OF SOIL BORING COMPLETED BY DAHL & ASSOCIATES
- GP-2 ● LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF SOIL SAMPLES
- GP-1 ○ LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF GROUNDWATER AND SOIL SAMPLES
- GMMW-4 ● LOCATION OF MONITORING WELL COMPLETED BY GERAGHTY & MILLER, INC.
- SB-1 ☒ SOIL BORING LOCATION FOR COLLECTION OF SOIL SAMPLES
- GMMW-7 ☒ ABANDONED MONITORING WELL
- RECOVERY TRENCH

NOTES: Concentrations are presented in micrograms per liter (mg/L)

- 0.54 CONCENTRATION DETECTED AT A CONCENTRATION ABOVE NR 140 ENFORCEMENT STANDARD (ES)
- 0.64 CONCENTRATIONS DETECTED AT A CONCENTRATION ABOVE NR 140 PREVENTIVE ACTION LIMIT (PAL)
- ESTIMATED EXTENT OF GROUNDWATER IMPACTS ABOVE NR 140 PAL.
- GENERALIZED GROUNDWATER FLOW DIRECTION (January 3, 2007)
- PVOCs petroleum volatile organic compounds
- PAHs polycyclic aromatic hydrocarbons
- VOCs volatile organic compounds
- B benzene
- BP benzo(a)pyrene
- C chrysene
- J estimated
- L laboratory contaminant
- ND Not detected above laboratory limits of detection.
- NE Concentrations detected, but are below NR 140 regulatory standards.

Only concentrations reported above NR 140 PAL are shown.



UNION PACIFIC BUTLER FACILITY
MILWAUKEE, WISCONSIN

SUMMARY OF GROUNDWATER VOC AND PAH ANALYTICAL RESULTS



FIGURE
15

Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	NR 720	NR 720	NR 746	Proposed	Proposed	Proposed	GMMW-4	GMMW-5	GMMW-6	GMMW-8
Sample Depth (feet)	Table 1	Table 1	Table 1	Industrial	Non-Industrial	Groundwater	3-5'	4-6'	5-7'	5-7'
Sample Date	RCL	Criteria	Criteria	Direct Contact	Direct Contact	Protection	12/9/96	6/1/96	12/11/96	12/9/96
DRO (mg/kg)	100	NE	NE	NE	NE	NE	<6.1	3,030	2,110	<5.4
GRO (mg/kg)	100	NE	NE	NE	NE	NE	<6.1	NA	174 H	<5.4
VOCs (µg/kg)										
Benzene	5.5	1,100	8,500	NE	NE	NE	<12	<303	<600	<11
Bromomethane	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Chloromethane	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
cis-1,2-Dichloroethene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Ethylbenzene	2,900	NE	4,600	NE	NE	NE	<30	497	<1,600	<27
Isopropylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Methyl tert-Butyl Ether	NE	NE	NE	NE	NE	NE	<30	<303	<1,600	<27
Methylene Chloride	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Naphthalene	2,700	NE	NE	110,000	20,000	400	NA	NA	NA	NA
n-Butylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
n-Propylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
sec-Butylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
tert-Butylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Tetrachloroethene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Toluene	1,500	NE	38,000	NE	NE	NE	<30	<303	<1,600	<27
Trichloroethene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
1,2,4-Trimethylbenzene	NE	NE	83,000	NE	NE	NE	<30	145,000	3,720	<27
1,3,5-Trimethylbenzene	NE	NE	11,000	NE	NE	NE	<30	885	2,980	<27
Xylenes, total	4,100	NE	42,000	NE	NE	NE	<92	1,330	<4,600	<81

Footnotes on Page 15.

Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-9	GMMW-10	GMMW-11	GMMW-12	GMMW-13	GP-1	GP-2	GP-3	GP-6	
Sample Depth (feet)	6-8'	4-6'	4-6'	0-2'	4-6'	4-6'	6-8'	6-8'	14-16'	6-8'
Sample Date	6/1/99	6/1/99	6/2/99	6/2/99	6/2/99	5/23/96	5/23/96	5/23/96	5/24/96	5/24/96
DRO (mg/kg)	<5.9	13	<6.4	1,110	<5.5	<5	11	5.4	11	4,200 B
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<30	<29	<32	<139	<28	<25	<48	<30	<25	<38 I
Bromomethane	NA	NA	NA	NA	NA	<100	<48	<30	<100	<150 I
Chloromethane	NA	NA	NA	NA	NA	<30	<57	204	<30	<45 I
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	<25	<48	<30	<25	<38 I
Ethylbenzene	<30	37	<32	<139	<28	<25	<48	<30	<25	60 I
Isopropylbenzene	NA	NA	NA	NA	NA	<25	<48	<30	<25	100 I
Methyl tert-Butyl Ether	<30	<29	<32	<139	<28	<25	<48	<30	<25	<38 I
Methylene Chloride	NA	NA	NA	NA	NA	180 L	480 L	280 L	140 L	220 I, L
Naphthalene	NA	NA	NA	NA	NA	<25	630	<25	<25	<25
n-Butylbenzene	NA	NA	NA	NA	NA	<25	<48	<30	<25	910 I
n-Propylbenzene	NA	NA	NA	NA	NA	<25	<48	<30	<25	180 I
sec-Butylbenzene	NA	NA	NA	NA	NA	<25	<48	<30	<25	<38 I
tert-Butylbenzene	NA	NA	NA	NA	NA	<25	<48	<30	<25	440 I
Tetrachloroethene	NA	NA	NA	NA	NA	<25	<48	<30	<25	<38 I
Toluene	<30	<29	<32	<139	<28	<25	71 B	46 B	<25	<38 I
Trichloroethene	NA	NA	NA	NA	NA	<25	<48	<30	<25	<38 I
1,2,4-Trimethylbenzene	<30	42	<32	1,730	<28	<25	<48	<30	<25	<38 I
1,3,5-Trimethylbenzene	<30	<29	<32	1,040	<28	<25	<48	<30	<25	<38 I
Xylenes, total	<89	<88	<96	474	<83	<35	<66	<42	<35	<52 I

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-7	GP-8		GP-9	GP-10	GP-11	GP-12		GP-13	GP-14	GP-15	GP-16
Sample Depth (feet)	6-8'	4-6'	6-8'	6-8'	6-8'	4-6'	4-6'	12-14'	6-8'	6-8'	4-6'	4-6'
Sample Date	5/23/96	5/28/96	5/28/96	5/24/96	5/24/96	5/24/96	5/28/96	5/28/96	5/24/96	5/24/96	5/23/96	5/23/96
DRO (mg/kg)	<5	<5.0 B	46 B	<5.0 B	<5.0 B	8.3 B	920 B	12	12 B	8.2 B	<5.0	<5.0
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Bromomethane	98	<140 I	170 I	<150 I	<170 I	<160 I	<170 I	<130 I	<180 I	<130	120	90
Chloromethane	<33	<42 I	51 I	<45 I	<51 I	<48 I	<51 I	<39 I	<54 I	<39	<39	<30
cis-1,2-Dichloroethene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Ethylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Isopropylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Methyl tert-Butyl Ether	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Methylene Chloride	320 L	200 I,L	230 I,L	220 I,L	230 I,L	210 I,L	190 I,L	160 I,L	230 I,L	140 L	540 L	330
Naphthalene	<25	<25	<25	<25	<25	<25	64	<25	<25	<25	<25	<25
n-Butylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	240 I	<32 I	<45 I	<32	<32	<25
n-Propylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	56 I	<32 I	<45 I	<32	<32	<25
sec-Butylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	200 I	<32 I	<45 I	<32	<32	<25
tert-Butylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Tetrachloroethene	37	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Toluene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Trichloroethene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	70	<25
1,2,4-Trimethylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
1,3,5-Trimethylbenzene	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I	<45 I	<32	<32	<25
Xylenes, total	<38	<49 I	<60 I	<52 I	<60 I	<56 I	<60 I	<46 I	<63 I	<46	<46	<35

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-17		GP-18	GP-19	GP-20	GP-21		GP-22	GP-23	GP-24	GP-25	GP-27
Sample Depth (feet)	14-16'	4-6'	6-8'	6-8'	6-8'	10-12'	2-4'	6-8'	6-8'	2-4'	6-8'	6-8'
Sample Date	5/23/96	5/23/96	5/28/96	5/23/96	5/28/96	5/28/96	5/28/96	5/28/96	5/29/96	5/28/96	5/29/96	5/29/96
DRO (mg/kg)	13	910	<5.0 B	5.6	2,800 B	42	350	19 B	15	37 B	620	9.4
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<40	170	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
Bromomethane	<40	95	<140 I	<30	<650 M	<160 I	<850 I,M	<160 I	<180 I	<190 I	<210 I,M	<220 I
Chloromethane	<48	<30	<42 I	<36	<200 M	<48 I	<260 I,M	<48 I	<54 I	<57 I	<63 I,M	<66 I
cis-1,2-Dichloroethene	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
Ethylbenzene	<40	440	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
Isopropylbenzene	<40	210	<35 I	<30	400	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
Methyl tert-Butyl Ether	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	550 I,L	<48 I	<52 I,M	<55 I
Methylene Chloride	500	640 L	200 I,L	290 L	610 L	170 I,L	830 I,M	180 I,L	<90 I	200 I,L	930 I,L	830 I,L
Naphthalene	<25	1,200	<25	<25	<500 M	<25	<25	<25	<25	240	<25	160
n-Butylbenzene	<40	<25	<35 I	<30	1600	<40 I	<210 I,M	<40 I	<45 I	<48 I	422 I	<55 I
n-Propylbenzene	<40	310	<35 I	<30	810	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
sec-Butylbenzene	<40	260	<35 I	43	730	<40 I	<210 I,M	<40 I	<45 I	<48 I	210 I	<55 I
tert-Butylbenzene	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
Tetrachloroethene	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
Toluene	<40	980	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	48 I	<52 I,M	<55 I
Trichloroethene	<40	63	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
1,2,4-Trimethylbenzene	<40	2,100	<35 I	100	<160 M	<40 I	390 I	<40 I	<45 I	73 I	<52 I,M	<55 I
1,3,5-Trimethylbenzene	<40	830	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I	<45 I	<48 I	<52 I,M	<55 I
Xylenes, total	160	2,600	<49 I	73	<230 M	<56 I	950 I	<56 I	<63 I	<66 I	<74 I,M	<77 I

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-28	GP-30	GP-31	GP-32	GP-33	GP-34	GP-38	GP-38	GP-38 D	GP-39	
Sample Depth (feet)	6-8'	6-8'	6-8'	6-8'	6-8'	6-8'	3-5'	9-11'	3-5'	7-9'	9-11'
Sample Date	5/29/96	5/29/96	5/29/96	10/3/96	10/3/96	10/3/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96
DRO (mg/kg)	<5.0	<5.0	6.9	<5.0	7,500	1,000	<20	<20	366 H	<20	<20
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)											
Benzene	<50	<80 I	<38 I	<10	<500	<100	<1	<1	<12	<1	<1
Bromomethane	<200	<300 I	<150 I	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	60	390 I	<45 I	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	<50	<80 I	<38 I	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<50	<80 I	<38 I	<25	1,400	<250	<1	<1	<30	<1	<1
Isopropylbenzene	<50	<80 I	<38 I	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<50	<80 I	<38 I	<25	<1,200	<250	<1	<1	<30	<1	<1
Methylene Chloride	750	1,100 I,L	490 I,L	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	<25	<25	<25	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	<50	<80 I	<38 I	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	<50	<80 I	<38 I	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	<50	<80 I	<38 I	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	<50	<80 I	<38 I	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	<50	<80 I	<38 I	NA	NA	NA	<1	<1	NA	NA	NA
Toluene	<50	<80 I	<38 I	<25	<1200	<250	<1	<1	<30	<1	<1
Trichloroethene	<50	<80 I	<38 I	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<50	<80 I	<38 I	<25	13,000	2,700	<1	<1	97	<1	<1
1,3,5-Trimethylbenzene	<50	<80 I	<38 I	<25	7,400	1,200	<1	<1	70	<1	<1
Xylenes, total	<70	<100 I	<52 I	<75	13,000	1,200	<1	<1	<88	<1	<1

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-40		GP-40 D	GP-41		GP-42		GP-43	GP-44	GP-45	GP-46	
Sample Depth (feet)	7-9'	9-11'	9-11'	13-15'	7-9'	2-4'	6-8'	4-6'	6-8'	4-6'	11-13'	3-5'
Sample Date	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	10/3/96	10/3/96	10/3/96	10/3/96	10/3/96	12/2/96	12/2/96
DRO (mg/kg)	<20	<20	<6.1	<20	<20	6,900 H	<5.0	3,500	<5	530	23.8	1,234
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<1	<1	<12	<1	<1	<500	<10	<100	<10	<100	<1	<1
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<1	<1	<30	<1	<1	<1,200	<25	280	<25	<250	<1	<1
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<1	<1	<30	<1	<1	<1,200	<25	<250	<25	<250	<1	<1
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<1	<1	<30	<1	1	1,200	<25	<250	<25	<250	<1	<1
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<1	<1	<30	<1	<1	2,600	<25	1,700	<25	1,800	<1	55
1,3,5-Trimethylbenzene	<1	<1	<30	<1	<1	2,500	<25	1,200	<25	770	<1	<1
Xylenes, total	<1	<1	<91	<1	<1	4,700	<75	2,100	<75	1,500	<1	<1

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-46 D	GP-47		GP-48		GP-48 D	GP-50	GP-51	GP-52	GP-53	GP-54	GP-55
Sample Depth (feet)	3-5'	5-7'	7-9'	5-7'	7-9'	5-7'	4-6'	2-4'	2-4'	6-8'	4-6'	2-4'
Sample Date	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	6/2/99	6/2/99	6/2/99	6/2/99	6/2/99	6/2/99
DRO (mg/kg)	600 H	462	<20	<20	<20	NA	562	8,010	9,580	552	1,810	120
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	41	<1	<1	<1	<1	<1	<31	<635	<631	<31	<30	<31
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	54	5.5	<1	<1	<1	<1	89	<635	<631	<31	<30	44
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<36	<1	<1	<1	<1	<1	<31	<635	<631	<31	<30	<31
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	143	<1	<1	<1	<1	<1	<31	<635	<631	<31	<30	<31
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	300	35.5	<1	<1	<1	<1	904	3,680	2,650	294	290	391
1,3,5-Trimethylbenzene	60	60.5	<1	<1	<1	<1	183	991	706	86	50	87
Xylenes, total	243	6	<1	<1	<1	<1	159	<1,910	<1,890	94	93	183

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-56	GP-57	GP-58	GP-59	GP-60	GP-61	GP-62	GP-63	GP-64	GP-65	GP-66
Sample Depth (feet)	2-4'	4-6'	0-2'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	6/2/99	6/2/99	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/18/05
DRO (mg/kg)	258	445	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)											
Benzene	82	176	<30	<30	<30	<29	<31 ,QU	<30	<32	<31	<30
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	697	<352	<30	280	<30	<29	41 QU	<30	<32	<31	<30
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	27	<29	<30	<30	<30	<29	<31 ,QU	<30	<32	<31	<30
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	64	<50	<30	<30	<30	31	<31 ,QU	<30	<32	<31	<30
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	2,470	1,760	<30	190	<30	77	110 QU	53	<32	<31	<30
1,3,5-Trimethylbenzene	805	<621	<30	210	<30	<29	<31 ,QU	<30	<32	<31	<30
Xylenes, total	1,050	<903	<90	<89	<90	140	<92 ,QU	<90	<96	<94	<89

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-67	GP-68	GP-69	GP-70	GP-71	GP-72	GP-73	GP-74	GP-75	GP-76
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'
Sample Date	10/18/05	10/18/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<320 ,QU	<33	<32 ,QU	45	<30	<27	<27	<29 ,QU	<31	<30
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<320 ,QU	75	<32 ,QU	<30	<400 RL1	<27	<190 RL1	<29 ,QU	<31	<30
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<320 ,QU	<33	<32 ,QU	<30	<30	<27	<27	<29 ,QU	<31	<30
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<320 ,QU	84	42 QU	33	<30	49	68	<29 ,QU	<31	<30
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	630 QU	56	68 QU	38	160	110	170	<29 ,QU	<31	52
1,3,5-Trimethylbenzene	<320 ,QU	<33	<32 ,QU	<30	85	30	32	<29 ,QU	<31	<30
Xylenes, total	<950 ,QU	160	110 QU	100	180	200	370	<86 ,QU	<93	<89

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-77	GP-80	GP-81	GP-82	GP-83	GP-84	GP-85	GP-86	GP-88
Sample Depth (feet)	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	0-2'
Sample Date	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)									
Benzene	<28	<29	<31	<31	<28	<31	<31 ,QU	<32 ,QU	<28 ,QU
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<28	<370 RL1	<31	<31	<28	<31	<31 ,QU	<32 ,QU	110 QU
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<28	<29	<31	<31	<28	<31	<31 ,QU	<32 ,QU	<28 ,QU
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<28	<29	<31	<31	<28	<31	<31 ,QU	<32 ,QU	67 QU
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	98	840	<31	<31	40	<31	69 QU	<32 ,QU	63 QU
1,3,5-Trimethylbenzene	<28	180	<31	<31	<28	<31	<31 ,QU	<32 ,QU	<28 ,QU
Xylenes, total	150	400	<93	<92	<84	<93	150 QU	<96 ,QU	160 QU

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-89	GP-90	GP-91	GP-93	GP-94	GP-95	GP-98	GP-99	GP-100	GP-101
Sample Depth (feet)	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/18/05	10/19/05	10/18/05	10/18/05	10/19/05	10/19/05	10/20/05	10/20/05	10/20/05	10/20/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<630 ,QU	88 QU	<29	<29	<31	<26 ,QU	100	<31	<31 ,QU	<31
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<630 ,QU	<2800 ,QU,RL1	<29	<29	<31	<26 ,QU	130	260	<31 ,QU	<31
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<630 ,QU	<31 ,QU	<29	<29	<31	<26 ,QU	<31	<31	<31 ,QU	<31
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<630 ,QU	<31 ,QU	32	<29	<31	<26 ,QU	330	<31	<31 ,QU	<31
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	2200 QU	3400 QU	89	<29	<31	710 QU	230	120	<31 ,QU	<31
1,3,5-Trimethylbenzene	<630 ,QU	<31 ,QU	44	<29	<31	<26 ,QU	94	120	<31 ,QU	<31
Xylenes, total	<1900 ,QU	1300 QU	160	<88	<93	<78 ,QU	370	350	<93 ,QU	<94

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-102	GP-103	GP-104	GP-105	GP-107	GP-109	GP-110	GP-111	GP-112	GP-113
Sample Depth (feet)	0-2'	2-4'	0-2'	2-4'	2-4'	0-2'	0-2'	2-4'	2-4'	2-4'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/19/05	10/19/05	10/19/05	10/19/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<33	<29	<31 ,QU	<30	<30 ,A-01	<29	<28	<29	<26	<27
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<33	<29	<700 ,QU,RL1	<30	<30 ,A-01	<29	51	<29	<26	<27
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<33	<29	<31 ,QU	<30	<30 ,A-01	<29	<28	<29	<26	<27
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<33	<29	64 QU	<30	<30 ,A-01	29	55	<29	<26	<27
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<33	<29	530 QU	<30	130 A-01	<29	75	<29	<26	<27
1,3,5-Trimethylbenzene	<33	<29	<31 ,QU	<30	51 A-01	<29	<28	<29	<26	<27
Xylenes, total	<99	<87	370 QU	<91	<91 ,A-01	<86	170	<87	<79	<80

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-114	GP-115	GP-116	GP-117	GP-118	GP-119	GP-189	GP-199	GP-203		
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'	4-6'	3-5'	6-8'	10-12'
Sample Date	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	1/10/07	1/10/07	11/08/07	11/09/07	11/08/07
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)											
Benzene	<31	220	<30	<29	<29	<26	<32	<31	<31	<30	<36
Bromomethane	NA	NA	NA	NA	NA	NA	<130	<120	<130	<120	<140
Chloromethane	NA	NA	NA	NA	NA	NA	<65	<62	<63	<61	<72
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
Ethylbenzene	<31	120	<30	<29	<29	<26	<32	<31	<31	<30	<36
Isopropylbenzene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
Methyl tert-Butyl Ether	<31	<30	<30	<29	<29	<26	<32	<31	<31	<30	<36
Methylene Chloride	NA	NA	NA	NA	NA	NA	<65	<62	<63	<61	<72
Naphthalene	NA	NA	NA	NA	NA	NA	<65	<62	<63	<61	<72
n-Butylbenzene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
n-Propylbenzene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
Tetrachloroethene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
Toluene	<31	530	<30	<29	<29	<26	<32	<31	48	<30	<36
Trichloroethene	NA	NA	NA	NA	NA	NA	<32	<31	<31	<30	<36
1,2,4-Trimethylbenzene	<31	66	<30	<29	<29	<26	<32	<31	47	<30	<36
1,3,5-Trimethylbenzene	<31	39	<30	<29	<29	<26	<32	<31	<31	<30	<36
Xylenes, total	<92	480	<91	<86	<87	<79	<110	<110	<110	<100	<120

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7
Sample Depth (feet)	9-11'	9-11'	7-9'	7-9'	5-7'	9-11'	9-11'
Sample Date	12/10/96	12/10/96	12/10/96	12/10/96	12/10/96	12/10/96	12/10/96
DRO (mg/kg)	<5.5	<5.9	14 H	7.0 H	<6.2 H	<5.2	<6.0 H
GRO (mg/kg)	<5.5	<5.9	<6.1	<7.2	<6.2	<5.2	<6.0
VOCs (µg/kg)							
Benzene	<11	<12	<12	<14	<12	<10	<12
Bromomethane	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<28	<30	<30	<36	<31	<26	<30
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<28	<30	<30	<36	<31	<26	<30
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA
Toluene	<28	<30	<30	<36	<31	<26	<30
Trichloroethene	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<28	<30	<30	<36	<31	<26	<30
1,3,5-Trimethylbenzene	<28	<30	<30	<36	<31	<26	<30
Xylenes, total	<83	<89	<91	<110	<92	<78	<89

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Table 1. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Bold	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
<i>Italic</i>	Concentration exceeds the NR 746 Soil Criteria (NR 746 criteria is the regulatory indicator of residual petroleum product in soil pores).
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
(1)	Soil samples analyzed using an onsite gas chromatograph.
<	Analyte detected below laboratory detection limits.
A-01	High concentrations of a non-target analyte present.
B	Method blank is contaminated.
DRO	Diesel Range Organics.
DUP	Duplicate sample.
GRO	Gasoline Range Organics.
H	Late eluting hydrocarbons present within sample.
I	Additional laboratory sample preparations were necessary before analysis.
L	Common laboratory solvent and contaminant.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
µg/kg	Micrograms per kilogram.
mg/kg	Milligrams per kilogram.
NA	Not analyzed.
NE	Not established.
QU	Unquantitated hydrocarbons were present in the sample outside of the reported carbon range.
RCL	WDNR established Residual Contaminant Level (RCL) from Table 1 of the Wisconsin Administrative Code Chapter NR 720.09.
RL1	Reporting limit raised due to sample matrix effects.
VOC	Volatile Organic Compound.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	NR 720	Proposed	Proposed	Proposed	GP-1	GP-2	GP-3	GP-4	GP-5	
Sample Depth (feet)	Table 1	Groundwater	Non-Industrial	Industrial	4-6'	6-8'	6-8'	6-8'	6-8'	12-14'
Sample Date	RCL	Protection	Direct Contact	Direct Contact	05/23/96	05/23/96	05/23/96	05/23/96	05/24/96	05/24/96
PAHs (µg/kg)										
1-Methylnaphthalene	NE	23,000	1,100,000	70,000,000	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	NE	20,000	600,000	40,000,000	<25	<25	<25	<25	<25	<25
Acenaphthene	NE	38,000	900,000	60,000,000	NA	NA	NA	NA	NA	NA
Anthracene	NE	3,000,000	5,000,000	300,000,000	<8.0	33	<8.0	<8.0	<8.0	<8.0
Benzo (a) anthracene	NE	17,000	88	3,900	<2.0	120	<2.0	<2.0	<2.0	<2.0
Benzo (a) pyrene	NE	48,000	8.8	390	<4.0	110	<4.0	<4.0	<4.0	<4.0
Benzo (b) fluoranthene	NE	360,000	88	3,900	<2.0	41	<2.0	<2.0	<2.0	<2.0
Benzo (g,h,i) perylene	NE	6,800,000	1,800	39,000	<4.0	110	<4.0	<4.0	<4.0	<4.0
Benzo (k) fluoranthene	NE	870,000	880	39,000	<2.0	65	<2.0	<2.0	<2.0	<2.0
Chrysene	NE	37,000	8,800	390,000	<4.0	98	<4.0	<4.0	<4.0	<4.0
Dibenzo (a,h) anthracene	NE	38,000	8.8	390	NA	NA	NA	NA	NA	NA
Fluoranthene	NE	500,000	600,000	40,000,000	<8.0	230	<8.0	<8.0	<8.0	<8.0
Fluorene	NE	100,000	600,000	40,000,000	<16	<16	<16	<16	<16	<16
Indeno (1,2,3-cd) pyrene	NE	680,000	88	3,900	<4.0	60	<4.0	<4.0	<4.0	<4.0
Naphthalene	2,700	400	20,000	110,000	NA	NA	NA	NA	NA	NA
Phenanthrene	NE	1,800	18,000	390,000	<16	230	<16	<16	<16	<16
Pyrene	NE	8,700,000	500,000	30,000,000	<8.0	190	<8.0	<8.0	<8.0	<8.0

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-6		GP-7	GP-8		GP-9	GP-10	GP-11	GP-12		GP-13
Sample Depth (feet)	6-8'	14-16'	6-8'	4-6'	6-8'	6-8'	6-8'	4-6'	4-6'	12-14'	6-8'
Sample Date	05/24/96	05/24/96	05/23/96	05/28/96	05/28/96	05/24/96	05/24/96	05/24/96	05/28/96	05/28/96	05/24/96
PAHs (µg/kg)											
1-Methylnaphthalene	<25	<25	NA	<25	<25	<25	<25	<25	490	<25	<25
2-Methylnaphthalene	1,200	<25	<25	<25	<25	<25	<25	<25	300	<25	<25
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Benzo (a) anthracene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzo (a) pyrene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Benzo (b) fluoranthene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzo (g,h,i) perylene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Benzo (k) fluoranthene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chrysene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Fluorene	270	<16	<16	<16	<16	<16	<16	<16	38	<16	<16
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	4.0	<4.0	<4.0
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1,600	<16	<16	<16	<16	<16	<16	<16	100	<16	<16
Pyrene	<8.0	<8.0	NA	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-14	GP-15	GP-16	GP-17		GP-18	GP-19	GP-20	GP-21	
Sample Depth (feet)	6-8'	4-6'	4-6'	4-6'	14-16'	6-8'	6-8'	6-8'	2-4'	10-12'
Sample Date	05/24/96	05/23/96	05/23/96	05/23/96	05/23/96	05/28/96	05/23/96	05/28/96	05/28/96	05/28/96
PAHs (µg/kg)										
1-Methylnaphthalene	<25	<25	<25	3,700	<25	<25	<25	<500 M	<25	<25
2-Methylnaphthalene	<25	<25	<25	3,500	<25	<25	<25	<500 M	<25	<25
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0
Benzo (a) anthracene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	130	<2.0
Benzo (a) pyrene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Benzo (b) fluoranthene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0
Benzo (g,h,i) perylene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Benzo (k) fluoranthene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0
Chrysene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	84	<4.0	<4.0
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	2,400	120	<8.0
Fluorene	<16	<16	<16	<320 M	<16	<16	<16	530	<16	<16
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	<16	<16	<16	1,300	<16	<16	<16	2,900	230	<16
Pyrene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	1300	82	<8.0

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-22	GP-23	GP-24	GP-25	GP-27	GP-28	GP-30	GP-31	GP-58	GP-59
Sample Depth (feet)	6-8'	6-8'	2-4'	6-8'	6-8'	6-8'	6-8'	6-8'	0-2'	0-2'
Sample Date	05/28/96	05/29/96	05/28/96	05/29/96	05/29/96	05/29/96	05/29/96	05/29/96	10/19/05	10/19/05
PAHs (µg/kg)										
1-Methylnaphthalene	<25	<25	520	<25	68	<25	<25	<25	<36	270
2-Methylnaphthalene	<25	<25	480	<25	94	<25	<25	<25	<30	160
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	<60	<59
Anthracene	<8.0	<8.0	20	<8	68	<8.0	9.6	<8.0	<6.0	<5.9
Benzo (a) anthracene	<2.0	<2.0	800	180	200	<2.0	89	<2.0	11	<5.9
Benzo (a) pyrene	<4.0	<4.0	170	<4.0	250	<4.0	6.9	<4.0	11	<5.9
Benzo (b) fluoranthene	<2.0	<2.0	36	<2.0	100	<2.0	26	<2.0	9.1 L2	<5.9 L2
Benzo (g,h,i) perylene	<4.0	<4.0	130	<4.0	230	<4.0	64	<4.0	11	<5.9
Benzo (k) fluoranthene	<2.0	<2.0	64	<2.0	130	<2.0	14	<2.0	<6.0 L2	<5.9 L2
Chrysene	<4.0	<4.0	110	24	200	<4.0	86	<4.0	<6.0 L2	<5.9 L2
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	<9.0 L2	<8.9 L2
Fluoranthene	<8.0	<8.0	270	130	440	<8.0	100	<8.0	33	12
Fluorene	<16	<16	<16	150	19	<16	31	<16	<12	<12
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	79	<4.0	160	<4.0	46	<4.0	9.5 L2	<5.9 L2
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	<36	120
Phenanthrene	<16	<16	110	67	250	<16	330	<16	18	11
Pyrene	<8.0	<8.0	210	1,100	370	<8.0	95	<8.0	62	59

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-60	GP-61	GP-62	GP-63	GP-64	GP-65	GP-66	GP-67	GP-68	GP-69	GP-70
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<36	<35	290	<36	<38	<38	<36	820	<410	180	<36
2-Methylnaphthalene	<30	110	200	50	48	<31	<30	1,200	430	720	120
Acenaphthene	<60	<59	<61	<60	<64	<63	<59	<79	<680	<64	<60
Anthracene	<6.0	7.8	42	<6.0	20	<6.3	<5.9	11	<68	74	16
Benzo (a) anthracene	13	33	220	16	45	<6.3	<5.9	64	400	640	110
Benzo (a) pyrene	9.5	17	14	9.3	37	<6.3	<5.9	33	200	370	140
Benzo (b) fluoranthene	12 L2	20 L2	24 L2	8.7 L2	30 L2	<6.3 L2	<5.9 L2	33	270 L2	360 L2	97 L2
Benzo (g,h,i) perylene	14	16	19	9.2	33	<6.3	<5.9	28	110	530	140
Benzo (k) fluoranthene	6.5 L2	12 L2	8.7 L2	<6.0 L2	17 L2	<6.3 L2	<5.9	15	140	160 L2	45 L2
Chrysene	<6.0 L2	19 L2	140 L2	8.8 L2	7.9 L2	<6.3 L2	<5.9	14	250	91 L2	12
Dibenzo (a,h) anthracene	<9.0 L2	<8.8 L2	<9.2 L2	<9.0 L2	<9.6 L2	<9.4 L2	<8.9 L2	<12	<100 L2	72 L2	21 L2
Fluoranthene	30	110	590	62	110	<13	<12	270	650	950	240
Fluorene	<12	<12	120	<12	<13	<13	<12	68	<140	70	12
Indeno (1,2,3-cd) pyrene	7.9 L2	12 L2	12 L2	7.2 L2	35 L2	<6.3 L2	<5.9 L2	25	99 L2	310 L2	100 L2
Naphthalene	<36	<35	<37	<36	<38	<38	<36	<47	<410	49	<36
Phenanthrene	11	72	210	37	83	<6.3	<5.9	150	430	490	100
Pyrene	27	330	830	61	100	<6.3	<5.9	210	960	770	230

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-71	GP-72	GP-73	GP-74	GP-75	GP-76	GP-77	GP-80	GP-81	GP-82
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05
PAHs (µg/kg)										
1-Methylnaphthalene	<36	53	120	<35	<37	47	<170	1,300	<37	<280
2-Methylnaphthalene	<30	120	380	<29	<31	130	320	2,500	<31	420
Acenaphthene	<61	<54	<54	<58	<62	<60	<280	800	<62	<460
Anthracene	<6.1	10	33	<5.8	<6.2	13	<28	310	<6.2	<46
Benzo (a) anthracene	6.6	56	200	<5.8	<6.2	91	120	870	<6.2	270
Benzo (a) pyrene	<6.1	42	200	<5.8	<6.2	64	84	71	<6.2	210
Benzo (b) fluoranthene	<6.1 L2	42 L2	150 L2	<5.8 L2	<6.2 L2	54	86 L2	85 L2	<6.2 L2	190 L2
Benzo (g,h,i) perylene	<6.1	47	140	<5.8	<6.2	44	63	<58	<6.2	200
Benzo (k) fluoranthene	<6.1 L2	13 L2	82 L2	<5.8	<6.2	36	33	<58	<6.2	120
Chrysene	<6.1	11	25	<5.8	<6.2	15	73	250	<6.2	53
Dibenzo (a,h) anthracene	<9.1 L2	<8.1 L2	26 L2	<8.6 L2	<9.3 L2	<8.9	<41 L2	<86 L2	<9.3 L2	<69 L2
Fluoranthene	14	190	520	<12	<12	200	430	3,900	<12	540
Fluorene	<12	12	<11	<12	<12	13	<55	1,000	<12	<92
Indeno (1,2,3-cd) pyrene	<6.1 L2	33 L2	130 L2	<5.8 L2	<6.2 L2	40	56 L2	<58 L2	<6.2 L2	160 L2
Naphthalene	<36	<32	84	<35	<37	<36	<170	<350	<37	<280
Phenanthrene	7.3	88	240	<5.8	<6.2	94	270	2,400	<6.2	330
Pyrene	33	100	430	<5.8	<6.2	280	260	3,200	<6.2	570

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-83	GP-84	GP-85	GP-86	GP-88	GP-89	GP-90	GP-91	GP-93	GP-94	GP-95
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/19/05	10/18/05	10/18/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<170	<47	37	100	280	70,000	6,000	<180	<35	<37	54
2-Methylnaphthalene	<140	<39	88	120	710	82,000	3,200	<150	<29	<31	49
Acenaphthene	<280	<78	<61	<64	<280	7,300	400	<290	<59	<62	<52
Anthracene	<28	<7.8	6.6	<6.4	93	7,900	260	<29	<5.9	<6.2	20
Benzo (a) anthracene	100	22	37	31	460	13,000	650	74	<5.9	<6.2	190
Benzo (a) pyrene	37	14	31	22	350	<120	82	57	<5.9	<6.2	28
Benzo (b) fluoranthene	56 L2	13	32	23	330 L2	<120 L2	63 L2	60 L2	<5.9 L2	<6.2 L2	37 L2
Benzo (g,h,i) perylene	<28	18	33	22	250	<120	40	63	<5.9	<6.2	32
Benzo (k) fluoranthene	69	<7.8	13	12	170	<120	30 L2	<29	<5.9	<6.2 L2	13 L2
Chrysene	63	9.1	<6.1	7.2	79	4,400	190	<29	<5.9	<6.2	250
Dibenzo (a,h) anthracene	<42 L2	<12	<9.2	<9.6	<42 L2	<180 L2	10 L2	<44 L2	<8.8 L2	<9.3 L2	<7.8 L2
Fluoranthene	240	61	140	31	1,300	110,000	3,900	170	<12	<12	330
Fluorene	<56	<16	<12	<13	160	21,000	1,200	<59	<12	<12	46
Indeno (1,2,3-cd) pyrene	<28 L2	9.7	34	21	220 L2	<120 L2	33 L2	44 L2	<5.9 L2	<6.2 L2	28 L2
Naphthalene	<170	<47	<37	<38	<170	2,900	370	<180	<35	<37	66
Phenanthrene	130	31	77	24	540	50,000	2,100	80	<5.9	<6.2	110
Pyrene	410	76	91	60	1,200	96,000	3,200	120	<5.9	<6.2	350

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNr Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNr Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNr Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-98	GP-99	GP-100	GP-101	GP-102	GP-103	GP-104	GP-105	GP-109	GP-110
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	0-2'	0-2'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/19/05
PAHs (µg/kg)										
1-Methylnaphthalene	<37	150	<190	<38	<990	<260	430	<180	<170	150
2-Methylnaphthalene	91	310	170	<31	2,200	<220	370	<150	280	420
Acenaphthene	<62	<62	<310	<63	<1,700	<440	<310	<300	<290	<56
Anthracene	19	22	31	<6.3	720	<44	57	41	82	36
Benzo (a) anthracene	94	36	620	<6.3	2,200	70	390	130	320	99
Benzo (a) pyrene	89	14	<31	<6.3	1,500	<44	100	96	230	320
Benzo (b) fluoranthene	66	8.9	<31	<6.3	1,300	49	80	70	230	320 L2
Benzo (g,h,i) perylene	70	<6.2	<31	<6.3	1,100	<44	80	72	160	270
Benzo (k) fluoranthene	38	<6.2	<31	<6.3	860	<44	33	43	140	180 L2
Chrysene	200	36	670	<6.3	4,600	120	84	110	290	52
Dibenzo (a,h) anthracene	12	<9.3	<46	<9.4	<250	<65	<46	<45	44	51 L2
Fluoranthene	190	210	530	<13	5,100	180	1,200	320	680	610
Fluorene	<12	28	<62	<13	430	<87	200	<61	<57	31
Indeno (1,2,3-cd) pyrene	64	<6.2	<31	<6.3	920	44	67	62	150	270 L2
Naphthalene	<37	73	<190	<38	<990	<260	<180	<180	<170	82
Phenanthrene	97	150	130	<6.3	2,800	97	420	200	360	230
Pyrene	190	95	390	<6.3	5,000	200	1,200	330	610	580

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-111	GP-112	GP-113	GP-114	GP-115	GP-116	GP-117	GP-118	GP-119	GP-120	GP-121
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	0-2'	0-2'
Sample Date	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	11/10/06	11/10/06
PAHs (µg/kg)											
1-Methylnaphthalene	<35	<31	<32	<37	<37	<36	<35	<35	<32	360	<150
2-Methylnaphthalene	<29	<26	<27	<31	50	<30	<29	<29	<26	870	250
Acenaphthene	<58	<52	<53	<61	<61	<61	<58	<58	<53	<380	<240
Anthracene	<5.8	<5.2	<5.3	<6.1	10	<6.1	<5.8	<5.8	<5.3	150	67
Benzo (a) anthracene	<5.8	<5.2	<5.3	<6.1	36	<6.1	<5.8	<5.8	14	1,000	330
Benzo (a) pyrene	<5.8	<5.2	<5.3	<6.1	26	<6.1	<5.8	<5.8	13	760	360
Benzo (b) fluoranthene	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	20 L2	<6.1 L2	<5.8 L2	<5.8 L2	14 L2	460	260
Benzo (g,h,i) perylene	<5.8	<5.2	<5.3	<6.1	20	<6.1	<5.8	<5.8	13	450	250
Benzo (k) fluoranthene	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	12 L2	<6.1 L2	<5.8 L2	<5.8 L2	11 L2	350	180
Chrysene	<5.8	<5.2	<5.3	<6.1	43	<6.1	<5.8	<5.8	<5.3	530	280
Dibenzo (a,h) anthracene	<8.7 L2	<7.9 L2	<8.0 L2	<9.2 L2	<9.1 L2	<9.1 L2	<8.6 L2	<8.7 L2	<7.9 L2	83	43
Fluoranthene	<12	<10	<11	<12	89	<12	<12	<12	32	1,300	690
Fluorene	<12	<10	<11	<12	<12	<12	<12	<12	<11	160	<49
Indeno (1,2,3-cd) pyrene	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	17 L2	<6.1 L2	<5.8 L2	<5.8 L2	9.5 L2	490	250
Naphthalene	<35	<31	<32	<37	<37	<36	<35	<35	<32	<230	<150
Phenanthrene	<5.8	<5.2	<5.3	<6.1	47	<6.1	<5.8	<5.8	14	850	370
Pyrene	<5.8	<5.2	<5.3	<6.1	76	<6.1	<5.8	<5.8	28	620	500

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-122	GP-123	GP-124	GP-125	GP-126	GP-127	GP-128	GP-129	GP-130	GP-131	GP-132
Sample Depth (feet)	0-2'	0-2'	2-4'	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	0-2'	2-4'
Sample Date	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06
PAHs (µg/kg)											
1-Methylnaphthalene	<610	<1,900	<210	<950	<140	<280	<210	<37	<93	<210	<320
2-Methylnaphthalene	570	<1,600	<170	<790	<110	<240	<170	<31	<78	<180	<270
Acenaphthene	<1,000	<3,200	<350	<1,600	<230	<470	<340	<62	<160	<350	<540
Anthracene	220	320	320	<160	92	240	290	<6.2	<16	<35	140
Benzo (a) anthracene	630	900	550	<160	280	820	1,100	11	45	<35	500
Benzo (a) pyrene	620	800	380	<160	280	1,000	1,200	9.4	42	47	400
Benzo (b) fluoranthene	500	590	250	<160	200	730	950	6.4	53	67	340
Benzo (g,h,i) perylene	470	540	280	290	180	670	770	<6.2	49	<35	350
Benzo (k) fluoranthene	370	450	210	220	160	440	600	<6.2	27	60	290
Chrysene	560	820	370	<160	230	700	870	8.7	43	44	390
Dibenzo (a,h) anthracene	<150	<480	57	<240	39	110	130	<9.2	<23	<53	110
Fluoranthene	1,300	2,100	1,000	<320	470	1800	1800	34	120	<70	750
Fluorene	<200	<640	<69	<320	<46	<95	<68	<12	<31	<70	<110
Indeno (1,2,3-cd) pyrene	410	480	210	<160	160	690	710	<6.2	29	<35	330
Naphthalene	<610	<1,900	<210	<950	<140	<280	<210	<37	<93	<210	<320
Phenanthrene	700	900	670	160	290	830	1,400	30	68	38	530
Pyrene	860	1,500	940	<160	510	1,800	2,000	15	71	<35	850

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-133	GP-134	GP-135	GP-137	GP-138	GP-139	GP-140	GP-141	GP-143	GP-145	GP-152
Sample Depth (feet)	2-4'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	2-4'	2-4'
Sample Date	11/10/06	11/10/06	11/10/06	11/10/06	11/13/06	11/10/06	11/10/06	11/10/06	11/13/06	11/13/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	<480	<460	<610	<280	<38	2,000	<320	<400	<980	<180	<36
2-Methylnaphthalene	<400	<380	<510	540	<32	7,200	<270	<330	1,200	420	<30
Acenaphthene	<790	<760	<1,000	<470	<63	1,300	<530	<660	<1,600	<300	<61
Anthracene	<79	<76	250	320	<6.3	640	87	690	380	250	<6.1
Benzo (a) anthracene	<79	400	950	1,100	<6.3	430	270	1,900	1,500	900	8.6
Benzo (a) pyrene	<79	240	540	1,400	<6.3	200	240	1,900	790	650	<6.1
Benzo (b) fluoranthene	<79	250	850	750	<6.3	210	210	1,200	590	410	<6.1
Benzo (g,h,i) perylene	<79	210	<100	860	7.0	<57	210	1,200	530	470	<6.1
Benzo (k) fluoranthene	<79	97	320	660	<6.3	210	<53	1,100	440	360	<6.1
Chrysene	<79	220	500	820	<6.3	230	210	1,500	880	650	6.2
Dibenzo (a,h) anthracene	<120	<110	<150	180	<9.5	<86	<80	220	<240	90	<9.1
Fluoranthene	<160	380	1,400	2,000	19	1,100	540	3,600	2,300	1,900	17
Fluorene	<160	<150	<200	120	<13	970	<110	<130	<330	170	<12
Indeno (1,2,3-cd) pyrene	<79	<76	340	1,000	<6.3	180	190	1,300	510	480	<6.1
Naphthalene	<480	<460	<610	<280	<38	9,500	<320	<400	<980	<180	<36
Phenanthrene	<79	250	300	1,100	11	2,200	340	3,000	1,700	1,400	15
Pyrene	<79	93	780	1,700	9.3	900	380	3,600	1,800	1,600	13

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-153	GP-154	GP-155	GP-156	GP-157	GP-158	GP-159	GP-160	GP-162	GP-163	GP-164
Sample Depth (feet)	2-4'	0-2'	2-4'	2-4'	0-2'	0-2'	0-2'	2-4'	2-4'	0-2'	2-4'
Sample Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	01/10/07	01/10/07	01/10/07
PAHs (µg/kg)											
1-Methylnaphthalene	<91	<37	<37	8,500	6,800	310	110	300	<48	<790	<290
2-Methylnaphthalene	490	<31	<31	5,900	7,900	520	130	450	<40	<660	260
Acenaphthene	<150	<61	<62	580	530	<110	<140	<320	<79	<1,300	<490
Anthracene	180	130	<6.2	870	900	57	<14	<32	<7.9	<130	55
Benzo (a) anthracene	440	310	9.9	1,000	1,300	120	<14	63	<7.9	<130	280
Benzo (a) pyrene	340	290	8.1	<13	<27	29	<14	<32	<7.9	<130	350
Benzo (b) fluoranthene	250	190	7.0	<13	77	19	<14	<32	<7.9	<130	240
Benzo (g,h,i) perylene	190	160	<6.2	<13	<27	13	<14	<32	<7.9	<130	380
Benzo (k) fluoranthene	190	140	6.8	<13	<27	<11	<14	<32	<7.9	<130	170
Chrysene	380	280	8.1	130	270	46	<14	<32	<7.9	<130	250
Dibenzo (a,h) anthracene	39	33	<9.2	<20	<40	<16	<21	<48	<12	<200	<73
Fluoranthene	1,200	440	19	5,400	4,000	430	51	250	<16	<260	440
Fluorene	130	<12	<12	2,100	1,700	110	<29	70	<16	<260	<98
Indeno (1,2,3-cd) pyrene	210	180	6.2	<13	<27	28	<14	<32	<7.9	<130	280
Naphthalene	130	<37	<37	660	670	75	<86	<190	<48	<790	<290
Phenanthrene	920	46	11	4,300	3,300	330	37	140	<7.9	<130	260
Pyrene	810	590	15	4,500	4,200	770	25	220	<7.9	<130	330

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-165	GP-166	GP-167	GP-168	GP-169	GP-170	GP-171	GP-172	GP-173	GP-177
Sample Depth (feet)	0-2'	2-4'	0-2'	2-4'	2-4'	0-2'	2-4'	0-2'	0-2'	0-2'
Sample Date	01/10/07	01/09/07	01/10/07	01/10/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07
PAHs (µg/kg)										
1-Methylnaphthalene	<240	<340	<290	<60	<120	960	200	<420	<1,000	<130
2-Methylnaphthalene	430	340	640	76	330	4,600	860	1,100	1,800	<110
Acenaphthene	<390	<570	<490	<100	<200	1,100	220	<700	<1,700	<220
Anthracene	100	120	230	12	54	1,900	290	430	450	52
Benzo (a) anthracene	390	410	790	39	190	5,500	890	1,800	1,300	160
Benzo (a) pyrene	310	340	720	28	110	3,400	590	1,200	1,000	120
Benzo (b) fluoranthene	240	250	580	20	83	2,600	380	980	760	89
Benzo (g,h,i) perylene	260	270	430	27	110	2,300	440	790	830	100
Benzo (k) fluoranthene	160	180	360	13	48	1,600	310	640	550	65
Chrysene	410	330	640	29	120	3,600	570	1,300	930	130
Dibenzo (a,h) anthracene	<59	<86	75	<15	<30	450	86	140	<250	<32
Fluoranthene	740	930	1,700	66	380	11,000	1,500	5,200	2,700	330
Fluorene	<79	<110	<98	<20	39	860	110	<140	390	<43
Indeno (1,2,3-cd) pyrene	220	230	430	<10	110	1,900	360	640	690	78
Naphthalene	<240	<340	<290	<60	<120	<270	320	<420	<1,000	<130
Phenanthrene	470	490	820	66	280	7,700	1,100	900	1,800	210
Pyrene	550	630	1,400	40	230	6,400	1,400	3,800	1,900	250

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	Sample Name	GP-183	GP-187	GP-189	GP-199	GP-200		GP-201	GP-202
Sample Depth (feet)	Sample Depth (feet)	2-4'	2-4'	4-6'	4-6'	0-2'	0-2'	0-2'	2-4'
Sample Date	Sample Date	01/09/07	01/10/07	01/10/07	01/10/07	01/10/07	11/08/07	11/08/07	11/08/07
PAHs (µg/kg)	PAHs (µg/kg)								
1-Methylnaphthalene	1-Methylnaphthalene	<290	<35	<290	<280	<1,200	<2,100	<390	<u>27,000</u>
2-Methylnaphthalene	2-Methylnaphthalene	<240	<29	<240	<230	2,200	<1,800	<330	<u>170,000</u>
Acenaphthene	Acenaphthene	<480	<58	<480	<460	<2,000	<3,500	<650	<u>43,000</u>
Anthracene	Anthracene	58	<5.8	<48	<46	650	2,000	75	61,000
Benzo (a) anthracene	Benzo (a) anthracene	<u>230</u>	6.1	<u>120</u>	61	<u>2,600</u>	<u>6,100</u>	<u>280</u>	<u>240,000</u>
Benzo (a) pyrene	Benzo (a) pyrene	<u>150</u>	<5.8	<u>88</u>	<u>55</u>	<u>2,100</u>	<u>5,200</u>	<u>260</u>	<u>190,000</u>
Benzo (b) fluoranthene	Benzo (b) fluoranthene	<u>110</u>	<5.8	74	49	<u>1,700</u>	<u>3,800</u>	<u>150</u>	<u>110,000</u>
Benzo (g,h,i) perylene	Benzo (g,h,i) perylene	120	<5.8	92	47	1,600	<u>3,100</u>	170	<u>95,000</u>
Benzo (k) fluoranthene	Benzo (k) fluoranthene	77	<5.8	<48	<46	320	<u>2,200</u>	110	<u>73,000</u>
Chrysene	Chrysene	130	<5.8	83	50	2,000	4,900	210	<u>160,000</u>
Dibenzo (a,h) anthracene	Dibenzo (a,h) anthracene	<71	<8.7	<73	<70	<u>340</u>	<530	<98	<u>17,000</u>
Fluoranthene	Fluoranthene	410	12	270	130	6,900	15,000	630	370,000
Fluorene	Fluorene	<95	<12	<97	<93	<400	1,000	<130	21,000
Indeno (1,2,3-cd) pyrene	Indeno (1,2,3-cd) pyrene	<u>99</u>	<5.8	81	<46	<u>1,400</u>	<u>3,200</u>	<u>140</u>	<u>100,000</u>
Naphthalene	Naphthalene	<290	<35	<290	<280	<1,200	<2,100	<390	<u>13,000</u>
Phenanthrene	Phenanthrene	220	9.3	140	57	<u>2,100</u>	<u>9,500</u>	300	<u>210,000</u>
Pyrene	Pyrene	270	<5.8	170	86	3,600	9,500	650	380,000

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 2. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-203			GP-204	GP-206	GP-208	GP-210	GP-212	GP-213
Sample Depth (feet)	3-5'	6-8'	10-12'	2-4'	2-4'	2-4'	0-2'	0-2'	2-4'
Sample Date	11/08/07	11/09/07	11/08/07	01/10/07	01/09/07	01/09/07	01/09/07	01/10/07	01/10/07
PAHs (µg/kg)									
1-Methylnaphthalene	<86	<36	<36	<2,500	<37	<57	<960	<470	<36
2-Methylnaphthalene	<72	<30	<30	2,200	<31	220	1,900	<390	<30
Acenaphthene	<140	<61	<60	<4,200	<62	<95	<1,600	<780	<60
Anthracene	<14	<6.1	<6	1,500	<6.2	210	740	99	<6.0
Benzo (a) anthracene	33	<6.1	<6	2,000	<6.2	560	2,700	380	<6.0
Benzo (a) pyrene	26	<6.1	<6	1,500	<6.2	400	2,300	360	<6.0
Benzo (b) fluoranthene	18	<6.1	<6	1,200	<6.2	270	1,600	270	<6.0
Benzo (g,h,i) perylene	23	<6.1	<6	1,300	<6.2	300	1,700	290	<6.0
Benzo (k) fluoranthene	<14	<6.1	<6	870	<6.2	210	1,100	82	<6.0
Chrysene	18	<6.1	<6	1,800	<6.2	370	1,700	280	<6.0
Dibenzo (a,h) anthracene	<21	<9.1	<9	<620	<9.2	56	290	<120	<9.0
Fluoranthene	92	<12	<12	5,300	<12	1,100	4,600	660	<12
Fluorene	<29	<12	<12	<830	<12	42	<320	<160	<12
Indeno (1,2,3-cd) pyrene	20	<6.1	<6	970	<6.2	250	1,800	270	<6.0
Naphthalene	<86	<36	<36	<2,500	<37	<57	<960	<470	<36
Phenanthrene	69	<6.1	7.4	4,400	<6.2	720	2,600	450	<6.0
Pyrene	34	<6.1	11	3,500	<6.2	1,000	4,400	820	<6.0

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	NR 720	Proposed	Proposed	Proposed	GP-1	GP-2	GP-3	GP-4	GP-5	
Sample Depth (feet)	Table 1	Groundwater	Non-Industrial	Industrial	4-6'	6-8'	6-8'	6-8'	6-8'	12-14'
Sample Date	RCL	Protection	Direct Contact	Direct Contact	05/23/96	05/23/96	05/23/96	05/23/96	05/24/96	05/24/96
PAHs (µg/kg)										
1-Methylnaphthalene	NE	23,000	1,100,000	70,000,000	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	NE	20,000	600,000	40,000,000	<25	<25	<25	<25	<25	<25
Acenaphthene	NE	38,000	900,000	60,000,000	NA	NA	NA	NA	NA	NA
Anthracene	NE	3,000,000	5,000,000	300,000,000	<8.0	33	<8.0	<8.0	<8.0	<8.0
Benzo (a) anthracene	NE	17,000	88	3,900	<2.0	120	<2.0	<2.0	<2.0	<2.0
Benzo (a) pyrene	NE	48,000	8.8	390	<4.0	110	<4.0	<4.0	<4.0	<4.0
Benzo (b) fluoranthene	NE	360,000	88	3,900	<2.0	41	<2.0	<2.0	<2.0	<2.0
Benzo (g,h,i) perylene	NE	6,800,000	1,800	39,000	<4.0	110	<4.0	<4.0	<4.0	<4.0
Benzo (k) fluoranthene	NE	870,000	880	39,000	<2.0	65	<2.0	<2.0	<2.0	<2.0
Chrysene	NE	37,000	8,800	390,000	<4.0	98	<4.0	<4.0	<4.0	<4.0
Dibenzo (a,h) anthracene	NE	38,000	8.8	390	NA	NA	NA	NA	NA	NA
Fluoranthene	NE	500,000	600,000	40,000,000	<8.0	230	<8.0	<8.0	<8.0	<8.0
Fluorene	NE	100,000	600,000	40,000,000	<16	<16	<16	<16	<16	<16
Indeno (1,2,3-cd) pyrene	NE	680,000	88	3,900	<4.0	60	<4.0	<4.0	<4.0	<4.0
Naphthalene	2,700	400	20,000	110,000	NA	NA	NA	NA	NA	NA
Phenanthrene	NE	1,800	18,000	390,000	<16	230	<16	<16	<16	<16
Pyrene	NE	8,700,000	500,000	30,000,000	<8.0	190	<8.0	<8.0	<8.0	<8.0

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-6		GP-7	GP-8		GP-9	GP-10	GP-11	GP-12		GP-13
Sample Depth (feet)	6-8'	14-16'	6-8'	4-6'	6-8'	6-8'	6-8'	4-6'	4-6'	12-14'	6-8'
Sample Date	05/24/96	05/24/96	05/23/96	05/28/96	05/28/96	05/24/96	05/24/96	05/24/96	05/28/96	05/28/96	05/24/96
PAHs (µg/kg)											
1-Methylnaphthalene	<25	<25	NA	<25	<25	<25	<25	<25	490	<25	<25
2-Methylnaphthalene	1,200	<25	<25	<25	<25	<25	<25	<25	300	<25	<25
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Benzo (a) anthracene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzo (a) pyrene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Benzo (b) fluoranthene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzo (g,h,i) perylene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Benzo (k) fluoranthene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chrysene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Fluorene	270	<16	<16	<16	<16	<16	<16	<16	38	<16	<16
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	4.0	<4.0	<4.0
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1,600	<16	<16	<16	<16	<16	<16	<16	100	<16	<16
Pyrene	<8.0	<8.0	NA	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-14	GP-15	GP-16	GP-17		GP-18	GP-19	GP-20	GP-21	
Sample Depth (feet)	6-8'	4-6'	4-6'	4-6'	14-16'	6-8'	6-8'	6-8'	2-4'	10-12'
Sample Date	05/24/96	05/23/96	05/23/96	05/23/96	05/23/96	05/28/96	05/23/96	05/28/96	05/28/96	05/28/96
PAHs (µg/kg)										
1-Methylnaphthalene	<25	<25	<25	3,700	<25	<25	<25	<500 M	<25	<25
2-Methylnaphthalene	<25	<25	<25	3,500	<25	<25	<25	<500 M	<25	<25
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0
Benzo (a) anthracene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	130	<2.0
Benzo (a) pyrene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Benzo (b) fluoranthene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0
Benzo (g,h,i) perylene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Benzo (k) fluoranthene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0
Chrysene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	84	<4.0	<4.0
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	2,400	120	<8.0
Fluorene	<16	<16	<16	<320 M	<16	<16	<16	530	<16	<16
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	<16	<16	<16	1,300	<16	<16	<16	2,900	230	<16
Pyrene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	1300	82	<8.0

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-22	GP-23	GP-24	GP-25	GP-27	GP-28	GP-30	GP-31	GP-58	GP-59
Sample Depth (feet)	6-8'	6-8'	2-4'	6-8'	6-8'	6-8'	6-8'	6-8'	0-2'	0-2'
Sample Date	05/28/96	05/29/96	05/28/96	05/29/96	05/29/96	05/29/96	05/29/96	05/29/96	10/19/05	10/19/05
PAHs (µg/kg)										
1-Methylnaphthalene	<25	<25	520	<25	68	<25	<25	<25	<36	270
2-Methylnaphthalene	<25	<25	480	<25	94	<25	<25	<25	<30	160
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	<60	<59
Anthracene	<8.0	<8.0	20	<8	68	<8.0	9.6	<8.0	<6.0	<5.9
Benzo (a) anthracene	<2.0	<2.0	800	180	200	<2.0	89	<2.0	11	<5.9
Benzo (a) pyrene	<4.0	<4.0	170	<4.0	250	<4.0	6.9	<4.0	11	<5.9
Benzo (b) fluoranthene	<2.0	<2.0	36	<2.0	100	<2.0	26	<2.0	9.1 L2	<5.9 L2
Benzo (g,h,i) perylene	<4.0	<4.0	130	<4.0	230	<4.0	64	<4.0	11	<5.9
Benzo (k) fluoranthene	<2.0	<2.0	64	<2.0	130	<2.0	14	<2.0	<6.0 L2	<5.9 L2
Chrysene	<4.0	<4.0	110	24	200	<4.0	86	<4.0	<6.0 L2	<5.9 L2
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	<9.0 L2	<8.9 L2
Fluoranthene	<8.0	<8.0	270	130	440	<8.0	100	<8.0	33	12
Fluorene	<16	<16	<16	150	19	<16	31	<16	<12	<12
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	79	<4.0	160	<4.0	46	<4.0	9.5 L2	<5.9 L2
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	<36	120
Phenanthrene	<16	<16	110	67	250	<16	330	<16	18	11
Pyrene	<8.0	<8.0	210	1,100	370	<8.0	95	<8.0	62	59

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-60	GP-61	GP-62	GP-63	GP-64	GP-65	GP-66	GP-67	GP-68	GP-69	GP-70
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<36	<35	290	<36	<38	<38	<36	820	<410	180	<36
2-Methylnaphthalene	<30	110	200	50	48	<31	<30	1,200	430	720	120
Acenaphthene	<60	<59	<61	<60	<64	<63	<59	<79	<680	<64	<60
Anthracene	<6.0	7.8	42	<6.0	20	<6.3	<5.9	11	<68	74	16
Benzo (a) anthracene	13	33	220	16	45	<6.3	<5.9	64	400	640	110
Benzo (a) pyrene	9.5	17	14	9.3	37	<6.3	<5.9	33	200	370	140
Benzo (b) fluoranthene	12 L2	20 L2	24 L2	8.7 L2	30 L2	<6.3 L2	<5.9 L2	33	270 L2	360 L2	97 L2
Benzo (g,h,i) perylene	14	16	19	9.2	33	<6.3	<5.9	28	110	530	140
Benzo (k) fluoranthene	6.5 L2	12 L2	8.7 L2	<6.0 L2	17 L2	<6.3 L2	<5.9	15	140	160 L2	45 L2
Chrysene	<6.0 L2	19 L2	140 L2	8.8 L2	7.9 L2	<6.3 L2	<5.9	14	250	91 L2	12
Dibenzo (a,h) anthracene	<9.0 L2	<8.8 L2	<9.2 L2	<9.0 L2	<9.6 L2	<9.4 L2	<8.9 L2	<12	<100 L2	72 L2	21 L2
Fluoranthene	30	110	590	62	110	<13	<12	270	650	950	240
Fluorene	<12	<12	120	<12	<13	<13	<12	68	<140	70	12
Indeno (1,2,3-cd) pyrene	7.9 L2	12 L2	12 L2	7.2 L2	35 L2	<6.3 L2	<5.9 L2	25	99 L2	310 L2	100 L2
Naphthalene	<36	<35	<37	<36	<38	<38	<36	<47	<410	49	<36
Phenanthrene	11	72	210	37	83	<6.3	<5.9	150	430	490	100
Pyrene	27	330	830	61	100	<6.3	<5.9	210	960	770	230

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-71	GP-72	GP-73	GP-74	GP-75	GP-76	GP-77	GP-80	GP-81	GP-82
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05
PAHs (µg/kg)										
1-Methylnaphthalene	<36	53	120	<35	<37	47	<170	1,300	<37	<280
2-Methylnaphthalene	<30	120	380	<29	<31	130	320	2,500	<31	420
Acenaphthene	<61	<54	<54	<58	<62	<60	<280	800	<62	<460
Anthracene	<6.1	10	33	<5.8	<6.2	13	<28	310	<6.2	<46
Benzo (a) anthracene	6.6	56	200	<5.8	<6.2	91	120	870	<6.2	270
Benzo (a) pyrene	<6.1	42	200	<5.8	<6.2	64	84	71	<6.2	210
Benzo (b) fluoranthene	<6.1 L2	42 L2	150 L2	<5.8 L2	<6.2 L2	54	86 L2	85 L2	<6.2 L2	190 L2
Benzo (g,h,i) perylene	<6.1	47	140	<5.8	<6.2	44	63	<58	<6.2	200
Benzo (k) fluoranthene	<6.1 L2	13 L2	82 L2	<5.8	<6.2	36	33	<58	<6.2	120
Chrysene	<6.1	11	25	<5.8	<6.2	15	73	250	<6.2	53
Dibenzo (a,h) anthracene	<9.1 L2	<8.1 L2	26 L2	<8.6 L2	<9.3 L2	<8.9	<41 L2	<86 L2	<9.3 L2	<69 L2
Fluoranthene	14	190	520	<12	<12	200	430	3,900	<12	540
Fluorene	<12	12	<11	<12	<12	13	<55	1,000	<12	<92
Indeno (1,2,3-cd) pyrene	<6.1 L2	33 L2	130 L2	<5.8 L2	<6.2 L2	40	56 L2	<58 L2	<6.2 L2	160 L2
Naphthalene	<36	<32	84	<35	<37	<36	<170	<350	<37	<280
Phenanthrene	7.3	88	240	<5.8	<6.2	94	270	2,400	<6.2	330
Pyrene	33	100	430	<5.8	<6.2	280	260	3,200	<6.2	570

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-83	GP-84	GP-85	GP-86	GP-88	GP-89	GP-90	GP-91	GP-93	GP-94	GP-95
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/19/05	10/18/05	10/18/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<170	<47	37	100	280	<u>70,000</u>	6,000	<180	<35	<37	54
2-Methylnaphthalene	<140	<39	88	120	710	<u>82,000</u>	3,200	<150	<29	<31	49
Acenaphthene	<280	<78	<61	<64	<280	7,300	400	<290	<59	<62	<52
Anthracene	<28	<7.8	6.6	<6.4	93	7,900	260	<29	<5.9	<6.2	20
Benzo (a) anthracene	<u>100</u>	22	37	31	<u>460</u>	13,000	<u>650</u>	74	<5.9	<6.2	<u>190</u>
Benzo (a) pyrene	<u>37</u>	<u>14</u>	<u>31</u>	<u>22</u>	<u>350</u>	<120	<u>82</u>	<u>57</u>	<5.9	<6.2	<u>28</u>
Benzo (b) fluoranthene	56 L2	13	32	23	<u>330 L2</u>	<120 L2	63 L2	60 L2	<5.9 L2	<6.2 L2	37 L2
Benzo (g,h,i) perylene	<28	18	33	22	250	<120	40	63	<5.9	<6.2	32
Benzo (k) fluoranthene	69	<7.8	13	12	170	<120	30 L2	<29	<5.9	<6.2 L2	13 L2
Chrysene	63	9.1	<6.1	7.2	79	4,400	190	<29	<5.9	<6.2	250
Dibenzo (a,h) anthracene	<42 L2	<12	<9.2	<9.6	<42 L2	<180 L2	<u>10 L2</u>	<44 L2	<8.8 L2	<9.3 L2	<7.8 L2
Fluoranthene	240	61	140	31	1,300	110,000	3,900	170	<12	<12	330
Fluorene	<56	<16	<12	<13	160	21,000	1,200	<59	<12	<12	46
Indeno (1,2,3-cd) pyrene	<28 L2	9.7	34	21	<u>220 L2</u>	<120 L2	33 L2	44 L2	<5.9 L2	<6.2 L2	28 L2
Naphthalene	<170	<47	<37	<38	<170	<u>2,900*</u>	370	<180	<35	<37	66
Phenanthrene	130	31	77	24	540	<u>50,000</u>	<u>2,100</u>	80	<5.9	<6.2	110
Pyrene	410	76	91	60	1,200	96,000	3,200	120	<5.9	<6.2	350

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-96	GP-97	GP-98	GP-99	GP-100	GP-101	GP-102	GP-103	GP-104	GP-105
Sample Depth (feet)	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05
PAHs (µg/kg)										
1-Methylnaphthalene	<u>59,000</u>	710	<37	150	<190	<38	<990	<260	430	<180
2-Methylnaphthalene	<u>480,000</u>	3,500	91	310	170	<31	2,200	<220	370	<150
Acenaphthene	<u>99,000</u>	1,000	<62	<62	<310	<63	<1,700	<440	<310	<300
Anthracene	280,000	360	19	22	31	<6.3	720	<44	57	41
Benzo (a) anthracene	<u>280,000</u>	<u>4,200</u>	<u>94</u>	36	<u>620</u>	<6.3	<u>2,200</u>	70	<u>390</u>	<u>130</u>
Benzo (a) pyrene	<u>250,000</u>	<u>7,100</u>	<u>89</u>	<u>14</u>	<31	<6.3	<u>1,500</u>	<44	<u>100</u>	<u>96</u>
Benzo (b) fluoranthene	<u>130,000</u>	<u>6,100</u>	66	8.9	<31	<6.3	<u>1,300</u>	49	80	70
Benzo (g,h,i) perylene	<u>110,000</u>	<u>5,600</u>	70	<6.2	<31	<6.3	1,100	<44	80	72
Benzo (k) fluoranthene	<u>92,000</u>	<u>3,100</u>	38	<6.2	<31	<6.3	860	<44	33	43
Chrysene	<u>260,000</u>	3,500	200	36	670	<6.3	4,600	120	84	110
Dibenzo (a,h) anthracene	<u>21,000</u>	<u>940</u>	<u>12</u>	<9.3	<46	<9.4	<250	<65	<46	<45
Fluoranthene	<u>1,000,000</u>	3,700	190	210	530	<13	5,100	180	1,200	320
Fluorene	<u>140,000</u>	210	<12	28	<62	<13	430	<87	200	<61
Indeno (1,2,3-cd) pyrene	<u>110,000</u>	<u>5,000</u>	64	<6.2	<31	<6.3	<u>920</u>	44	67	62
Naphthalene	<u>130,000*</u>	<290	<37	73	<190	<38	<990	<260	<180	<180
Phenanthrene	<u>1,000,000</u>	1,400	97	150	130	<6.3	<u>2,800</u>	97	420	200
Pyrene	<u>910,000</u>	4,000	190	95	390	<6.3	5,000	200	1,200	330

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-106	GP-107	GP-108	GP-109	GP-110	GP-111	GP-112	GP-113	GP-114	GP-115	GP-116
Sample Depth (feet)	2-4'	2-4'	0-2'	0-2'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<330	2,600	2,600	<170	150	<35	<31	<32	<37	<37	<36
2-Methylnaphthalene	2,500	16,000	16,000	280	420	<29	<26	<27	<31	50	<30
Acenaphthene	<560	2,100	1,600	<290	<56	<58	<52	<53	<61	<61	<61
Anthracene	890	7,000	6,500	82	36	<5.8	<5.2	<5.3	<6.1	10	<6.1
Benzo (a) anthracene	4,300	16,000	17,000	320	99	<5.8	<5.2	<5.3	<6.1	36	<6.1
Benzo (a) pyrene	3,100	11,000	11,000	230	320	<5.8	<5.2	<5.3	<6.1	26	<6.1
Benzo (b) fluoranthene	2,300	7,300	8,100	230	320 L2	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	20 L2	<6.1 L2
Benzo (g,h,i) perylene	2,000	6,100	6,300	160	270	<5.8	<5.2	<5.3	<6.1	20	<6.1
Benzo (k) fluoranthene	1,500	5,300	5,500	140	180 L2	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	12 L2	<6.1 L2
Chrysene	3,000	12,000	12,000	290	52	<5.8	<5.2	<5.3	<6.1	43	<6.1
Dibenzo (a,h) anthracene	460	1,300	1,400	44	51 L2	<8.7 L2	<7.9 L2	<8.0 L2	<9.2 L2	<9.1 L2	<9.1 L2
Fluoranthene	8,300	38,000	40,000	680	610	<12	<10	<11	<12	89	<12
Fluorene	550	3,600	3,400	<57	31	<12	<10	<11	<12	<12	<12
Indeno (1,2,3-cd) pyrene	1,800	5,900	5,800	150	270 L2	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	17 L2	<6.1 L2
Naphthalene	<330	1,900	1,700	<170	82	<35	<31	<32	<37	<37	<36
Phenanthrene	3,500	24,000	25,000	360	230	<5.8	<5.2	<5.3	<6.1	47	<6.1
Pyrene	8,100	35,000	35,000	610	580	<5.8	<5.2	<5.3	<6.1	76	<6.1

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-117	GP-118	GP-119	GP-120	GP-121	GP-122	GP-123	GP-124	GP-125	GP-126	GP-127
Sample Depth (feet)	2-4'	2-4'	2-4'	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	0-2'	0-2'
Sample Date	10/19/05	10/19/05	10/19/05	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06
PAHs (µg/kg)											
1-Methylnaphthalene	<35	<35	<32	360	<150	<610	<1,900	<210	<950	<140	<280
2-Methylnaphthalene	<29	<29	<26	870	250	570	<1,600	<170	<790	<110	<240
Acenaphthene	<58	<58	<53	<380	<240	<1,000	<3,200	<350	<1,600	<230	<470
Anthracene	<5.8	<5.8	<5.3	150	67	220	320	320	<160	92	240
Benzo (a) anthracene	<5.8	<5.8	14	1,000	330	630	900	550	<160	280	820
Benzo (a) pyrene	<5.8	<5.8	13	760	360	620	800	380	<160	280	1,000
Benzo (b) fluoranthene	<5.8 L2	<5.8 L2	14 L2	460	260	500	590	250	<160	200	730
Benzo (g,h,i) perylene	<5.8	<5.8	13	450	250	470	540	280	290	180	670
Benzo (k) fluoranthene	<5.8 L2	<5.8 L2	11 L2	350	180	370	450	210	220	160	440
Chrysene	<5.8	<5.8	<5.3	530	280	560	820	370	<160	230	700
Dibenzo (a,h) anthracene	<8.6 L2	<8.7 L2	<7.9 L2	83	43	<150	<480	57	<240	39	110
Fluoranthene	<12	<12	32	1,300	690	1,300	2,100	1,000	<320	470	1800
Fluorene	<12	<12	<11	160	<49	<200	<640	<69	<320	<46	<95
Indeno (1,2,3-cd) pyrene	<5.8 L2	<5.8 L2	9.5 L2	490	250	410	480	210	<160	160	690
Naphthalene	<35	<35	<32	<230	<150	<610	<1,900	<210	<950	<140	<280
Phenanthrene	<5.8	<5.8	14	850	370	700	900	670	160	290	830
Pyrene	<5.8	<5.8	28	620	500	860	1,500	940	<160	510	1,800

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

< Analyte detected below laboratory detection limits.

E Concentration exceeds the calibration range and therefore result is semi-quantitative.

L2 Laboratory control sample recovery was below acceptance limits.

M Matrix interference.

NA Not analyzed.

NE Not established.

PAH Polycyclic aromatic hydrocarbons.

RCL Residual contaminant level.

µg/kg Micrograms per kilogram.

WDNR Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-128	GP-129	GP-130	GP-131	GP-132	GP-133	GP-134	GP-135	GP-136	GP-137	GP-138
Sample Depth (feet)	0-2'	2-4'	0-2'	0-2'	2-4'	2-4'	0-2'	0-2'	0-2'	0-2'	0-2'
Sample Date	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	<210	<37	<93	<210	<320	<480	<460	<610	<1,000	<280	<38
2-Methylnaphthalene	<170	<31	<78	<180	<270	<400	<380	<510	8,800	540	<32
Acenaphthene	<340	<62	<160	<350	<540	<790	<760	<1,000	4,800	<470	<63
Anthracene	290	<6.2	<16	<35	140	<79	<76	250	11,000	320	<6.3
Benzo (a) anthracene	1,100	11	45	<35	500	<79	400	950	9,300	1,100	<6.3
Benzo (a) pyrene	1,200	9.4	42	47	400	<79	240	540	3,300	1,400	<6.3
Benzo (b) fluoranthene	950	6.4	53	67	340	<79	250	850	2,900	750	<6.3
Benzo (g,h,i) perylene	770	<6.2	49	<35	350	<79	210	<100	1,500	860	7.0
Benzo (k) fluoranthene	600	<6.2	27	60	290	<79	97	320	2,400	660	<6.3
Chrysene	870	8.7	43	44	390	<79	220	500	7,100	820	<6.3
Dibenzo (a,h) anthracene	130	<9.2	<23	<53	110	<120	<110	<150	270	180	<9.5
Fluoranthene	1800	34	120	<70	750	<160	380	1,400	30,000	2,000	19
Fluorene	<68	<12	<31	<70	<110	<160	<150	<200	4,100	120	<13
Indeno (1,2,3-cd) pyrene	710	<6.2	29	<35	330	<79	<76	340	1,500	1,000	<6.3
Naphthalene	<210	<37	<93	<210	<320	<480	<460	<610	<1000	<280	<38
Phenanthrene	1,400	30	68	38	530	<79	250	300	19,000	1,100	11
Pyrene	2,000	15	71	<35	850	<79	93	780	12,000	1,700	9.3

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-139	GP-140	GP-141	GP-142	GP-143	GP-144	GP-145	GP-146	GP-147	GP-148	GP-149
Sample Depth (feet)	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	2-4'	0-2'	0-2'
Sample Date	11/10/06	11/10/06	11/10/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	2,000	<320	<400	2,600	<980	1,400	<180	<15,000	<1,300	5,000	<u>110,000</u>
2-Methylnaphthalene	7,200	<270	<330	<u>25,000</u>	1,200	7,200	420	<u>28,000</u>	<1,100	<u>22,000</u>	<u>540,000</u>
Acenaphthene	1,300	<530	<660	7,700	<1,600	1,900	<300	<25,000	<2,200	<4,000	<u>110,000</u>
Anthracene	640	87	690	7,500	380	1,600	250	16,000	450	10,000	240,000
Benzo (a) anthracene	<u>430</u>	<u>270</u>	<u>1,900</u>	<u>7,600</u>	<u>1,500</u>	<u>7,400</u>	<u>900</u>	<u>30,000</u>	<u>3,000</u>	<u>26,000</u>	<u>310,000</u>
Benzo (a) pyrene	<u>200</u>	<u>240</u>	<u>1,900</u>	<u>4,500</u>	<u>790</u>	<u>4,300</u>	<u>650</u>	<u>16,000</u>	<u>2,300</u>	<u>16,000</u>	<u>230,000</u>
Benzo (b) fluoranthene	<u>210</u>	<u>210</u>	<u>1,200</u>	<u>4,300</u>	<u>590</u>	<u>3,600</u>	<u>410</u>	<u>11,000</u>	<u>1,600</u>	<u>10,000</u>	<u>160,000</u>
Benzo (g,h,i) perylene	<57	210	1,200	3,300	530	2,600	470	9,600	1,400	7,600	<u>110,000</u>
Benzo (k) fluoranthene	210	<53	<u>1,100</u>	<u>2,700</u>	440	<u>2,400</u>	360	<u>8,400</u>	<u>1,200</u>	<u>7,400</u>	<u>110,000</u>
Chrysene	230	210	1,500	6,100	880	5,100	650	<u>20,000</u>	2,200	<u>16,000</u>	<7,500
Dibenzo (a,h) anthracene	<86	<80	<u>220</u>	<u>510</u>	<240	<u>500</u>	<u>90</u>	<3,700	<330	<u>1,400</u>	<u>22,000</u>
Fluoranthene	1,100	540	3,600	27,000	2,300	16,000	1,900	91,000	4,900	53,000	<u>870,000</u>
Fluorene	970	<110	<130	6,600	<330	1,900	170	7,800	<440	5,400	<u>170,000</u>
Indeno (1,2,3-cd) pyrene	<u>180</u>	<u>190</u>	<u>1,300</u>	<u>2,900</u>	<u>510</u>	<u>2,900</u>	<u>480</u>	<u>9,600</u>	<u>1,300</u>	<u>8,900</u>	<u>130,000</u>
Naphthalene	<u>9500*</u>	<320	<400	<u>15000*</u>	<980	<u>2900*</u>	<180	<15,000	<1,300	<u>4200*</u>	<u>220000*</u>
Phenanthrene	<u>2,200</u>	340	<u>3,000</u>	<u>27,000</u>	1,700	<u>13,000</u>	1,400	<u>56,000</u>	770	<u>40,000</u>	<u>860,000</u>
Pyrene	900	380	3,600	17,000	1,800	9,900	1,600	42,000	6,000	36,000	560,000

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<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-150	GP-151	GP-152	GP-153	GP-154	GP-155	GP-156	GP-157	GP-158	GP-159	GP-160
Sample Depth (feet)	0-2'	0-2'	2-4'	2-4'	0-2'	2-4'	2-4'	0-2'	0-2'	0-2'	2-4'
Sample Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	140	4,800	<36	<91	<37	<37	8,500	6,800	310	110	300
2-Methylnaphthalene	590	<u>25,000</u>	<30	490	<31	<31	5,900	7,900	520	130	450
Acenaphthene	93	<5,600	<61	<150	<61	<62	580	530	<110	<140	<320
Anthracene	220	13,000	<6.1	180	130	<6.2	870	900	57	<14	<32
Benzo (a) anthracene	<u>590</u>	<u>45,000</u>	8.6	<u>440</u>	<u>310</u>	9.9	<u>1,000</u>	<u>1,300</u>	<u>120</u>	<14	63
Benzo (a) pyrene	<u>320</u>	<u>29,000</u>	<6.1	<u>340</u>	<u>290</u>	8.1	<13	<27	<u>29</u>	<14	<32
Benzo (b) fluoranthene	<u>230</u>	<u>17,000</u>	<6.1	<u>250</u>	<u>190</u>	7.0	<13	77	19	<14	<32
Benzo (g,h,i) perylene	200	<u>15,000</u>	<6.1	190	160	<6.2	<13	<27	13	<14	<32
Benzo (k) fluoranthene	160	<u>13,000</u>	<6.1	190	140	6.8	<13	<27	<11	<14	<32
Chrysene	370	<u>28,000</u>	6.2	380	280	8.1	130	270	46	<14	<32
Dibenzo (a,h) anthracene	<u>37</u>	<u>2,600</u>	<9.1	<u>39</u>	<u>33</u>	<9.2	<20	<40	<16	<21	<48
Fluoranthene	1,200	74,000	17	1,200	440	19	5,400	4,000	430	51	250
Fluorene	130	3,700	<12	130	<12	<12	2,100	1,700	110	<29	70
Indeno (1,2,3-cd) pyrene	<u>210</u>	<u>16,000</u>	<6.1	<u>210</u>	<u>180</u>	6.2	<13	<27	28	<14	<32
Naphthalene	180	<3,400	<36	130	<37	<37	<u>660</u>	<u>670</u>	75	<86	<190
Phenanthrene	1,000	<u>41,000</u>	15	920	46	11	<u>4,300</u>	<u>3,300</u>	330	37	140
Pyrene	800	57,000	13	810	590	15	4,500	4,200	770	25	220

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-161	GP-162	GP-163	GP-164	GP-165	GP-166	GP-167	GP-168	GP-169	GP-170	GP-171
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	0-2'	2-4'	2-4'	0-2'	2-4'
Sample Date	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/09/07	01/10/07	01/10/07	01/09/07	01/09/07	01/09/07
PAHs (µg/kg)											
1-Methylnaphthalene	<4,900	<48	<790	<290	<240	<340	<290	<60	<120	960	200
2-Methylnaphthalene	<u>29,000</u>	<40	<660	260	430	340	640	76	330	4,600	860
Acenaphthene	<8,200	<79	<1,300	<490	<390	<570	<490	<100	<200	1,100	220
Anthracene	15,000	<7.9	<130	55	100	120	230	12	54	1,900	290
Benzo (a) anthracene	38,000	<7.9	<130	<u>280</u>	<u>390</u>	<u>410</u>	<u>790</u>	39	<u>190</u>	5,500	890
Benzo (a) pyrene	25,000	<7.9	<130	<u>350</u>	<u>310</u>	<u>340</u>	720	<u>28</u>	<u>110</u>	3,400	590
Benzo (b) fluoranthene	20,000	<7.9	<130	<u>240</u>	<u>240</u>	<u>250</u>	<u>580</u>	20	83	<u>2,600</u>	<u>380</u>
Benzo (g,h,i) perylene	<u>24,000</u>	<7.9	<130	380	260	270	430	27	110	<u>2,300</u>	440
Benzo (k) fluoranthene	<u>13,000</u>	<7.9	<130	170	160	180	360	13	48	<u>1,600</u>	310
Chrysene	<u>26,000</u>	<7.9	<130	250	410	330	640	29	120	3,600	570
Dibenzo (a,h) anthracene	3,600	<12	<200	<73	<59	<86	<u>75</u>	<15	<30	450	86
Fluoranthene	80,000	<16	<260	440	740	930	1,700	66	380	11,000	1,500
Fluorene	7,400	<16	<260	<98	<79	<110	<98	<20	39	860	110
Indeno (1,2,3-cd) pyrene	19,000	<7.9	<130	<u>280</u>	<u>220</u>	<u>230</u>	<u>430</u>	<10	<u>110</u>	<u>1,900</u>	<u>360</u>
Naphthalene	<u>9000*</u>	<48	<790	<290	<240	<340	<290	<60	<120	<270	320
Phenanthrene	<u>56,000</u>	<7.9	<130	260	470	490	820	66	280	<u>7,700</u>	1,100
Pyrene	51,000	<7.9	<130	330	550	630	1,400	40	230	6,400	1,400

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-172	GP-173	GP-174	GP-175	GP-176	GP-177	GP-178	GP-179	GP-180	GP-181
Sample Depth (feet)	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	2-4'	0-2'	0-2'	0-2'
Sample Date	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/10/07	01/09/07	01/09/07	01/09/07
PAHs (µg/kg)										
1-Methylnaphthalene	<420	<1,000	<1,400	<10,000	<u>45,000</u>	<130	3,500	<950	<1,200	<4,900
2-Methylnaphthalene	1,100	1,800	<1,200	9,100	<u>290,000</u>	<110	19,000	3,000	5,800	7,500
Acenaphthene	<700	<1,700	<2,400	<17,000	<u>90,000</u>	<220	2,700	<1600	<2,000	<8,100
Anthracene	430	450	<240	2,000	140,000	52	8,900	1,400	2,400	3,400
Benzo (a) anthracene	<u>1,800</u>	<u>1,300</u>	<u>730</u>	<u>13,000</u>	<u>290,000 E</u>	<u>160</u>	<u>22,000</u>	<u>3,300</u>	<u>6,000</u>	<u>12,000</u>
Benzo (a) pyrene	<u>1,200</u>	<u>1,000</u>	<u>630</u>	<u>10,000</u>	<u>200,000</u>	<u>120</u>	<u>13,000</u>	<u>2,300</u>	<u>4,500</u>	<u>7,000</u>
Benzo (b) fluoranthene	<u>980</u>	<u>760</u>	<u>700</u>	<u>7,000</u>	<u>130,000</u>	<u>89</u>	<u>8,300</u>	<u>1,600</u>	<u>3,400</u>	<u>5,900</u>
Benzo (g,h,i) perylene	790	830	920	9,300	<u>120,000</u>	100	8,900	1,600	3,700	5,800
Benzo (k) fluoranthene	640	550	420	<u>5,000</u>	<u>94,000</u>	65	5,800	<u>1,100</u>	<u>2,400</u>	<u>3,600</u>
Chrysene	1,300	930	530	8,800	<u>190,000 E</u>	130	14,000	2,300	4,200	7,300
Dibenzo (a,h) anthracene	<u>140</u>	<250	<360	<2600	<u>25,000</u>	<32	<u>1,800</u>	<u>320</u>	<u>610</u>	<1,200
Fluoranthene	5,200	2,700	1,300	16,000	<u>590,000 E</u>	330	43,000	7,000	14,000	20,000
Fluorene	<140	390	<470	<3400	79,000	<43	4,300	770	810	<1,600
Indeno (1,2,3-cd) pyrene	<u>640</u>	<u>690</u>	<u>720</u>	<u>6,900</u>	<u>100,000</u>	78	<u>7,400</u>	<u>1,300</u>	<u>2,800</u>	<u>4,400</u>
Naphthalene	<420	<1,000	<1,400	<10,000	<u>32000*</u>	<130	<u>3700*</u>	<950	<1,200	<4,900
Phenanthrene	900	1,800	570	<u>3,400</u>	<u>410,000 E</u>	210	<u>32,000</u>	<u>5,000</u>	<u>9,300</u>	<u>13,000</u>
Pyrene	3,800	1,900	960	14,000	390,000	250	31,000	4,600	8,800	14,000

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-182	GP-183	GP-184	GP-185	GP-186	GP-187	GP-189	GP-199	GP-200	
Sample Depth (feet)	0-2'	2-4'	0-2'	0-2'	0-2'	2-4'	4-6'	4-6'	0-2'	0-2'
Sample Date	01/09/07	01/09/07	01/09/07	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	11/08/07
PAHs (µg/kg)										
1-Methylnaphthalene	12,000	<290	<3,300	<u>48,000</u>	<5,400	<35	<290	<280	<1,200	<2,100
2-Methylnaphthalene	<u>65,000</u>	<240	3,600	<u>79,000</u>	<u>23,000</u>	<29	<240	<230	2,200	<1,800
Acenaphthene	<7,300	<480	<5,500	6,700	<8,900	<58	<480	<460	<2,000	<3,500
Anthracene	29,000	58	1,300	8,800	10,000	<5.8	<48	<46	650	2,000
Benzo (a) anthracene	<u>93,000</u>	230	<u>5,500</u>	<u>41,000 E</u>	<u>38,000</u>	6.1	<u>120</u>	61	<u>2,600</u>	<u>6,100</u>
Benzo (a) pyrene	<u>59,000</u>	150	<u>3,300</u>	<u>8,300</u>	<u>21,000</u>	<5.8	<u>88</u>	<u>55</u>	<u>2,100</u>	<u>5,200</u>
Benzo (b) fluoranthene	<u>42,000</u>	110	2,600	<u>5,200</u>	<u>17,000</u>	<5.8	74	49	<u>1,700</u>	<u>3,800</u>
Benzo (g,h,i) perylene	<u>40,000</u>	120	3,200	<u>6,200</u>	<u>11,000</u>	<5.8	92	47	1,600	<u>3,100</u>
Benzo (k) fluoranthene	<u>27,000</u>	77	2,000	<u>2,900</u>	<u>10,000</u>	<5.8	<48	<46	320	<u>2,200</u>
Chrysene	<u>55,000</u>	130	3,200	<u>14,000</u>	<u>20,000</u>	<5.8	83	50	2,000	4,900
Dibenzo (a,h) anthracene	<u>8,300</u>	<71	<830	<u>1,000</u>	<u>2,300</u>	<8.7	<73	<70	<u>340</u>	<530
Fluoranthene	160,000	410	8,100	120,000 E	62,000	12	270	130	6,900	15,000
Fluorene	15,000	<95	<1,100	25,000	6,700	<12	<97	<93	<400	1,000
Indeno (1,2,3-cd) pyrene	<u>33,000</u>	99	<u>2,600</u>	<u>4,800</u>	<u>13,000</u>	<5.8	81	<46	<u>1,400</u>	<u>3,200</u>
Naphthalene	<u>12000*</u>	<290	<3,300	<u>14000*</u>	<u>8400*</u>	<35	<290	<280	<1,200	<2,100
Phenanthrene	<u>98,000</u>	220	<u>4,200</u>	<u>68,000 E</u>	<u>39,000</u>	9.3	140	57	<u>2,100</u>	<u>9,500</u>
Pyrene	120,000	270	5,900	9,100	38,000	<5.8	170	86	3,600	9,500

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

< Analyte detected below laboratory detection limits.

E Concentration exceeds the calibration range and therefore result is semi-quantitative.

L2 Laboratory control sample recovery was below acceptance limits.

M Matrix interference.

NA Not analyzed.

NE Not established.

PAH Polycyclic aromatic hydrocarbons.

RCL Residual contaminant level.

µg/kg Micrograms per kilogram.

WDNR Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-201	GP-202	GP-203			GP-204	GP-206	GP-207	GP-208	GP-210
Sample Depth (feet)	0-2'	2-4'	3-5'	6-8'	10-12'	2-4'	2-4'	0-2'	2-4'	0-2'
Sample Date	11/08/07	11/08/07	11/08/07	11/09/07	11/08/07	01/10/07	01/09/07	01/09/07	01/09/07	01/09/07
PAHs (µg/kg)										
1-Methylnaphthalene	<390	<u>27,000</u>	<86	<36	<36	<2,500	<37	<2,000	<57	<960
2-Methylnaphthalene	<330	<u>170,000</u>	<72	<30	<30	2,200	<31	6,700	220	1,900
Acenaphthene	<650	<u>43,000</u>	<140	<61	<60	<4,200	<62	<3,300	<95	<1,600
Anthracene	75	61,000	<14	<6.1	<6	1,500	<6.2	3,400	210	740
Benzo (a) anthracene	<u>280</u>	<u>240,000</u>	33	<6.1	<6	<u>2,000</u>	<6.2	<u>12,000</u>	<u>560</u>	<u>2,700</u>
Benzo (a) pyrene	<u>260</u>	<u>190,000</u>	<u>26</u>	<6.1	<6	<u>1,500</u>	<6.2	<u>8,700</u>	<u>400</u>	<u>2,300</u>
Benzo (b) fluoranthene	<u>150</u>	<u>110,000</u>	18	<6.1	<6	<u>1,200</u>	<6.2	<u>6,000</u>	<u>270</u>	<u>1,600</u>
Benzo (g,h,i) perylene	170	<u>95,000</u>	23	<6.1	<6	1,300	<6.2	<u>6,500</u>	300	1,700
Benzo (k) fluoranthene	110	<u>73,000</u>	<14	<6.1	<6	870	<6.2	<u>4,100</u>	210	<u>1,100</u>
Chrysene	210	<u>160,000</u>	18	<6.1	<6	1,800	<6.2	8,100	370	1,700
Dibenzo (a,h) anthracene	<98	<u>17,000</u>	<21	<9.1	<9	<620	<9.2	<u>1,100</u>	<u>56</u>	<u>290</u>
Fluoranthene	630	370,000	92	<12	<12	5,300	<12	21,000	1,100	4,600
Fluorene	<130	21,000	<29	<12	<12	<830	<12	940	42	<320
Indeno (1,2,3-cd) pyrene	<u>140</u>	<u>100,000</u>	20	<6.1	<6	<u>970</u>	<6.2	<u>5,600</u>	<u>250</u>	<u>1,800</u>
Naphthalene	<390	<u>130,000*</u>	<86	<36	<36	<2,500	<37	<2,000	<57	<960
Phenanthrene	300	<u>210,000</u>	69	<6.1	7.4	<u>4,400</u>	<6.2	<u>11,000</u>	720	<u>2,600</u>
Pyrene	650	380,000	34	<6.1	11	3,500	<6.2	15,000	1,000	4,400

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-212	GP-213	GP-214	GP-215	GP-216	GP-217	GP-218	GP-219
Sample Depth (feet)	0-2'	2-4'	2-4'	2-4'	0-2'	0-2'	2-4'	0-2'
Sample Date	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/09/07	01/10/07
PAHs (µg/kg)								
1-Methylnaphthalene	<470	<36	19,000	8,100	3,600	1,400	<2,100	<1,600
2-Methylnaphthalene	<390	<30	<u>91,000</u>	<u>47,000</u>	<u>23,000</u>	8,800	<1,700	4,000
Acenaphthene	<780	<60	17,000	13,000	6,400	<2,200	<3,500	<2,700
Anthracene	99	<6.0	48,000	22,000	13,000	3,600	630	1,400
Benzo (a) anthracene	<u>380</u>	<6.0	<u>79,000</u>	<u>54,000</u>	<u>34,000</u>	<u>13,000</u>	<u>2,800</u>	<u>4,400</u>
Benzo (a) pyrene	<u>360</u>	<6.0	<u>50,000</u>	<u>34,000</u>	<u>20,000</u>	<u>8,400</u>	<u>1,600</u>	<u>3,500</u>
Benzo (b) fluoranthene	<u>270</u>	<6.0	<u>28,000</u>	<u>21,000</u>	<u>13,000</u>	<u>6,300</u>	<u>1,300</u>	<u>2,500</u>
Benzo (g,h,i) perylene	290	<6.0	<u>33,000</u>	<u>23,000</u>	<u>14,000</u>	<u>6,300</u>	1,400	<u>3,000</u>
Benzo (k) fluoranthene	82	<6.0	<u>22,000</u>	<u>16,000</u>	<u>9,600</u>	<u>3,900</u>	840	<u>1,800</u>
Chrysene	280	<6.0	<u>53,000</u>	<u>35,000</u>	<u>22,000</u>	8,300	1,700	3,100
Dibenzo (a,h) anthracene	<120	<9.0	<u>5,800</u>	<u>4,800</u>	<u>2,600</u>	<u>1,300</u>	<520	<u>490</u>
Fluoranthene	660	<12	180,000	100,000	64,000	22,000	4,400	12,000
Fluorene	<160	<12	25,000	12,000	4,700	1,800	<690	920
Indeno (1,2,3-cd) pyrene	<u>270</u>	<6.0	<u>28,000</u>	<u>20,000</u>	<u>11,000</u>	<u>5,200</u>	<u>1,000</u>	<u>2,300</u>
Naphthalene	<470	<36	<u>28,000*</u>	<5,400	<u>8,100*</u>	<u>1,500</u>	<2,100	<1,600
Phenanthrene	450	<6.0	<u>170,000</u>	<u>86,000</u>	<u>42,000</u>	<u>13,000</u>	<u>2,200</u>	<u>4,900</u>
Pyrene	820	<6.0	110,000	70,000	45,000	16,000	3,300	6,100

*	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 4. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	Enforcement	Preventive	GP-1		GP-3	GP-7		GP-9	GP-19	GP-27
Sample Date	Standard	Action Limit	06/06/96	06/07/96	06/06/96	06/06/96	06/07/96	06/07/96	06/06/96	06/06/96
Diesel Range Organics (mg/L)	NE	NE	NA	0.12 B	<0.10 B	NA	0.31 B	<0.10 B	<0.10 B	0.10 BH
VOCs (µg/L)										
Acetone	1,000	200	5.1 L	NA	5.3 L	<5.0	NA	<5.0	6.6 L	<5.0
Benzene	5	0.5	<0.50	NA	<0.50	<0.50	NA	<0.50	<0.50	<0.50
cis-1,2-Dichloroethene	70	7	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	140	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	<1.0
Isopropylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	60	12	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	1.4
Methylene Chloride	5	0.5	<10	NA	<10	38	NA	<10	<10	<10
4-Methyl-2-Pentanone	500	50	<1.0	NA	<1.0	2.3	NA	<1.0	<1.0	<1.0
Naphthalene	100	10	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	200	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	1.5
1,2,4-Trimethylbenzene	480 (a)	96 (a)	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	480 (a)	96 (a)	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	<1.0
Xylenes, Total	10,000	1,000	<3.0	NA	<3.0	<3.0	NA	<3.0	<3.0	<3.0

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

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Table 4. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-28	GP-30	GP-31	GP-41	GP-46	MW-3				GMMW-4	
Sample Date	06/06/96	06/06/96	06/07/96	12/02/96	12/02/96	12/24/96	06/09/99	10/25/04	01/04/07	12/24/96	06/09/99
Diesel Range Organics (mg/L)	<0.10 B	1.1	0.22 B	<20	12.8	650	2.4	NA	NA	<0.10	<0.10
VOCs (µg/L)											
Acetone	11 L	30 L	32	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	<0.50	<2.5	<0.50	<1	<1	<1.0	<0.13	<0.25	<0.2	<1.0	<0.13
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	NA	NA
Ethylbenzene	<1.0	<5.0	<1.0	<1	<1	<1.0	<0.22	<0.22	<0.5	<1.0	<0.22
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	0.66 J	NA	NA
Methyl tert-Butyl Ether	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<0.16	<0.23	<0.5	<1.0	<0.16
Methylene Chloride	<10	<50	<10	NA	NA	NA	NA	NA	<1	NA	NA
4-Methyl-2-Pentanone	1.3	<5.0	4.6	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	0.29 J	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	0.52 J	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	0.82 J	NA	NA
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	1.2	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
Toluene	43	36	43	1.7	1.2	<1.0	<0.20	<0.11	<0.2	<1.0	<0.20
1,2,4-Trimethylbenzene	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<0.22	<0.25	<0.2	<1.0	<0.22
1,3,5-Trimethylbenzene	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<0.29	<0.19	<0.2	<1.0	<0.29
Xylenes, Total	<3.0	<15	<3.0	<1.0	<1.0	<1.0	<0.23	<0.39	<0.5	<1.0	<0.23

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

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Table 4. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-4 (continued)		GMMW-5			GMMW-6				GMMW-7	
Sample Date	10/25/04	01/04/07	06/09/99	10/26/04	01/04/07	12/24/96	09/24/97	10/26/04	01/04/07	12/24/96	11/03/97
Diesel Range Organics (mg/L)	NA	NA	2.8	NA	NA	2.8	2.8	NA	NA	<0.10	<0.10
VOCs (µg/L)											
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	<0.25	<0.2	2.2	0.41	0.32 J	NA	<1.0	<0.25	<0.2	NA	<1.0
cis-1,2-Dichloroethene	NA	<0.5	NA	NA	<0.5	NA	NA	NA	<0.5	NA	NA
Ethylbenzene	<0.22	<0.5	6.6	<0.22	<0.5	NA	<1.0	<0.22	<0.5	NA	<1.0
Isopropylbenzene	NA	<0.2	NA	NA	5.9	NA	NA	NA	0.25 J	NA	NA
Methyl tert-Butyl Ether	<0.23	<0.5	<1.6	<0.23	<0.5	NA	<1.0	<0.23	<0.5	NA	<1.0
Methylene Chloride	NA	<1	NA	NA	<1	NA	NA	NA	<1	NA	NA
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	<0.25	NA	NA	0.53 J	NA	NA	NA	<0.25	NA	NA
n-Butylbenzene	NA	<0.2	NA	NA	1.3	NA	NA	NA	<0.2	NA	NA
n-Propylbenzene	NA	<0.5	NA	NA	3.8	NA	NA	NA	<0.5	NA	NA
p-Isopropyltoluene	NA	<0.2	NA	NA	<0.2	NA	NA	NA	<0.2	NA	NA
sec-Butylbenzene	NA	<0.25	NA	NA	2.7	NA	NA	NA	<0.25	NA	NA
tert-Butylbenzene	NA	<0.2	NA	NA	0.36 J	NA	NA	NA	<0.2	NA	NA
Toluene	<0.11	<0.2	<2.0	0.12	<0.2	NA	<1.0	<0.11	<0.2	NA	<1.0
1,2,4-Trimethylbenzene	<0.25	<0.2	11	<0.25	1.2	NA	<1.0	<0.25	<0.2	NA	<1.0
1,3,5-Trimethylbenzene	<0.19	<0.2	<2.9	<0.19	<0.2	NA	<1.0	<0.19	<0.2	NA	<1.0
Xylenes, Total	<0.39	<0.5	7.8	0.83	0.61 J	NA	<1.0	<0.39	<0.5	NA	<1.0

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

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Table 4. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-8					GMMW-9			GMMW-10		
	12/24/96	11/03/97	06/08/99	10/25/04	01/05/07	06/09/99	10/26/04	01/04/07	06/08/99	10/25/04	01/05/07
Diesel Range Organics (mg/L)	<0.10	<0.10	0.22	NA	NA	0.82	NA	NA	1.3	NA	NA
VOCs (µg/L)											
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	<1.0	<0.13	<0.25	<0.2	<0.13	<0.25	<0.2	<0.13	<0.25	<0.2
cis-1,2-Dichloroethene	NA	NA	NA	NA	<0.5	NA	NA	<0.5	NA	NA	<0.5
Ethylbenzene	NA	<1.0	<0.22	<0.22	<0.5	<0.22	<0.22	<0.5	0.24	<0.22	<0.5
Isopropylbenzene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
Methyl tert-Butyl Ether	NA	<1.0	<0.16	<0.23	<0.5	<0.16	<0.23	<0.5	<0.16	<0.23	<0.5
Methylene Chloride	NA	NA	NA	NA	<1	NA	NA	<1	NA	NA	<1
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	<0.25	NA	NA	0.95	NA	NA	<0.25
n-Butylbenzene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
n-Propylbenzene	NA	NA	NA	NA	<0.5	NA	NA	<0.5	NA	NA	<0.5
p-Isopropyltoluene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
sec-Butylbenzene	NA	NA	NA	NA	<0.25	NA	NA	<0.25	NA	NA	<0.25
tert-Butylbenzene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
Toluene	NA	<1.0	<0.20	<0.11	<0.2	<0.20	<0.11	<0.2	<0.20	<0.11	<0.2
1,2,4-Trimethylbenzene	NA	<1.0	<0.22	<0.25	<0.2	0.24	<0.25	<0.2	3.4	<0.25	<0.2
1,3,5-Trimethylbenzene	NA	<1.0	<0.29	<0.19	<0.2	<0.29	<0.19	<0.2	<0.29	<0.19	<0.2
Xylenes, Total	NA	<1.0	<0.23	<0.39	<0.5	0.8	<0.39	<0.5	0.58	<0.39	<0.5

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

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L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

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Table 4. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-11			GMMW-12	GMMW-13			RT-1		RT-2	
Sample Date	06/08/99	10/25/04	01/03/07	06/08/99	06/08/99	10/26/04	01/03/07	10/26/04	01/05/07	10/26/04	01/04/07
Diesel Range Organics (mg/L)	0.6	NA	NA	1.6	1.4	NA	NA	NA	NA	NA	NA
VOCs (µg/L)											
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	<0.13	<0.25	<0.2	<0.13	<0.13	<0.25	<0.2	0.64	0.30 J	<0.25	0.50 J
cis-1,2-Dichloroethene	NA	NA	<0.5	NA	NA	NA	1.3 J	NA	<0.5	NA	<0.5
Ethylbenzene	<0.22	<0.22	<0.5	<0.22	0.32	<0.22	<0.5	12	1.4 J	<0.22	<0.5
Isopropylbenzene	NA	NA	<0.2	NA	NA	NA	1.5	NA	1.1	NA	0.95
Methyl tert-Butyl Ether	<0.16	<0.23	<0.5	<0.16	<0.16	<0.23	<0.5	0.6	<0.5	<0.23	<0.5
Methylene Chloride	NA	NA	<1	NA	NA	NA	<1	NA	<1	NA	<1
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	<0.25	NA	NA	NA	<0.25	NA	1.5	NA	0.69 J
n-Butylbenzene	NA	NA	<0.2	NA	NA	NA	0.35 J	NA	<0.2	NA	0.30 J
n-Propylbenzene	NA	NA	<0.5	NA	NA	NA	<0.5	NA	1.3 J	NA	1.0 J
p-Isopropyltoluene	NA	NA	<0.2	NA	NA	NA	<0.2	NA	1.4	NA	<0.2
sec-Butylbenzene	NA	NA	<0.25	NA	NA	NA	1.4	NA	1.7	NA	0.82 J
tert-Butylbenzene	NA	NA	<0.2	NA	NA	NA	<0.2	NA	<0.2	NA	<0.2
Toluene	<0.20	<0.11	<0.2	<0.20	<0.20	<0.11	<0.2	1.5	<0.2	0.29	<0.2
1,2,4-Trimethylbenzene	<0.22	<0.25	<0.2	<0.22	2.7	<0.25	<0.2	46	13	<0.25	<0.2
1,3,5-Trimethylbenzene	<0.29	<0.19	<0.2	<0.29	<0.29	<0.19	<0.2	<0.19	<0.2	<0.19	<0.2
Xylenes, Total	<0.23	<0.39	<0.5	<0.23	0.27	<0.39	<0.5	4.6	1.1 J	0.59	<0.5

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

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Table 5. Summary of Groundwater PAH Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	Enforcement	Preventive	GP-3	GP-9	GP-19	GP-27	GP-28	GP-30	GP-31	MW-3
Sample Date	Standard	Action Limit	06/06/96	06/07/96	06/06/96	06/06/96	06/06/96	06/06/96	06/07/96	01/04/07
PAHs										
1-Methylnaphthalene	NE	NE	NA	NA	NA	NA	NA	NA	NA	1.5
2-Methylnaphthalene	NE	NE	NA	NA	NA	NA	NA	NA	NA	2.0
Acenaphthene	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.44 J
Anthracene	3,000	600	<0.20	<0.20	<0.20	<0.20	<0.20	0.4	<0.20	0.15
Benzo(a)anthracene	NE	NE	<0.050	<0.050	<0.050	0.49	<0.050	<0.050	<0.050	0.28
Benzo(a)pyrene	0.2	0.02	<0.024	<0.024	<0.024	0.54	<0.024	<0.024	<0.024	0.032 J
Benzo(b)fluoranthene	0.2	0.02	<0.050	<0.050	<0.050	0.56	<0.050	<0.050	<0.050	<0.099
Benzo(g,h,i)perylene	NE	NE	<0.20	<0.20	<0.20	0.55	<0.20	<0.20	<0.20	<0.12
Benzo(k)fluoranthene	NE	NE	<0.050	<0.050	<0.050	0.23	<0.050	<0.050	<0.050	<0.049
Chrysene	0.2	0.02	<0.10	<0.10	<0.10	0.3	<0.10	<0.10	<0.10	0.088 J
Fluoranthene	400	80	<0.20	<0.20	<0.20	0.81	<0.20	<0.20	<0.20	0.5
Fluorene	400	80	<0.4	<0.4	<0.4	<0.4	<0.4	0.83	<0.4	0.69
Naphthalene	100	10	NA	NA	NA	NA	NA	NA	NA	<0.4
Phenanthrene	NE	NE	<0.40	<0.40	<0.40	<0.40	<0.40	1.3	<0.40	0.1
Pyrene	250	50	<0.20	<0.20	<0.20	0.59	<0.20	<0.20	<0.20	0.62

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

< Analyte detected below laboratory detection limits.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

NE Not established.

PAH Polycyclic Aromatic Hydrocarbons.

µg/L Micrograms per liter, equivalent to parts per billion (ppb).

WDNR Wisconsin Department of Natural Resources.

Table 5. Summary of Groundwater PAH Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-4	GMMW-5	GMMW-6	GMMW-8	GMMW-9	GMMW-10	GMMW-11	GMMW-13	RT-1	RT-2	TW-176
Sample Date	01/04/07	01/04/07	01/04/07	01/05/07	01/04/07	01/05/07	01/03/07	01/03/07	01/05/07	01/04/07	01/12/07
PAHs											
1-Methylnaphthalene	<0.33	35	0.75 J	<0.32	3.0	1.1	<0.32	1.1	9.5	1.0 J	<0.32
2-Methylnaphthalene	<0.32	8.0	<0.32	<0.31	<0.32	<0.32	<0.31	2.2	8.0	2.7	<0.31
Acenaphthene	<0.34	2.7	<0.34	<0.33	<0.34	0.89 J	<0.33	2.3	2.6	0.80 J	<0.33
Anthracene	<0.039	0.64	<0.039	<0.038	<0.039	<0.04	<0.038	<0.038	1.7	0.92	0.15
Benzo(a)anthracene	<0.045	0.060 J	<0.045	<0.044	<0.045	<0.046	<0.044	<0.044	1.0	0.93	0.045 J
Benzo(a)pyrene	<0.033	<0.033	<0.033	<0.032	<0.033	<0.033	<0.032	<0.032	<0.033	<0.04	<0.032
Benzo(b)fluoranthene	<0.1	<0.1	<0.1	<0.099	<0.1	<0.1	<0.098	<0.099	<0.1	<0.12	<0.098
Benzo(g,h,i)perylene	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.15	<0.12
Benzo(k)fluoranthene	<0.05	<0.05	<0.05	<0.049	<0.05	<0.051	<0.049	<0.049	<0.05	<0.062	<0.049
Chrysene	<0.042	<0.042	<0.042	<0.041	<0.042	<0.043	<0.041	<0.041	1.5	1.3	<0.041
Fluoranthene	<0.083	1.1	<0.083	<0.082	<0.083	<0.084	<0.081	<0.082	8.4	4.1	0.13 J
Fluorene	<0.063	5.2	0.20 J	<0.063	<0.063	0.58	<0.062	2.7	4.3	1.8	0.17 J
Naphthalene	<0.41	6.5	<0.41	<0.4	0.42 J	0.60 J	<0.4	0.92 J	5.7	2.2	<0.4
Phenanthrene	<0.031	1.6	<0.031	<0.03	<0.031	0.076 J	<0.03	0.15	1.7	0.59	0.17
Pyrene	<0.045	1.0	<0.045	<0.044	<0.045	<0.046	<0.044	<0.044	7.0	4.0	0.080 J

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

< Analyte detected below laboratory detection limits.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

NE Not established.

PAH Polycyclic Aromatic Hydrocarbons.

µg/L Micrograms per liter, equivalent to parts per billion (ppb).

WDNR Wisconsin Department of Natural Resources.

Table 6. Groundwater Elevation Data, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Monitoring Well	Land Surface Elevation (ft)	Measuring Point Elevation (ft)	Screened Interval (ft bls)	Screen Length (ft)	Depth to Product (ft) 12/24/96	Depth to Water (ft) 12/24/96	Water Elevation (ft msl) 12/24/96	Depth to Product (ft) 01/21/97	Depth to Water (ft) 01/21/97	Water Elevation (ft msl) 01/21/97
MW-1	738.8	739.7	5.0 - 15.0	10.0	9.05	14.86	729.49(a)	9.08	14.65	729.5 (a)
MW-2	738.6	740.3	3.0-13.0	10.0	8.86	10.43	731.1 (a)	9.05	10.61	730.9 (a)
MW-3	738.2	739.3	5.0 - 13.0	8.0	ND	8.18	731.1	ND	8.32	731.0
GMMW-4	739.1	742.5	5.0 - 15.0	10.0	ND	6.08	736.4	ND	6.77	735.7
GMMW-5	738.95	741.96	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-6	738.6	742.2	5.0 - 15.0	10.0	ND	7.79	734.4	ND	8.31	733.9
GMMW-7	739.5	742.9	5.0 - 15.0	10.0	ND	6.92	736.0	ND	7.42	735.5
GMMW-8	738.7	742.3	5.0 - 15.0	10.0	ND	9.36	732.9	ND	9.57	732.7
GMMW-9	738.10	741.11	5.0 - 15.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-10	736.85	739.95	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-11	738.91	738.72	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-12	738.55	738.33	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-13	738.82	738.74	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI

Measuring point elevation is from the north side of the top of PVC well casing (TOC).

Elevations are measured relative to a United States Geological Survey (USGS) datum.

(a) Groundwater elevation was corrected for the presence of product; product specific gravity assumed = 0.8 g/cm³.

amsl Above mean sea level.

(b) GMMW-7 abandoned prior to 6/8/99.

bls Below Land Surface.

(c) GMMW-12 abandoned prior to 10/25/04

(d) MW-1 and MW-2 were removed during installation of recovery trenches

ft Feet

ND None Detected.

NI Not installed.

NM Not measured.

TR Trace (<0.01 foot).

Table 6. Groundwater Elevation Data, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Monitoring Well	Depth to Product (ft) 06/08/99	Depth to Water (ft) 06/08/99	Water Elevation (ft msl) 06/08/99	Depth to Product (ft) 10/25/04	Depth to Water (ft) 10/25/04	Water Elevation (ft msl) 10/25/04	Depth to Product (ft) 01/03/07	Depth to Water (ft) 01/03/07	Water Elevation (ft msl) 01/03/07
MW-1	9.01	11.45	730.2	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)
MW-2	8.01	8.45	732.2	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)
MW-3	TR	7.17	732.1	ND	8.68	730.6	ND	7.68	731.62
GMMW-4	ND	5.13	737.4	ND	6.93	735.6	ND	5.7	736.80
GMMW-5	ND	8.26	733.70	ND	9.78	732.18	ND	8.8	733.16
GMMW-6	ND	NM	NM	ND	9.00	733.2	ND	8.63	733.57
GMMW-7	NM (b)	NM (b)	NM (b)	NM (b)	NM (b)	NM (b)	NM (c)	NM (b)	NM (b)
GMMW-8	ND	7.28	735.0	ND	9.98	732.3	ND	8.14	734.16
GMMW-9	ND	7.75	733.36	ND	9.12	731.99	ND	8.26	732.85
GMMW-10	ND	7.85	732.10	ND	9.08	730.87	ND	8.04	731.91
GMMW-11	ND	5.02	733.70	ND	6.90	731.82	ND	5.18	733.54
GMMW-12	ND	4.00	734.33	NM (c)	NM (c)	NM (c)	NM (c)	NM (c)	NM (c)
GMMW-13	ND	5.10	733.64	ND	6.11	732.63	ND	5.25	733.49

Measuring point elevation is from the north side of the top of PVC well casing (TOC).

Elevations are measured relative to a United States Geological Survey (USGS)

- (a) Groundwater elevation was corrected for the presence of product; product specific gravity assumed = 0.8 g/cm³.
- amsl Above mean sea level.
- (b) GMMW-7 abandoned prior to 6/8/99.
- bls Below Land Surface.
- (c) GMMW-12 abandoned prior to 10/25/04
- (d) MW-1 and MW-2 were removed during installation of recovery trenches
- ft Feet
- ND None Detected.
- NI Not yet installed.
- NM Not measured.
- TR Trace (<0.01 foot).

UNION PACIFIC RAILROAD

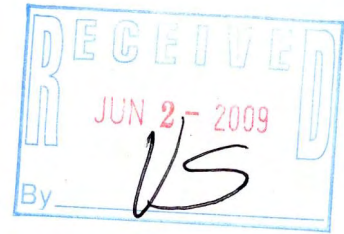
CLOSURE REPORT

UNION PACIFIC RAILROAD
BUTLER YARD FUELING FACILITY
MILWAUKEE, WISCONSIN
BRRTS No. 02-41-257209, 02-41-000967, 02-41-000260
FID No. 21401860

2

May 2009

ARCADIS



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Closure Report

Union Pacific Railroad
Butler Yard Fueling Facility

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Date:
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- B Soil Boring Logs and Abandonment Forms.
- C Soil Analytical Reports and Chain-of-Custody Form.
- D Landfill Tonnage Report.
- E Photographs.
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Introduction

ARCADIS was retained to conduct environmental investigation and remediation activities at the Union Pacific Railroad located at 4823 North 119th Street, Milwaukee, Wisconsin. A release was reported to the Wisconsin Department of Natural Resources (WDNR) on May 12, 1994 by Dahl & Associates based on diesel range organic (DRO) analytical results.

Site investigation activities were completed by ARCADIS to define the extent and degree of soil and groundwater impacts onsite including the advancement of 220 soil borings, 13 monitoring wells, 11 temporary wells, and two recovery trenches. Soil and groundwater samples were collected and submitted for laboratory analyses of DRO, gasoline range organics (GRO), volatile organic compounds (VOCs) or petroleum volatile organic compounds (PVOs), and polycyclic aromatic hydrocarbons (PAHs).

Light nonaqueous phase liquid (LNAPL) was encountered in two monitoring wells from May 1997 to March 2004. Remediation activities included the installation of two vacuum enhanced LNAPL recovery (VELR) systems and hand bailing resulting in the removal of approximately 460 gallons of LNAPL in vapor and liquid phase, and approximately 1,700 gallons of groundwater removed via vacuum truck. Groundwater was monitored following the removal of LNAPL and demonstrated the reduction of VOCs by natural attenuation.

A *Site Investigation, Remediation Documentation, and Remedial Action Plan (RAP)* was submitted to the WDNR on April 4, 2007. The WDNR verbally approved the RAP in a meeting on July 12, 2007. The RAP detailed a site closure strategy consisting of a soil excavation of PAH-impacted soil above the benzo(a)pyrene equivalent industrial residual contaminant level (RCL); a NR 140.28 Wis. adm. code exemption request for the remaining NR 140 preventive action limit (PAL) exceedance in the groundwater; and registration of the site on the WDNR soil Geographical Information System (GIS) Registry for Closed Remediation Sites.

The excavation of PAH-impacted soil around the 150,000-gallon diesel aboveground storage tank (AST) was completed between September and October 2008. Approximately 2,850 tons of soil were excavated, transported, and disposed of offsite at Waste Management Orchard Ridge Landfill in Menomonee Falls, Wisconsin.

This report was prepared to present supporting documentation regarding the site history, investigation and remediation activities, and analytical results. This report has been prepared in accordance with Chapters NR 700-746 (Environmental Protection) and NR 140 (Groundwater Quality) Wis. adm. code. On behalf of our client, Union Pacific Railroad, ARCADIS requests closure for this site in accordance with NR 726.05. A NR 712 Personnel Certification is included as Appendix A. A completed

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WDNR Case Summary and Close Out Form (Form 4400-202) is included under separate cover.

Pathway to Closure

The following sections present the pathway to closure for soil, groundwater, LNAPL, and other media.

Soil

Soil impacts above the NR 720 RCLs, NR 746 criteria, and above the benzo(a)pyrene equivalent non-industrial RCL exist onsite. The site will be placed on the WDNR GIS Registry for Closed Remediation Sites to address the soil impacts.

Groundwater

The source of the soil impacts was addressed through soil excavation during installation of recovery trenches, operation of VELR systems, and excavation of soil from the AST area. LNAPL has not been observed at the site since March 2004. Groundwater monitoring following confirmation of the absence of LNAPL has demonstrated a decrease in VOC concentrations to below the NR 140 PALs. However, PAH concentrations were reported above the PAL at one location. The pathway to closure for groundwater is to obtain an NR 140.28 exemption request for the PAL exceedance in the groundwater.

LNAPL

Measurable LNAPL was observed in May 1997 in Monitoring Wells MW-1 and MW-2 during site investigation activities. Monitoring Wells MW-1 and MW-2 were later removed for the installation of Recovery Trenches RT-1 and RT-2. LNAPL has not been observed in MW-1/RT-1 or MW-2/RT-2 since March 2004 and February 2004, respectively. ARCADIS recovered the LNAPL through installation of two vacuum enhanced LNAPL recovery (VELR) systems, vacuum trucks, and hand bailing.

Other Media

Other media (e.g., air, surface water) were not impacted or threatened by the release at the site.

Site Background

The following sections present a summary of the site location, geology, hydrogeology, soil and groundwater investigation results, and remediation of LNAPL. For additional site information, please refer to the following reports:

- Environmental Site Assessment (Dahl & Associates, 1994).
- Soil and Groundwater Quality Investigation and Remedial Alternatives Evaluation Report (ARCADIS, 1997).
- Results of Additional Site Investigation and Recommended Remedial Action/Site Closure Strategy (ARCADIS, 2000).
- Construction Documentation Report and Summary of 6 Months Operation (ARCADIS, 2003).
- Remedial System Progress Report (ARCADIS, 2003).
- Site Investigation, Remediation Documentation, and Remedial Action Plan (ARCADIS, 2007).

Site Location and Description

The Union Pacific Butler Yard Facility is located at 4823 North 119th Street in the city of Milwaukee, Milwaukee County and covers an area of about 41 acres. The site is located within the southwest ¼, southwest ¼, Section 31, Township 8 North, Range 21 East. For the purposes of this investigation and remediation, the “site” refers to the north half of the Butler Yard beginning north of the Hampton Avenue bridge and extending to the north side of the locomotive shop. A site location map is presented as Figure 1.

The site was originally developed for use as a freight-switching yard with a diesel locomotive maintenance and fueling facility by the Chicago and Northwestern Railroad Company. Developments at the site include a diesel shop and associated appurtenances, two fueling system pump houses, a 150,000-gallon diesel fuel AST, administrative building, and yard tracks. During the locomotive fueling activities, diesel fuel is gravity fed from the AST to a pump house through a 475-foot long underground dispensing line. The diesel fuel is then pumped to the fueling area where it is dispensed to the locomotives. LNAPL was encountered in MW-1 and MW-2, and appears to have been released during historical diesel fueling activities. A site layout map is presented on Figure 2.

Geologic and Hydrogeologic Conditions

Geology

The site surficial geology consists of clay, sand, silt, and gravel fill material ranging in thickness from 1 foot to approximately 16 feet below land surface (ft bls). Underlying the fill is stiff silt or silty clay glacial till with trace amounts of sand and gravel in some locations. The locations of the geologic cross-sections are presented on Figure 3 and Cross-Sections A-A' (northwest to southeast) and B-B' (west to east) are presented as Figures 4 and 5, respectively.

Hydrogeology

The shallow water table was generally present in the fill materials, with static water levels ranging from approximately 4 feet to 15 ft bls from December 1996 to January 2007. Groundwater elevation data are summarized in Table 1. The horizontal component of the flow direction is difficult to interpret due to the variability of the soil horizons, fill materials and subsurface manmade structures such as utility trenches. A groundwater elevation map using the January 3, 2007 data is presented as Figure 6. The localized groundwater flow direction is to the southeast. The shallow groundwater is likely perched along the fill-native soil interface, and localized flow is predominantly controlled by the topography of this interface. This is consistent with the groundwater flow direction prior to operating the VELR systems. The regional groundwater flow direction is most likely northeast toward the Menomonee River, although this may vary somewhat with surface topography and anthropogenic effects.

Between January 2 and 3, 1997, ARCADIS conducted hydraulic conductivity testing at Monitoring Wells MW-3, GMMW-4, GMMW-6, GMMW-7 and GMMW-8. The slug testing was conducted to determine approximate values of horizontal hydraulic conductivities in the immediate vicinity of the well screen through the use of a single well. The data was analyzed utilizing the Bouwer and Rice (1976) method. The hydraulic conductivity values ranged from 2.6×10^{-5} centimeters per second (cm/s) to 1.4×10^{-3} cm/s. Hydraulic conductivity results were previously submitted to the WDNR.

Soil Investigation

Soil investigation activities, consisting of the advancement of 220 soil borings, have been completed to evaluate the surface and subsurface soil conditions at the site. Soil samples were collected for analysis of DRO, GRO, VOCs or PVOCs, and PAHs. Soil analytical results were compared to NR 720 RCLs, NR 746 criteria, and PAH RCLs for groundwater protection (WDNR, 1997). Soil PAH analytical results were also compared to industrial direct contact RCLs developed using the benzo(a)pyrene equivalency equations provided by the WDNR.

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Soil DRO, GRO, VOC, and PVOC analytical results are summarized in Table 2. Soil PAH analytical results are summarized in Table 3. Soil DRO and GRO analytical results are presented on Figure 7. Surface soil and subsurface soil VOC analytical results are presented on Figures 8 and 9, respectively. Subsurface soil PAH analytical results are presented on Figure 10. Surface soil PAH analytical results are presented on Figures 11 and 12. Soil boring logs and abandonment forms not previously submitted are presented in Appendix B. Soil laboratory reports not previously submitted are presented in Appendix C.

DRO and GRO

Eighty-six soil samples were collected and submitted for DRO analysis and 11 soil samples for GRO analysis. Soil samples were collected at depths ranging from ground surface to 16 ft. bls. GRO results were all below the NR 720 RCL of 100 milligrams per kilogram (mg/kg), with the exception of 174 mg/kg detected at GMMW-6. DRO was reported at concentrations above the RCL of 100 mg/kg at 27 locations ranging from 120 mg/kg to 9,580 mg/kg. The DRO and GRO results are presented in Table 2.

The DRO concentrations above the RCL of 100 mg/kg are predominantly around Monitoring Wells MW-1 and MW-2 and the associated refueling system components (Figure 7). Two additional areas of DRO RCL exceedances are also illustrated on Figure 7. These two areas represent isolated impacts located within the track area that are assumed to be associated with general usage of locomotives in the yard. Although DRO impacts are present in the soil, only minor detections of DRO and PAHs have been detected in the groundwater at the site indicating that the DRO concentrations do not pose a significant threat to groundwater.

Soil contamination at concentrations above the NR 720 RCLs remains onsite and the site will be placed on the WDNR GIS Registry for Closed Remediation Sites to address the soil impacts.

VOCs and PVOCs

A total of 146 soil samples were collected for VOC or PVOC analysis from 129 soil borings. Soil samples were collected at depths ranging from ground surface to 16 ft. bls. The VOC and PVOC results are presented in Table 2 and Figures 8 and 9 for concentrations reported above RCLs.

Eleven out of 146 soil samples contained VOCs and PVOCs concentrations above the NR 720 RCLs based on the protection of groundwater from the following soil samples:

- Borings: GP-17 (benzene at 170 micrograms per kilogram [$\mu\text{g/kg}$] from 4 to 6 feet), GP-33 (xylenes at 13,000 $\mu\text{g/kg}$ from 6 to 8 feet), GP-42 (xylenes at

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4,700 µg/kg from 2 to 4 feet), GP-46 (benzene at 41 µg/kg from 3 to 5 feet), GP-56 (benzene at 82 µg/kg from 2 to 4 feet), GP-57 (benzene at 176 µg/kg from 4 to 6 feet), GP-70 (benzene 45 µg/kg from 2 to 4 feet), GP-90 (benzene 88 µg/kg from 0 to 2 feet), GP-98 (benzene 100 µg/kg from 2 to 4 feet), and GP-115 (benzene 220 µg/kg from 2 to 4 feet) exceeded the NR 720 RCLs for the protection of groundwater of 5.5 and 4,100 µg/kg for benzene and xylenes, respectively.

With the exception of the areas immediately around Monitoring Well MW-1 and MW-2, detections of VOCs across the site are isolated and do not appear to be contiguous. In addition, groundwater VOC analytical results were reported below the PALs in the last sampling round completed at 11 temporary wells, 11 monitoring wells, and two recovery trenches, indicating that groundwater is not being adversely impacted by the VOCs in the soil.

One soil analytical result exceeded the NR 746 criteria at GMMW-5 for 1,2,4-trimethylbenzene at 145,000 µg/kg from 4 to 6 feet. The NR 746 criteria indicate the potential for residual petroleum product in the soil pores. However, groundwater samples were collected from GMMW-5 in 1999, 2004, and 2007 and LNAPL was not present and the groundwater concentrations were below PALs in 2004 and 2007. Thus, the soil 1,2,4-trimethylbenzene concentration detected in GMMW-5 does not appear to be causing impact to the groundwater at this location.

Soil contamination above the NR 720 RCLs and NR 746 criteria remain onsite. The site will be placed on the WDNR GIS Registry for Closed Remediation Sites to address the soil impacts.

PAHs

A total of 183 soil samples were collected and submitted for PAH analysis including 145 samples from surface soil (0 to 4 ft bls) and 38 samples from subsurface soil between 4 and 16 ft bls). A summary of soil PAH analytical results are present in Table 3. Subsurface soil PAH analytical results are presented on Figure 10. Surface soil PAH analytical results are presented on Figures 11 and 12.

One or more PAH compounds were detected in the soil at concentrations above the following proposed RCLs as outlined by the WDNR (WDNR, 1997):

- Non-industrial direct contact RCLs in 123 of the 183 samples analyzed locations. The sample locations were widely distributed across the site.
- Industrial direct contact RCLs in 58 of the 183 samples analyzed. The sample locations were located near the 150,000-gallon diesel AST and dispensing line and north of the diesel AST where heavy equipment is staged.

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- Groundwater pathway RCLs at 44 of the 183 samples analyzed. The sample locations were generally located near the 150,000-gallon diesel AST and dispensing line, and north of the diesel AST where heavy equipment is staged.

Benzo(a)Pyrene Equivalent Evaluation

The PAH Guidance Document notes, "*cleanup levels for 'total PAHs' are inherently site-specific and generic values tend to be overly conservative*" (page 2). Based on the wide-spread distribution of the PAH compounds identified in the surface soil, site-specific RCLs were developed for total PAH compounds to further evaluate PAH distribution and risk. ARCADIS used a methodology presented in the PAH Guidance Document (WDNR, 1997), which utilizes a benzo(a)pyrene equivalent and relative potency factors (RPFs). According to the WDNR PAH guidance document, the benzo(a)pyrene equivalent method is "*conceptually consistent with the intent of the target risk requirements of ch. NR 720.11(3) and 720.19(5), Wis. adm. code, where risks are presumed to be additive.*" The PAH Guidance Document states, "the soil cleanup levels generated by using relative potency factors are unlikely to underestimate the potential human health risk associated with these compounds."

Site-specific RCLs were calculated for the site based on the information collected regarding the composition of the PAH mixture at the site combined with the RPFs that reflect the toxicity of each PAH compound relative to benzo(a)pyrene. An RCL based on the benzo(a)pyrene-equivalent (BaP_{equiv}) concentration was developed using the risk-based equations for carcinogenic compounds and the cancer slope factor for benzo(a)pyrene provided in the PAH Guidance Document. According to NR 720.19(5)(a), the target risk for the non-industrial and industrial scenarios can be modified for *in situ* contaminated soil using an excess cancer risk of 1×10^{-7} for the non-industrial scenario and 1×10^{-6} for the industrial scenario. Concentrations equal to one-half the detection limit were used where sample results were reported below laboratory detection limits. This approach is consistent with the use of non-detect results in other WDNR approved statistical tools, such as the Mann-Kendall spreadsheet.

In calculating an RCL utilizing the BaP_{equiv} approach, the target risk is distributed equally among the PAH compounds and a combined target excess cancer risk level is calculated. The combined target cancer risk level is therefore determined by multiplying the target risk for individual compounds by the number of compounds in the assessment, provided the result does not exceed 1×10^{-5} , as specified in NR 720.19(5)(a)(2). Seventeen PAH compounds were detected in the soil samples collected. Because 17×10^{-6} is greater than 1×10^{-5} , the target risk for the site was set at 1×10^{-5} . Applying the target risk of 1×10^{-5} to the equation provided in Attachment B of the PAH Guidance Document yields a non-industrial direct contact RCL for BaP_{equiv} .

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of 880 µg/kg, or 0.88 mg/kg and an industrial direct contact RCL of 3,900 µg/kg, or 3.9 mg/kg.

To determine if surface soil concentrations at the site exceed the site-specific RCLs for BaP_{equiv}, the PAH concentrations in the soil samples must be converted to equivalent concentrations (with regard to toxic potency) of benzo(a)pyrene. This was accomplished by multiplying the concentration of each PAH compound in a given sample by that compound's RPF. RPFs were obtained from Nisbet and LaGoy (1992) and are listed on page 3 of the PAH Guidance Document. The RPFs are unitless and vary from 0.001 to 1. An RPF of 0.001 indicates that the compound is only 1/1,000th as toxic as benzo(a)pyrene, while an RPF of 1.0 indicates, the compound has the same toxicity as benzo(a)pyrene. The resultant products were then summed to yield the BaP_{equiv} concentration for that sample.

The BaP_{equiv} non-industrial and industrial RCLs for the site were determined to be 880 µg/kg and 3,900 µg/kg, respectively. The calculations and BaP_{equiv} data are summarized in Table 4. The BaP_{equiv} industrial RCL was exceeded at 29 locations (Table 4, Figure 13). The soil boring locations are located near the diesel AST and associated dispensing line.

PAH impacts appear to be delineated both horizontally and vertically onsite. PAH concentrations were detected above the proposed RCL for the protection of groundwater, however, the analytes were not detected in the groundwater samples collected from nearby monitoring wells. The BaP_{equiv} industrial RCL soil exceedances located near the diesel AST and associated dispensing line were excavated between September and October 2008. Soil PAHs concentrations above the BaP_{equiv} non-industrial RCL remain onsite.

Groundwater Investigation

Groundwater investigation activities, consisting of the installation and sampling of temporary wells, monitoring wells, and trenches for LNAPL recovery, have been completed to evaluate the groundwater quality at the site. Groundwater samples were collected for analysis of DRO, VOCs, PVOCs, and PAHs. Groundwater analytical results were compared to NR 140 PAL and ES.

Groundwater DRO, VOC and PVOC analytical results are summarized in Table 5. Groundwater PAH analytical results are summarized in Table 6. Groundwater analytical results for temporary and monitoring wells are posted on Figures 14 and 15, respectively. Groundwater laboratory reports were previously submitted to the WDNR.

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DRO

Groundwater was sampled and submitted for DRO analysis. However, there is no established groundwater standard for DRO, so the analytical results can only be used to identify if constituents of heavy hydrocarbons are dissolved in the groundwater. DRO concentrations have ranged from below laboratory detection limits to 12.8 milligrams per liter (mg/L), with the exception of a DRO reported at 650 mg/L at MW-3 in June 1996. Note that the DRO result from MW-3 in June 1999 had decreased to 2.4 mg/L. The DRO results indicate the heavy hydrocarbons have a low solubility in groundwater at this site.

VOC and PVOC

None of the groundwater samples collected from the monitoring wells at the site contained VOCs or PVOCs at concentrations exceeding the PAL. Methylene chloride was detected at Temporary Well GP-7. However, methylene chloride is a known common laboratory contaminant and not a constituent of concern at the site. Therefore, further evaluation of the methylene chloride detection is not warranted. Groundwater analytical results for temporary and monitoring wells are posted on Figures 14 and 15, respectively.

Historically, benzene was the only analyte detected above the PAL of 0.5 micrograms per liter ($\mu\text{g/L}$) at GMMW-5 at 2.2 $\mu\text{g/L}$ in June 1999 and RT-1 at 0.64 $\mu\text{g/L}$ in October 2004. Benzene concentrations decreased below the PAL in subsequent sampling events at GMMW-5 in October 2004 and January 2007 and RT-1 in January 2007.

PAH

Groundwater analytical results for temporary and monitoring wells are posted on Figures 14 and 15, respectively. Groundwater samples were collected from seven temporary wells (GP-3, GP-9, GP-19, GP-27, GP-28, GP-30, and GP-31) in June 1996 and submitted for PAH analysis (Figure 9). Except for GP-27, none of these samples contained any PAHs at concentrations exceeding the PAL or ES. Benzo(a)pyrene, benzo(a)fluoranthene, and chrysene were detected at concentrations of 0.54 $\mu\text{g/L}$, 0.56 $\mu\text{g/L}$, and 0.30 $\mu\text{g/L}$, respectively in GP-27. All these compounds exceed their respective ES of 0.2 $\mu\text{g/L}$. Since the samples were collected from a temporary well, the results are likely elevated due to the turbidity of the water sample. The groundwater results from the surrounding sampling points were below laboratory detection limits. Based on the absence of groundwater PAH impacts in the area and the sample from GP-27 collected from a temporary well, the result is not likely representative of true groundwater quality and thus not evaluated further.

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Groundwater samples were collected from 11 monitoring wells and two recovery trenches and submitted for laboratory analysis of PAHs in January 2007. Groundwater PAH analytical results are summarized in Table 6 and presented on Figure 15.

Groundwater PAH concentrations were reported above the PAL at Monitoring Well MW-3 (benzo(a)pyrene 0.032 µg/L and chrysene 0.088 µg/L) and above the ES at Recovery Trench RT-1 (chrysene 1.5 µg/L) and Recovery Trench RT-2 (chrysene 1.3 µg/L). The recovery trenches were installed in clayey soil, with low permeability, below the water table. Groundwater accumulated in the recovery trenches and has remained immobile in the coarse-grained backfill. Further, the recovery trenches were not designed or installed in accordance with NR 141 Wis. adm. code requirements. Since the water in the recovery trenches is immobile and the recovery trenches were not installed in compliance with NR 141, the ES exceedances at the recovery trenches are not evaluated further.

ARCADIS requests a WDNR exemption under s. NR 140.28 Wis. adm. code be issued for the PAL exceedance in the groundwater at MW-3.

LNPL Occurrence and Investigation

Measurable LNAPL was observed in May 1997 in Monitoring Wells MW-1 and MW-2 (Figure 2) during the various site investigation activities. The observed thickness has varied from 0.01 to 6.05 feet in Monitoring Well MW-1, and from 0.01 to 1.56 feet in Monitoring Well MW-2. It should be noted that due to capillary effects, particularly in areas with fine-grained soil such as clay, the observed thickness of LNAPL in a monitoring well may be substantially greater than the actual thickness of LNAPL on the groundwater table. As an interim action, ARCADIS manually bailed the product from MW-1 and MW-2 from May 1997 through December 1999. A summary of product and groundwater levels for MW-1 and MW-2 are presented in Tables 7 and 8, respectively.

In June 1999, ARCADIS advanced eight Geoprobe soil borings (GP-50 through GP-57) to delineate the extent of LNAPL surrounding Monitoring Wells MW-1 and MW-2. Each boring was converted to a temporary well. LNAPL was not observed in any of the temporary wells. The absence of measurable LNAPL in the temporary wells indicated that the LNAPL was localized around MW-1 and MW-2 and the horizontal migration was inhibited by the silt and clay soil.

Remediation Activities

Vacuum Enhanced LNAPL Recovery System Overview

ARCADIS supervised the installation of a VELR system at Area 1 to recover the LNAPL at MW-1, and at Area 2 to recover the LNAPL at MW-2 in April 2001 (see

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Figure 2). The VELR systems consisted of recovery trenches and VELR equipment including regenerative blowers, knock-out tanks, and perforated piping in the trenches.

The primary function of the systems was to induce a vacuum on the vadose zone and capillary fringe to promote the migration of LNAPL towards the recovery trenches, where LNAPL was collected for subsequent removal and disposal. A secondary function of the systems was to draw soil gas through the vadose zone to each of the recovery trenches as a result of the vacuum induced in the recovery trenches via the blower system. This increased the flow of oxygen through the subsurface to promote microbiological contaminant degradation and soil gas volatilization of petroleum constituents adsorbed to the soil and present at the capillary fringe. Extracted soil vapors were vented to the atmosphere. Additional information on the design of the VELR systems was presented in the *Construction Documentation Report and Summary of 6 Months Operation* prepared by ARCADIS and dated February 2003.

Vacuum Enhanced LNAPL Recovery System Installation

In April 2001, Recovery Trenches RT-1 and RT-2 were installed. Recovery Trench RT-1 was installed at Area 1 and is approximately 31 feet long by 4 feet wide and 13 feet deep. MW-1 was excavated and replaced by RT-1. Recovery Trench RT-2 was installed at Area 2 and is approximately 24 feet long by 4 feet wide and 12 feet deep. MW-2 was excavated and replaced by RT-2. Approximately 180 tons and 140 tons of impacted soils were excavated from Area 1 and Area 2, respectively, and transported to Superior Emerald Park Landfill in Muskego, Wisconsin for disposal. Based on soil samples submitted for analysis of DRO, the mass of LNAPL removed from the excavations was calculated at approximately 522 pounds (lbs) of hydrocarbons (equivalent to approximately 79 gallons of LNAPL) from RT-1 and approximately 402 lbs of hydrocarbons (equivalent to approximately 61 gallons of LNAPL) from RT-2.

LNAPL Recovery in Vapor Phase (VELR System Discharge)

The systems were started up on December 19, 2001. In accordance with NR 419 Wis. Adm. Code, air samples were collected from the discharge of each of the two systems daily for the first 3 days of operation, weekly for the next 3 weeks of operation, monthly for the next 3 months, and quarterly thereafter. In accordance with NR 406, NR 419, and NR 445 Wis. Adm. Code, the air samples were submitted for analysis of total petroleum hydrocarbons (TPH) (C₄-C₁₂ range). The air analysis was completed by Microseeps in Pittsburgh, Pennsylvania. Air laboratory analytical reports were previously submitted to the WDNR.

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Area No. 1

Based on the effluent air sampling results, the estimated average TPH concentration in the VELR system effluent discharge (December 2001 through January 2004) was approximately 2.8 part per million by volume (ppmv). Therefore, with an average air flow rate of 3,182 cubic feet per minute (cfpm) through the 2-inch diameter conveyance pipe, the average system contaminant removal rate was approximately 0.0014 pounds per hour (lbs/hr). This rate was well within the WDNR allowable emission rate of 5.7 lbs/hr. Assuming an approximate system operation timeframe of 779 days (from system start-up through January 2004 with an estimated 95 percent run time), the VELR System at Area No. 1 has removed approximately 25 lbs (3.8 gallons of LNAPL) of contaminants from the subsurface in the vapor phase. The monthly contaminant vapor removal rates for the VELR system in Area No. 1 are included in Table 9. The cumulative mass of contaminants removed (vapor phase) versus time for the Area No. 1 VELR system is presented on Figure 16.

Area No. 2

The estimated average TPH concentration in the VELR system effluent discharge (December 2001 through June 2003) was approximately 4.1 ppmv. Therefore, with an average flow rate of 3,979 cfpm through the 2-inch diameter conveyance pipe, the average VELR system contaminant vapor removal rate is approximately 0.0037 lbs/hr. This value is well within the WDNR allowable emission rate of 5.7 lbs/hr. Assuming an approximate system operation timeframe of 564 days, the VELR system in Area No. 2 has removed approximately 46.5 pounds (7.4 gallons of LNAPL) (again with an estimated 95 percent run time) of contaminants from the subsurface in the vapor phase. The monthly contaminant vapor removal rates for the VELR system in Area No. 2 are included in Table 9. The cumulative mass of contaminants removed (vapor phase) versus time for the Area No. 2 system is presented on Figure 17.

LNAPL Recovery in Liquid Phase (Manual Bailing and Vacuum Truck)

Area No. 1

Approximately 162 gallons (1069 lbs) of LNAPL was removed via manual bailing from Monitoring Well MW-1 from May 1997 to January 2004. LNAPL was removed via manual hand bailing as an interim action from May 1997 through November 2001 and during regular site visits during the VELR system operation from December 2001 through January 2004.

In October 2001, prior to the VELR system start-up, approximately 7.3 gallons (48 lbs) of LNAPL were removed via vacuum truck from Recovery Trench RT-1, including approximately 600 gallons of groundwater. On February 22, 2002, a vacuum truck

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was used to remove approximately 1.5 gallons (10 lbs) of LNAPL and approximately 400 gallons of groundwater from Recovery Trench RT-1.

A summary of the historical LNAPL removal rates is shown in Table 7, and a graphical presentation of the cumulative mass of LNAPL removed versus time from Area No. 1 is shown on Figure 18. Groundwater and LNAPL recovery from the subsurface was transported off-site for recycling and/or disposal by Heartland Environmental, in Milwaukee, Wisconsin.

Area No. 2

Approximately 99 gallons (653 lbs) of LNAPL was removed via manual bailing from Monitoring Well MW-2 from May 1997 to April 2003. LNAPL was removed via manual hand bailing as an interim action from May 1997 through November 2001 and during regular site visits during the VELR system operation from December 2001 through February 2004.

In October 2001, prior to the VELR system start-up, approximately 8.5 gallons (56 lbs) of LNAPL were removed via vacuum truck from Recovery Trench RT-2, including approximately 400 gallons of groundwater. On February 22, 2002, a vacuum truck was used to remove approximately 31 gallons (205 lbs) of LNAPL from Recovery Trench RT-2, including approximately 300 gallons of groundwater.

A summary of the historical LNAPL removal rates is presented in Table 8, and a graphical presentation of the cumulative mass of LNAPL removed versus time from Area No. 2 is shown on Figure 19. Groundwater and LNAPL recovery from the subsurface was transported off-site for recycling and/or disposal by Heartland Environmental, in Milwaukee, Wisconsin.

Soil Excavation

Excavation was the remediation strategy chosen to address PAH-impacted soil above the BaP_{equiv} industrial direct contact RCL from ground surface to 4 ft bls. Five areas (denoted as Area 1 through Area 5 on Figure 20) were identified for excavation immediately surrounding the 150,000-gallon diesel AST. The horizontal excavation limits were determined based on nearest soil boring location with PAH analytical results reported below the BaP_{equiv} industrial direct contact RCL. The soil analytical results from these soil borings were used to represent the excavation soil confirmation sidewall sample locations.

Between September and October 2008, Hulcher Services, Inc. (Hulcher), of Hudson, Wisconsin excavated, transported, and disposed of approximately 2,850 tons of soil at Waste Management Orchard Ridge Landfill, in Menomonee Falls, Wisconsin. The

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landfill tonnage report is included in Appendix D. Photographs 1 through 12 document the excavation progress and backfilling (Appendix E).

Approximately 5,000 tons of soil were originally estimated to be removed based on the dimensions of the five areas. However, due to the occurrence of buried concrete foundations from the former roundhouse, the actual quantity removed was less. Hulcher used a narrow excavator bucket to remove soil between the existing concrete foundations to the target depth of 4 feet. The concrete foundations were present at Areas 1 and 5 (Photographs 1, 2, and 8 through 11). Soil borings were not advanced along the westernmost excavation wall to define the excavation limits due to the close proximity of the railroad tracks. The western excavation wall was defined by the concrete foundation orientated north-south (Photograph 8).

The excavations were backfilled to grade using crushed stone. Water accumulated in portions of the excavations from recent rainfall. Clear 2-inch stone was used in these instances before placement of the crushed stone. A vibratory drum roller and walk-behind vibratory plate were used to compact the backfill in place. Midwest Engineering Services (MES) was the onsite geotechnical firm responsible for backfill compaction testing. MES tested the compaction of backfill material utilizing a nuclear density method, spot testing random areas of each one foot lift within each excavation area. The compaction testing requirement of achieving 95% standard proctor was met. The geotechnical report is included in Appendix F.

Evaluation of Closure Criteria

Criteria for determining whether no further action is necessary are established in s. NR 726.05 Wis. adm. code. Because PAL and ES exceedances remain onsite, ARCADIS evaluated the following closure criteria in NR726.05(2)(b):

- Completion of source control.
- Presence of natural attenuation.
- Stability of groundwater plume margin.
- GIS registry information.
- Anticipated threats to public health, safety or welfare, or the environment.

The following sections present a detailed analysis of each of the five closure criteria.

Source Control

Source control measures include the excavation of approximately 320 tons of impacted soil from the subsurface during the installation of the recovery trenches, and removal of approximately 460 gallons of LNAPL (254 gallons from Area 1 and 206 gallons from Area 2) in the vapor and liquid phase from the VELR systems and manual bailing. Additionally, approximately 1,700 gallons of groundwater were removed via vacuum truck from Monitoring Wells MW-1 and MW-2. LNAPL has not been observed in MW-1 and MW-2 since March and February 2004, respectively.

Further, approximately 2,850 tons of PAH-impacted soil surrounding the 150,000-gallon diesel AST were excavated and disposed of at Waste Management Orchard Ridge Landfill to address the PAH-impacted soil above the BaP_{equiv} industrial direct contact RCL from ground surface to 4 ft bls.

In addition, since the inception of the investigation activities, Union Pacific has upgraded both the locomotive refueling area and the AST filling area. Upgrades in the refueling area consist of containment pans which capture all storm water and potential spills within the fuel area. The water collected from the pan system is routed through an oil/water separator prior to discharge. Upgrades at the AST filling area consist of a new containment pad for the tanker trucks with a sump system. In addition, the earthen containment berm continues to be maintained.

Natural Attenuation Monitoring Results

Groundwater VOC analytical results from temporary and monitoring wells were reported below the PAL. Historically, benzene was the only analyte detected above the PAL of 0.5 µg/L at GMMW-5 at 2.2 µg/L in June 1999. Benzene concentrations decreased below the PAL in subsequent sampling events at GMMW-5 in October 2004. The decrease in VOC concentrations is attributed to natural attenuation.

Groundwater samples were collected and submitted for laboratory analysis of PAH from temporary wells and monitoring wells. Groundwater PAH concentrations were reported above the PAL at Monitoring Well MW-3 (benzo(a)pyrene 0.032 µg/L and chrysene 0.088 µg/L).

Plume Reduction

As presented earlier in this report, the distribution of contaminants in groundwater has been reduced to only PAH concentrations above the PAL at MW-3 and above the ES at GP-27, RT-1, and RT-2. The historical benzene PAL exceedances at GMMW-5 and RT-1 have degraded by natural attenuation to concentrations below the PAL. Since the LNAPL in the recovery trench has been removed and natural attenuation has been

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documented at the site, it is unlikely that future petroleum concentrations will increase or exceed the ES.

Geographic Information System Documentation

A GIS package is attached as a separate deliverable to place the site on the GIS Registry of Contaminated Sites for soil impacts.

Risk to Human Health and Environment

Residual soil and groundwater impacts are limited to the site. Residual VOC soil concentrations exceed NR 720 groundwater pathway RCLs based on the protection of groundwater. VOC concentrations were not detected above the PAL in the temporary or monitoring well samples. Thus, the residual VOC soil concentrations above the NR 720 RCLs do not appear to pose a risk to human health or the environment.

Residual VOC concentrations exceed the NR 746 criteria at one location (GMMW-5). The NR 746 criteria are established to identify locations for potential NAPL accumulation. Groundwater samples collected from GMMW-5 in 1999, 2004, and 2007 indicate that the LNAPL was not present, and the groundwater concentrations were below the PAL. Thus, the elevated soil 1,2,4-trimethylbenzene concentration detected in GMMW-5 does not appear to be causing impact to the groundwater at this location.

Residual PAH concentrations are above the BaP_{equiv} non-industrial direct contact RCL, but below the industrial RCL. Since the site will be utilized as a railroad yard for the foreseeable future, closure of the Site utilizing industrial direct contact RCLs is reasonable.

Groundwater samples were collected and submitted for laboratory analysis of PAH from seven temporary wells and 11 monitoring wells. Groundwater PAH concentrations were reported above the PAL at Monitoring Well MW-3. Based on the limited extent of exceedances and low levels detected, the concentrations at this location are expected to decrease to below the PAL before the property line is reached and do not pose a risk to human health or the environment.

Since the groundwater concentrations are minimal and do not extend offsite, the private wells and Menomonee River (approximately 2,000 feet east of the site) are not likely to be affected.

There are several structures and underground utilities located at the site. Soil and groundwater samples have been collected from near the structures and along the utility

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corridors. Groundwater samples were below laboratory detection limits or below the PAL at these locations.

Based on these results, the residual soil and groundwater contamination does not pose an unacceptable risk to human health or the environment.

Conclusions and Recommendations

This *Closure Report* has been prepared for the Union Pacific Butler Yard Facility located in Milwaukee, Wisconsin. ARCADIS, on behalf of Union Pacific, is requesting Site Closure based on the following criteria:

- Soil PVOC concentrations above the NR 720 RCLs (based on the protection of groundwater) for benzene and xylenes were reported at 11 out of 146 soil samples and at one location above NR 746 criteria onsite. ARCADIS recommends the onsite soil contamination above the NR 720 RCLs and NR 746 criteria be placed on the WDNR GIS Registry for Closed Remediation Sites to address the soil impacts.
- Soil PAH concentrations above the BaP_{equiv} industrial RCL were only located around the 150,000-gallon diesel AST. Approximately 2,850 tons of PAH-impacted soils were excavated to remove the source of impacts and eliminate the direct contact exposure pathway.
- LNAPL has not been observed in MW-1 or MW-2 since March 2004 and February 2004, respectively. Remediation activities included the removal approximately 460 gallons of LNAPL in vapor and liquid phase, and approximately 1,700 gallons of groundwater were removed via vacuum truck.
- Post remediation groundwater monitoring has confirmed a decrease of VOCs to concentrations below the PAL by natural attenuation. Groundwater PAH concentrations were reported above the PAL at Monitoring Well MW-3. ARCADIS requests a WDNR exemption under s. NR 140.28 Wis. adm. code be issued for this PAL exceedance.
- Groundwater concentrations were below the PAL in samples collected near the onsite structures and utility corridors. Further, since the groundwater concentrations are minimal and do not extend offsite, the private wells and Menomonee River (approximately 2,000 feet east of the site) are not likely to be affected by the constituents of concern.

Upon closure of the site by the WDNR, ARCADIS will pursue the following:

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- Abandonment of the site monitoring wells in accordance with NR 141 requirements. Copies of monitoring well abandonment forms will be forwarded to the WDNR once the activities are complete.

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References

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Wisconsin Administrative Code. Wisconsin Department of Natural Resources. Chapter NR 141 Groundwater Monitoring Well Requirements. March 2000.

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United States Geological Survey (USGS). 1976. 7.5-minute Topographic Map. Wauwatosa, Wisconsin Quadrangle.

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Table 1. Groundwater Elevation Data, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Monitoring Well	Land Surface Elevation (ft)	Measuring Point Elevation (ft)	Screened Interval (ft bls)	Screen Length (ft)	Depth to Product (ft) 12/24/96	Depth to Water (ft) 12/24/96	Water Elevation (ft msl) 12/24/96	Depth to Product (ft) 01/21/97	Depth to Water (ft) 01/21/97	Water Elevation (ft msl) 01/21/97
MW-1	738.8	739.7	5.0 - 15.0	10.0	9.05	14.86	729.49(a)	9.08	14.65	729.5 (a)
MW-2	738.6	740.3	3.0-13.0	10.0	8.86	10.43	731.1 (a)	9.05	10.61	730.9 (a)
MW-3	738.2	739.3	5.0 - 13.0	8.0	ND	8.18	731.1	ND	8.32	731.0
GMMW-4	739.1	742.5	5.0 - 15.0	10.0	ND	6.08	736.4	ND	6.77	735.7
GMMW-5	738.95	741.96	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-6	738.6	742.2	5.0 - 15.0	10.0	ND	7.79	734.4	ND	8.31	733.9
GMMW-7	739.5	742.9	5.0 - 15.0	10.0	ND	6.92	736.0	ND	7.42	735.5
GMMW-8	738.7	742.3	5.0 - 15.0	10.0	ND	9.36	732.9	ND	9.57	732.7
GMMW-9	738.10	741.11	5.0 - 15.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-10	736.85	739.95	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-11	738.91	738.72	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-12	738.55	738.33	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI
GMMW-13	738.82	738.74	4.0 - 14.0	10.0	NI	NI	NI	NI	NI	NI

Measuring point elevation is from the north side of the top of PVC well casing (TOC).

Elevations are measured relative to a United States Geological Survey (USGS) datum.

(a) Groundwater elevation was corrected for the presence of product; product specific gravity assumed = 0.8 g/cm³.

amsl Above mean sea level.

(b) GMMW-7 abandoned prior to 6/8/99.

bls Below Land Surface.

(c) GMMW-12 abandoned prior to 10/25/04

(d) MW-1 and MW-2 were removed during installation of recovery trenches

ft Feet

ND None Detected.

NI Not installed.

NM Not measured.

TR Trace (<0.01 foot).

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Table 1. Groundwater Elevation Data, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Monitoring Well	Depth to Product (ft) 06/08/99	Depth to Water (ft) 06/08/99	Water Elevation (ft msl) 06/08/99	Depth to Product (ft) 10/25/04	Depth to Water (ft) 10/25/04	Water Elevation (ft msl) 10/25/04	Depth to Product (ft) 01/03/07	Depth to Water (ft) 01/03/07	Water Elevation (ft msl) 01/03/07
MW-1	9.01	11.45	730.2	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)
MW-2	8.01	8.45	732.2	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)	NM (d)
MW-3	TR	7.17	732.1	ND	8.68	730.6	ND	7.68	731.62
GMMW-4	ND	5.13	737.4	ND	6.93	735.6	ND	5.7	736.80
GMMW-5	ND	8.26	733.70	ND	9.78	732.18	ND	8.8	733.16
GMMW-6	ND	NM	NM	ND	9.00	733.2	ND	8.63	733.57
GMMW-7	NM (b)	NM (b)	NM (b)	NM (b)	NM (b)	NM (b)	NM (c)	NM (b)	NM (b)
GMMW-8	ND	7.28	735.0	ND	9.98	732.3	ND	8.14	734.16
GMMW-9	ND	7.75	733.36	ND	9.12	731.99	ND	8.26	732.85
GMMW-10	ND	7.85	732.10	ND	9.08	730.87	ND	8.04	731.91
GMMW-11	ND	5.02	733.70	ND	6.90	731.82	ND	5.18	733.54
GMMW-12	ND	4.00	734.33	NM (c)	NM (c)	NM (c)	NM (c)	NM (c)	NM (c)
GMMW-13	ND	5.10	733.64	ND	6.11	732.63	ND	5.25	733.49

Measuring point elevation is from the north side of the top of PVC well casing (TOC).

Elevations are measured relative to a United States Geological Survey (USGS)

(a) Groundwater elevation was corrected for the presence of product; product specific gravity assumed = 0.8 g/cm³.

amsl Above mean sea level.

(b) GMMW-7 abandoned prior to 6/8/99.

bis Below Land Surface.

(c) GMMW-12 abandoned prior to 10/25/04

(d) MW-1 and MW-2 were removed during installation of recovery trenches

ft Feet

ND None Detected.

NI Not yet installed.

NM Not measured.

TR Trace (<0.01 foot).

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	NR 720	NR 720	NR 746	Proposed	Proposed	Proposed	GMMW-4	GMMW-5	GMMW-6	GMMW-7
Sample Depth (feet)	Table 1	Table 2	Table 1	Industrial	Non-Industrial	Groundwater	3-5'	4-6'	5-7'	9-11'
Sample Date	RCL	Criteria	Criteria	Direct Contact	Direct Contact	Protection	12/9/96	6/1/96	12/11/96	12/11/96
DRO (mg/kg)	100	NE	NE	NE	NE	NE	<6.1	3,030	2,110	12
GRO (mg/kg)	100	NE	NE	NE	NE	NE	<6.1	NA	174 H	<6.1
VOCs (µg/kg)										
Benzene	5.5	1,100	8,500	NE	NE	NE	<12	<303	<600	<12
Bromomethane	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Chloromethane	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
cis-1,2-Dichloroethene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Ethylbenzene	2,900	NE	4,600	NE	NE	NE	<30	497	<1,600	<31
Isopropylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Methyl tert-Butyl Ether	NE	NE	NE	NE	NE	NE	<30	<303	<1,600	<31
Methylene Chloride	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Naphthalene	2,700	NE	NE	110,000	20,000	400	NA	NA	NA	NA
n-Butylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
n-Propylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
sec-Butylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
tert-Butylbenzene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Tetrachloroethene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
Toluene	1,500	NE	38,000	NE	NE	NE	<30	<303	<1,600	<31
Trichloroethene	NE	NE	NE	NE	NE	NE	NA	NA	NA	NA
1,2,4-Trimethylbenzene	NE	NE	83,000	NE	NE	NE	<30	145,000	3,720	<31
1,3,5-Trimethylbenzene	NE	NE	11,000	NE	NE	NE	<30	885	2,980	<31
Xylenes, total	4,100	NE	42,000	NE	NE	NE	<92	1,330	<4,600	<92

Footnotes on Page 15.

Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-8	GMMW-9	GMMW-10	GMMW-11	GMMW-12	GMMW-13	GP-1	GP-2	GP-3	GP-4
Sample Depth (feet)	5-7'	6-8'	4-6'	4-6'	0-2'	4-6'	4-6'	6-8'	6-8'	6-8'
Sample Date	12/9/96	6/1/99	6/1/99	6/2/99	6/2/99	6/2/99	5/23/96	5/23/96	5/23/96	5/23/96
DRO (mg/kg)	<5.4	<5.9	13	<6.4	1,110	<5.5	<5	11	5.4	<5.0
GRO (mg/kg)	<5.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<11	<30	<29	<32	<139	<28	<25	<48	<30	<30
Bromomethane	NA	NA	NA	NA	NA	NA	<100	<48	<30	34
Chloromethane	NA	NA	NA	NA	NA	NA	<30	<57	204	<36
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	<25	<48	<30	54
Ethylbenzene	<27	<30	37	<32	<139	<28	<25	<48	<30	54
Isopropylbenzene	NA	NA	NA	NA	NA	NA	<25	<48	<30	<30
Methyl tert-Butyl Ether	<27	<30	<29	<32	<139	<28	<25	<48	<30	<30
Methylene Chloride	NA	NA	NA	NA	NA	NA	180 L	480 L	280 L	280 L
Naphthalene	NA	NA	NA	NA	NA	NA	<25	630	<25	<25
n-Butylbenzene	NA	NA	NA	NA	NA	NA	<25	<48	<30	<30
n-Propylbenzene	NA	NA	NA	NA	NA	NA	<25	<48	<30	<30
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	<25	<48	<30	<30
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	<25	<48	<30	<30
Tetrachloroethene	NA	NA	NA	NA	NA	NA	<25	<48	<30	<30
Toluene	<27	<30	<29	<32	<139	<28	<25	71 B	46 B	46 B
Trichloroethene	NA	NA	NA	NA	NA	NA	<25	<48	<30	55
1,2,4-Trimethylbenzene	<27	<30	42	<32	1,730	<28	<25	<48	<30	<30
1,3,5-Trimethylbenzene	<27	<30	<29	<32	1,040	<28	<25	<48	<30	<30
Xylenes, total	<81	<89	<88	<96	474	<83	<35	<66	<42	<42

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-5		GP-6		GP-7	GP-8		GP-9	GP-10	GP-11	GP-12	
Sample Depth (feet)	12-14'	6-8'	14-16'	6-8'	6-8'	4-6'	6-8'	6-8'	6-8'	4-6'	4-6'	12-14'
Sample Date	5/24/96	5/24/96	5/24/96	5/24/96	5/23/96	5/28/96	5/28/96	5/24/96	5/24/96	5/24/96	5/28/96	5/28/96
DRO (mg/kg)	5.3 B	720 B	11	4,200 B	<5	<5.0 B	46 B	<5.0 B	<5.0 B	8.3 B	920 B	12
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Bromomethane	<130 I	<130 I	<100	<150 I	98	<140 I	170 I	<150 I	<170 I	<160 I	<170 I	<130 I
Chloromethane	<39 I	<39 I	<30	<45 I	<33	<42 I	51 I	<45 I	<51 I	<48 I	<51 I	<39 I
cis-1,2-Dichloroethene	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Ethylbenzene	<32 I	<32 I	<25	60 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Isopropylbenzene	<32 I	<32 I	<25	100 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Methyl tert-Butyl Ether	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Methylene Chloride	280 I,L	190 I,L	140 L	220 I,L	320 L	200 I,L	230 I,L	220 I,L	230 I,L	210 I,L	190 I,L	160 I,L
Naphthalene	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	64	<25
n-Butylbenzene	<32 I	<32 I	<25	910 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	240 I	<32 I
n-Propylbenzene	<32 I	<32 I	<25	180 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	56 I	<32 I
sec-Butylbenzene	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	200 I	<32 I
tert-Butylbenzene	<32 I	<32 I	<25	440 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Tetrachloroethene	<32 I	<32 I	<25	<38 I	37	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Toluene	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Trichloroethene	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
1,2,4-Trimethylbenzene	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
1,3,5-Trimethylbenzene	<32 I	<32 I	<25	<38 I	<28	<35 I	<42 I	<38 I	<42 I	<40 I	<42 I	<32 I
Xylenes, total	<46 I	<46 I	<35	<52 I	<38	<49 I	<60 I	<52 I	<60 I	<56 I	<60 I	<46 I

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-13	GP-14	GP-15	GP-16	GP-17		GP-18	GP-19	GP-20	GP-21		GP-22
Sample Depth (feet)	6-8'	6-8'	4-6'	4-6'	14-16'	4-6'	6-8'	6-8'	6-8'	10-12'	2-4'	6-8'
Sample Date	5/24/96	5/24/96	5/23/96	5/23/96	5/23/96	5/23/96	5/28/96	5/23/96	5/28/96	5/28/96	5/28/96	5/28/96
DRO (mg/kg)	12 B	8.2 B	<5.0	<5.0	13	910	<5.0 B	5.6	2,800 B	42	350	19 B
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<45 I	<32	<32	<25	<40	170	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Bromomethane	<180 I	<130	120	90	<40	95	<140 I	<30	<650 M	<160 I	<850 I,M	<160 I
Chloromethane	<54 I	<39	<39	<30	<48	<30	<42 I	<36	<200 M	<48 I	<260 I,M	<48 I
cis-1,2-Dichloroethene	<45 I	<32	<32	<25	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Ethylbenzene	<45 I	<32	<32	<25	<40	440	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Isopropylbenzene	<45 I	<32	<32	<25	<40	210	<35 I	<30	400	<40 I	<210 I,M	<40 I
Methyl tert-Butyl Ether	<45 I	<32	<32	<25	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Methylene Chloride	230 I,L	140 L	540 L	330	500	640 L	200 I,L	290 L	610 L	170 I,L	830 I,M	180 I,L
Naphthalene	<25	<25	<25	<25	<25	1,200	<25	<25	<500 M	<25	<25	<25
n-Butylbenzene	<45 I	<32	<32	<25	<40	<25	<35 I	<30	1600	<40 I	<210 I,M	<40 I
n-Propylbenzene	<45 I	<32	<32	<25	<40	310	<35 I	<30	810	<40 I	<210 I,M	<40 I
sec-Butylbenzene	<45 I	<32	<32	<25	<40	260	<35 I	43	730	<40 I	<210 I,M	<40 I
tert-Butylbenzene	<45 I	<32	<32	<25	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Tetrachloroethene	<45 I	<32	<32	<25	<40	<25	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Toluene	<45 I	<32	<32	<25	<40	980	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Trichloroethene	<45 I	<32	70	<25	<40	63	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
1,2,4-Trimethylbenzene	<45 I	<32	<32	<25	<40	2,100	<35 I	100	<160 M	<40 I	390 I	<40 I
1,3,5-Trimethylbenzene	<45 I	<32	<32	<25	<40	830	<35 I	<30	<160 M	<40 I	<210 I,M	<40 I
Xylenes, total	<63 I	<46	<46	<35	160	2,600	<49 I	73	<230 M	<56 I	950 I	<56 I

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-23	GP-24	GP-25	GP-27	GP-28	GP-30	GP-31	GP-32	GP-33	GP-34	GP-38	GP-38
Sample Depth (feet)	6-8'	2-4'	6-8'	6-8'	6-8'	6-8'	6-8'	6-8'	6-8'	6-8'	3-5'	9-11'
Sample Date	5/29/96	5/28/96	5/29/96	5/29/96	5/29/96	5/29/96	5/29/96	10/3/96	10/3/96	10/3/96	12/2/96	12/2/96
DRO (mg/kg)	15	37 B	620	9.4	<5.0	<5.0	6.9	<5.0	7,500	1,000	<20	<20
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	<10	<500	<100	<1	<1
Bromomethane	<180 I	<190 I	<210 I,M	<220 I	<200	<300 I	<150 I	NA	NA	NA	NA	NA
Chloromethane	<54 I	<57 I	<63 I,M	<66 I	60	390 I	<45 I	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	NA	NA	NA	NA	NA
Ethylbenzene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	<25	1,400	<250	<1	<1
Isopropylbenzene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	550 I,L	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	<25	<1,200	<250	<1	<1
Methylene Chloride	<90 I	200 I,L	930 I,L	830 I,L	750	1,100 I,L	490 I,L	NA	NA	NA	NA	NA
Naphthalene	<25	240	<25	160	<25	<25	<25	NA	NA	NA	NA	NA
n-Butylbenzene	<45 I	<48 I	422 I	<55 I	<50	<80 I	<38 I	NA	NA	NA	NA	NA
n-Propylbenzene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	NA	NA	NA	NA	NA
sec-Butylbenzene	<45 I	<48 I	210 I	<55 I	<50	<80 I	<38 I	NA	NA	NA	NA	NA
tert-Butylbenzene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	NA	NA	NA	NA	NA
Tetrachloroethene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	NA	NA	NA	<1	<1
Toluene	<45 I	48 I	<52 I,M	<55 I	<50	<80 I	<38 I	<25	<1200	<250	<1	<1
Trichloroethene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<45 I	73 I	<52 I,M	<55 I	<50	<80 I	<38 I	<25	13,000	2,700	<1	<1
1,3,5-Trimethylbenzene	<45 I	<48 I	<52 I,M	<55 I	<50	<80 I	<38 I	<25	7,400	1,200	<1	<1
Xylenes, total	<63 I	<66 I	<74 I,M	<77 I	<70	<100 I	<52 I	<75	13,000	1,200	<1	<1

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-38 D	GP-39		GP-40		GP-40 D	GP-41		GP-42		GP-43	GP-44
Sample Depth (feet)	3-5'	7-9'	9-11'	7-9'	9-11'	9-11'	13-15'	7-9'	2-4'	6-8'	4-6'	6-8'
Sample Date	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	10/3/96	10/3/96	10/3/96	10/3/96
DRO (mg/kg)	366 H	<20	<20	<20	<20	<6.1	<20	<20	6,900 H	<5.0	3,500	<5
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<12	<1	<1	<1	<1	<12	<1	<1	<500	<10	<100	<10
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<30	<1	<1	<1	<1	<30	<1	<1	<1,200	<25	280	<25
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<30	<1	<1	<1	<1	<30	<1	<1	<1,200	<25	<250	<25
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<30	<1	<1	<1	<1	<30	<1	1	1,200	<25	<250	<25
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	97	<1	<1	<1	<1	<30	<1	<1	2,600	<25	1,700	<25
1,3,5-Trimethylbenzene	70	<1	<1	<1	<1	<30	<1	<1	2,500	<25	1,200	<25
Xylenes, total	<88	<1	<1	<1	<1	<91	<1	<1	4,700	<75	2,100	<75

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-45	GP-46		GP-46 D	GP-47		GP-48		GP-48 D	GP-50	GP-51	GP-52
Sample Depth (feet)	4-6'	11-13'	3-5'	3-5'	5-7'	7-9'	5-7'	7-9'	5-7'	4-6'	2-4'	2-4'
Sample Date	10/3/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	12/2/96	6/2/99	6/2/99	6/2/99
DRO (mg/kg)	530	23.8	1,234	600 H	462	<20	<20	<20	NA	562	8,010	9,580
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<100	<1	<1	41	<1	<1	<1	<1	<1	<31	<635	<631
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<250	<1	<1	54	5.5	<1	<1	<1	<1	89	<635	<631
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<250	<1	<1	<36	<1	<1	<1	<1	<1	<31	<635	<631
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<250	<1	<1	143	<1	<1	<1	<1	<1	<31	<635	<631
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	1,800	<1	55	300	35.5	<1	<1	<1	<1	904	3,680	2,650
1,3,5-Trimethylbenzene	770	<1	<1	60	60.5	<1	<1	<1	<1	183	991	706
Xylenes, total	1,500	<1	<1	243	6	<1	<1	<1	<1	159	<1,910	<1,890

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-53	GP-54	GP-55	GP-56	GP-57	GP-58	GP-59	GP-60	GP-61	GP-62	GP-63	GP-64
Sample Depth (feet)	6-8'	4-6'	2-4'	2-4'	4-6'	0-2'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	6/2/99	6/2/99	6/2/99	6/2/99	6/2/99	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05
DRO (mg/kg)	552	1,810	120	258	445	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)												
Benzene	<31	<30	<31	82	176	<30	<30	<30	<29	<31 ,QU	<30	<32
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<31	<30	44	697	<352	<30	280	<30	<29	41 QU	<30	<32
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<31	<30	<31	27	<29	<30	<30	<30	<29	<31 ,QU	<30	<32
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<31	<30	<31	64	<50	<30	<30	<30	31	<31 ,QU	<30	<32
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	294	290	391	2,470	1,760	<30	190	<30	77	110 QU	53	<32
1,3,5-Trimethylbenzene	86	50	87	805	<621	<30	210	<30	<29	<31 ,QU	<30	<32
Xylenes, total	94	93	183	1,050	<903	<90	<89	<90	140	<92 ,QU	<90	<96

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-65	GP-66	GP-67	GP-68	GP-69	GP-70	GP-71	GP-72	GP-73	GP-74
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'
Sample Date	10/19/05	10/18/05	10/18/05	10/18/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/18/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<31	<30	<320 ,QU	<33	<32 ,QU	45	<30	<27	<27	<29 ,QU
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<31	<30	<320 ,QU	75	<32 ,QU	<30	<400 RL1	<27	<190 RL1	<29 ,QU
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<31	<30	<320 ,QU	<33	<32 ,QU	<30	<30	<27	<27	<29 ,QU
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<31	<30	<320 ,QU	84	42 QU	33	<30	49	68	<29 ,QU
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<31	<30	630 QU	56	68 QU	38	160	110	170	<29 ,QU
1,3,5-Trimethylbenzene	<31	<30	<320 ,QU	<33	<32 ,QU	<30	85	30	32	<29 ,QU
Xylenes, total	<94	<89	<950 ,QU	160	110 QU	100	180	200	370	<86 ,QU

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-75	GP-76	GP-77	GP-80	GP-81	GP-82	GP-83	GP-84	GP-85	GP-86	GP-88
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	0-2'
Sample Date	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)											
Benzene	<31	<30	<28	<29	<31	<31	<28	<31	<31 ,QU	<32 ,QU	<28 ,QU
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<31	<30	<28	<370 RL1	<31	<31	<28	<31	<31 ,QU	<32 ,QU	110 QU
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<31	<30	<28	<29	<31	<31	<28	<31	<31 ,QU	<32 ,QU	<28 ,QU
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<31	<30	<28	<29	<31	<31	<28	<31	<31 ,QU	<32 ,QU	67 QU
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<31	52	98	840	<31	<31	40	<31	69 QU	<32 ,QU	63 QU
1,3,5-Trimethylbenzene	<31	<30	<28	180	<31	<31	<28	<31	<31 ,QU	<32 ,QU	<28 ,QU
Xylenes, total	<93	<89	150	400	<93	<92	<84	<93	150 QU	<96 ,QU	160 QU

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-89	GP-90	GP-91	GP-93	GP-94	GP-95	GP-96	GP-97	GP-98	GP-99
Sample Depth (feet)	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	2-4'
Sample Date	10/18/05	10/19/05	10/18/05	10/18/05	10/19/05	10/19/05	10/20/05	10/20/05	10/20/05	10/20/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<630 ,QU	88 QU	<29	<29	<31	<26 ,QU	<32	<32	100	<31
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<630 ,QU	<2800 ,QU,RL1	<29	<29	<31	<26 ,QU	<32	<32	130	260
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<630 ,QU	<31 ,QU	<29	<29	<31	<26 ,QU	<32	<32	<31	<31
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<630 ,QU	<31 ,QU	32	<29	<31	<26 ,QU	<32	<32	330	<31
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	2200 QU	3400 QU	89	<29	<31	710 QU	32	170	230	120
1,3,5-Trimethylbenzene	<630 ,QU	<31 ,QU	44	<29	<31	<26 ,QU	<32	90	94	120
Xylenes, total	<1900 ,QU	1300 QU	160	<88	<93	<78 ,QU	<96	120	370	350

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-100	GP-101	GP-102	GP-103	GP-104	GP-105	GP-106	GP-107	GP-108	GP-109
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	2-4'	2-4'	0-2'	0-2'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)										
Benzene	<31 ,QU	<31	<33	<29	<31 ,QU	<30	<28	<30 ,A-01	<31	<29
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	<31 ,QU	<31	<33	<29	<700 ,QU,RL1	<30	<28	<30 ,A-01	<31	<29
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	<31 ,QU	<31	<33	<29	<31 ,QU	<30	<28	<30 ,A-01	<31	<29
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	<31 ,QU	<31	<33	<29	64 QU	<30	<28	<30 ,A-01	<31	29
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	<31 ,QU	<31	<33	<29	530 QU	<30	<28	130 A-01	<31	<29
1,3,5-Trimethylbenzene	<31 ,QU	<31	<33	<29	<31 ,QU	<30	<28	51 A-01	<31	<29
Xylenes, total	<93 ,QU	<94	<99	<87	370 QU	<91	<83	<91 ,A-01	<93	<86

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-110	GP-111	GP-112	GP-113	GP-114	GP-115	GP-116	GP-117	GP-118	GP-119	GP-189
Sample Depth (feet)	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	4-6'
Sample Date	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	1/10/07
DRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GRO (mg/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs (µg/kg)											
Benzene	<28	<29	<26	<27	<31	220	<30	<29	<29	<26	<32
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<130
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<65
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
Ethylbenzene	51	<29	<26	<27	<31	120	<30	<29	<29	<26	<32
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
Methyl tert-Butyl Ether	<28	<29	<26	<27	<31	<30	<30	<29	<29	<26	<32
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<65
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<65
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
Toluene	55	<29	<26	<27	<31	530	<30	<29	<29	<26	<32
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<32
1,2,4-Trimethylbenzene	75	<29	<26	<27	<31	66	<30	<29	<29	<26	<32
1,3,5-Trimethylbenzene	<28	<29	<26	<27	<31	39	<30	<29	<29	<26	<32
Xylenes, total	170	<87	<79	<80	<92	480	<91	<86	<87	<79	<110

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-199	GP-203				SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7
Sample Depth (feet)	4-6'	3-5'	6-8'	10-12'	9-11'	9-11'	7-9'	7-9'	5-7'	9-11'	9-11'	
Sample Date	1/10/07	11/08/07	11/09/07	11/08/07	12/10/96	12/10/96	12/10/96	12/10/96	12/10/96	12/10/96	12/10/96	12/10/96
DRO (mg/kg)	NA	NA	NA	NA	<5.5	<5.9	14 H	7.0 H	<6.2 H	<5.2	<6.0 H	
GRO (mg/kg)	NA	NA	NA	NA	<5.5	<5.9	<6.1	<7.2	<6.2	<5.2	<6.0	
VOCs (µg/kg)												
Benzene	<31	<31	<30	<36	<11	<12	<12	<14	<12	<10	<12	
Bromomethane	<120	<130	<120	<140	NA	NA	NA	NA	NA	NA	NA	
Chloromethane	<62	<63	<61	<72	NA	NA	NA	NA	NA	NA	NA	
cis-1,2-Dichloroethene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
Ethylbenzene	<31	<31	<30	<36	<28	<30	<30	<36	<31	<26	<30	
Isopropylbenzene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-Butyl Ether	<31	<31	<30	<36	<28	<30	<30	<36	<31	<26	<30	
Methylene Chloride	<62	<63	<61	<72	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	<62	<63	<61	<72	NA	NA	NA	NA	NA	NA	NA	
n-Butylbenzene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
n-Propylbenzene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
sec-Butylbenzene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
Tetrachloroethene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
Toluene	<31	48	<30	<36	<28	<30	<30	<36	<31	<26	<30	
Trichloroethene	<31	<31	<30	<36	NA	NA	NA	NA	NA	NA	NA	
1,2,4-Trimethylbenzene	<31	47	<30	<36	<28	<30	<30	<36	<31	<26	<30	
1,3,5-Trimethylbenzene	<31	<31	<30	<36	<28	<30	<30	<36	<31	<26	<30	
Xylenes, total	<110	<110	<100	<120	<83	<89	<91	<110	<92	<78	<89	

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Table 2. Summary of Soil DRO, GRO, and VOC Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Bold	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
<i>Italic</i>	Concentration exceeds the NR 746 Soil Criteria (NR 746 criteria is the regulatory indicator of residual petroleum product in soil pores).
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
(1)	Soil samples analyzed using an onsite gas chromatograph.
<	Analyte detected below laboratory detection limits.
A-01	High concentrations of a non-target analyte present.
B	Method blank is contaminated.
DRO	Diesel Range Organics.
DUP	Duplicate sample.
GRO	Gasoline Range Organics.
H	Late eluting hydrocarbons present within sample.
I	Additional laboratory sample preparations were necessary before analysis.
L	Common laboratory solvent and contaminant.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
µg/kg	Micrograms per kilogram.
mg/kg	Milligrams per kilogram.
NA	Not analyzed.
NE	Not established.
QU	Unquantitated hydrocarbons were present in the sample outside of the reported carbon range.
RCL	WDNR established Residual Contaminant Level (RCL) from Table 2 of the Wisconsin Administrative Code Chapter NR 720.09.
RL1	Reporting limit raised due to sample matrix effects.
VOC	Volatile Organic Compound.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	NR 720	Proposed	Proposed	Proposed	GP-1	GP-2	GP-3	GP-4	GP-5	
Sample Depth (feet)	Table 1	Groundwater	Non-Industrial	Industrial	4-6'	6-8'	6-8'	6-8'	6-8'	12-14'
Sample Date	RCL	Protection	Direct Contact	Direct Contact	05/23/96	05/23/96	05/23/96	05/23/96	05/24/96	05/24/96
PAHs (ug/kg)										
1-Methylnaphthalene	NE	23,000	1,100,000	70,000,000	<25	<25	<25	<25	<25	<25
2-Methylnaphthalene	NE	20,000	600,000	40,000,000	<25	<25	<25	<25	<25	<25
Acenaphthene	NE	38,000	900,000	60,000,000	NA	NA	NA	NA	NA	NA
Anthracene	NE	3,000,000	5,000,000	300,000,000	<8.0	33	<8.0	<8.0	<8.0	<8.0
Benzo (a) anthracene	NE	17,000	88	3,900	<2.0	120	<2.0	<2.0	<2.0	<2.0
Benzo (a) pyrene	NE	48,000	8.8	390	<4.0	110	<4.0	<4.0	<4.0	<4.0
Benzo (b) fluoranthene	NE	360,000	88	3,900	<2.0	41	<2.0	<2.0	<2.0	<2.0
Benzo (g,h,i) perylene	NE	6,800,000	1,800	39,000	<4.0	110	<4.0	<4.0	<4.0	<4.0
Benzo (k) fluoranthene	NE	870,000	880	39,000	<2.0	65	<2.0	<2.0	<2.0	<2.0
Chrysene	NE	37,000	8,800	390,000	<4.0	98	<4.0	<4.0	<4.0	<4.0
Dibenzo (a,h) anthracene	NE	38,000	8.8	390	NA	NA	NA	NA	NA	NA
Fluoranthene	NE	500,000	600,000	40,000,000	<8.0	230	<8.0	<8.0	<8.0	<8.0
Fluorene	NE	100,000	600,000	40,000,000	<16	<16	<16	<16	<16	<16
Indeno (1,2,3-cd) pyrene	NE	680,000	88	3,900	<4.0	60	<4.0	<4.0	<4.0	<4.0
Naphthalene	2,700	400	20,000	110,000	NA	NA	NA	NA	NA	NA
Phenanthrene	NE	1,800	18,000	390,000	<16	230	<16	<16	<16	<16
Pyrene	NE	8,700,000	500,000	30,000,000	<8.0	190	<8.0	<8.0	<8.0	<8.0

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
ug/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-6		GP-7	GP-8		GP-9	GP-10	GP-11	GP-12		GP-13
	6-8'	14-16'	6-8'	4-6'	6-8'	6-8'	6-8'	4-6'	4-6'	12-14'	6-8'
Sample Depth (feet)											
Sample Date	05/24/96	05/24/96	05/23/96	05/28/96	05/28/96	05/24/96	05/24/96	05/24/96	05/28/96	05/28/96	05/24/96
PAHs (ug/kg)											
1-Methylnaphthalene	<25	<25	NA	<25	<25	<25	<25	<25	490	<25	<25
2-Methylnaphthalene	1,200	<25	<25	<25	<25	<25	<25	<25	300	<25	<25
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Benzo (a) anthracene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzo (a) pyrene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Benzo (b) fluoranthene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzo (g,h,i) perylene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Benzo (k) fluoranthene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chrysene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Fluorene	270	<16	<16	<16	<16	<16	<16	<16	38	<16	<16
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	NA	<4.0	<4.0	<4.0	<4.0	<4.0	4.0	<4.0	<4.0
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1,600	<16	<16	<16	<16	<16	<16	<16	100	<16	<16
Pyrene	<8.0	<8.0	NA	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0

Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
ug/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-14	GP-15	GP-16	GP-17		GP-18	GP-19	GP-20	GP-21	
Sample Depth (feet)	6-8'	4-6'	4-6'	4-6'	14-16'	6-8'	6-8'	6-8'	2-4'	10-12'
Sample Date	05/24/96	05/23/96	05/23/96	05/23/96	05/23/96	05/28/96	05/23/96	05/28/96	05/28/96	05/28/96
PAHs (µg/kg)										
1-Methylnaphthalene	<25	<25	<25	3,700	<25	<25	<25	<500 M	<25	<25
2-Methylnaphthalene	<25	<25	<25	3,500	<25	<25	<25	<500 M	<25	<25
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0
Benzo (a) anthracene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	130	<2.0
Benzo (a) pyrene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Benzo (b) fluoranthene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0
Benzo (g,h,i) perylene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Benzo (k) fluoranthene	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0	<2.0	<40 M	<2.0	<2.0
Chrysene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	84	<4.0	<4.0
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	2,400	120	<8.0
Fluorene	<16	<16	<16	<320 M	<16	<16	<16	530	<16	<16
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0	<4.0	<80 M	<4.0	<4.0
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	<16	<16	<16	1,300	<16	<16	<16	2,900	230	<16
Pyrene	<8.0	<8.0	<8.0	<160 M	<8.0	<8.0	<8.0	1300	82	<8.0

Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.</i>
<u>Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.</u>
< Analyte detected below laboratory detection limits.
E Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2 Laboratory control sample recovery was below acceptance limits.
M Matrix interference.
NA Not analyzed.
NE Not established.
PAH Polycyclic aromatic hydrocarbons.
RCL Residual contaminant level.
µg/kg Micrograms per kilogram.
WDNR Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-22	GP-23	GP-24	GP-25	GP-27	GP-28	GP-30	GP-31	GP-58	GP-59
Sample Depth (feet)	6-8'	6-8'	2-4'	6-8'	6-8'	6-8'	6-8'	6-8'	0-2'	0-2'
Sample Date	05/28/96	05/29/96	05/28/96	05/29/96	05/29/96	05/29/96	05/29/96	05/29/96	10/19/05	10/19/05
PAHs (µg/kg)										
1-Methylnaphthalene	<25	<25	520	<25	68	<25	<25	<25	<36	270
2-Methylnaphthalene	<25	<25	480	<25	94	<25	<25	<25	<30	160
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	<60	<59
Anthracene	<8.0	<8.0	20	<8	68	<8.0	9.6	<8.0	<6.0	<5.9
Benzo (a) anthracene	<2.0	<2.0	800	180	200	<2.0	89	<2.0	11	<5.9
Benzo (a) pyrene	<4.0	<4.0	170	<4.0	250	<4.0	6.9	<4.0	11	<5.9
Benzo (b) fluoranthene	<2.0	<2.0	36	<2.0	100	<2.0	26	<2.0	9.1 L2	<5.9 L2
Benzo (g,h,i) perylene	<4.0	<4.0	130	<4.0	230	<4.0	64	<4.0	11	<5.9
Benzo (k) fluoranthene	<2.0	<2.0	64	<2.0	130	<2.0	14	<2.0	<6.0 L2	<5.9 L2
Chrysene	<4.0	<4.0	110	24	200	<4.0	86	<4.0	<6.0 L2	<5.9 L2
Dibenzo (a,h) anthracene	NA	NA	NA	NA	NA	NA	NA	NA	<9.0 L2	<8.9 L2
Fluoranthene	<8.0	<8.0	270	130	440	<8.0	100	<8.0	33	12
Fluorene	<16	<16	<16	150	19	<16	31	<16	<12	<12
Indeno (1,2,3-cd) pyrene	<4.0	<4.0	79	<4.0	160	<4.0	46	<4.0	9.5 L2	<5.9 L2
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	<36	120
Phenanthrene	<16	<16	110	67	250	<16	330	<16	18	11
Pyrene	<8.0	<8.0	210	1,100	370	<8.0	95	<8.0	62	59

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 3. Summary of Soil PAH Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-60	GP-61	GP-62	GP-63	GP-64	GP-65	GP-66	GP-67	GP-68	GP-69	GP-70
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<36	<35	290	<36	<38	<38	<36	820	<410	180	<36
2-Methylnaphthalene	<30	110	200	50	48	<31	<30	1,200	430	720	120
Acenaphthene	<60	<59	<61	<60	<64	<63	<59	<79	<680	<64	<60
Anthracene	<6.0	7.8	42	<6.0	20	<6.3	<5.9	11	<68	74	16
Benzo (a) anthracene	13	33	220	16	45	<6.3	<5.9	64	400	640	110
Benzo (a) pyrene	9.5	17	14	9.3	37	<6.3	<5.9	33	200	370	140
Benzo (b) fluoranthene	12 L2	20 L2	24 L2	8.7 L2	30 L2	<6.3 L2	<5.9 L2	33	270 L2	360 L2	97 L2
Benzo (g,h,i) perylene	14	16	19	9.2	33	<6.3	<5.9	28	110	530	140
Benzo (k) fluoranthene	6.5 L2	12 L2	8.7 L2	<6.0 L2	17 L2	<6.3 L2	<5.9	15	140	160 L2	45 L2
Chrysene	<6.0 L2	19 L2	140 L2	8.8 L2	7.9 L2	<6.3 L2	<5.9	14	250	91 L2	12
Dibenzo (a,h) anthracene	<9.0 L2	<8.8 L2	<9.2 L2	<9.0 L2	<9.6 L2	<9.4 L2	<8.9 L2	<12	<100 L2	72 L2	21 L2
Fluoranthene	30	110	590	62	110	<13	<12	270	650	950	240
Fluorene	<12	<12	120	<12	<13	<13	<12	68	<140	70	12
Indeno (1,2,3-cd) pyrene	7.9 L2	12 L2	12 L2	7.2 L2	35 L2	<6.3 L2	<5.9 L2	25	99 L2	310 L2	100 L2
Naphthalene	<36	<35	<37	<36	<38	<38	<36	<47	<410	49	<36
Phenanthrene	11	72	210	37	83	<6.3	<5.9	150	430	490	100
Pyrene	27	330	830	61	100	<6.3	<5.9	210	960	770	230

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-71	GP-72	GP-73	GP-74	GP-75	GP-76	GP-77	GP-80	GP-81	GP-82
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05
PAHs (µg/kg)										
1-Methylnaphthalene	<36	53	120	<35	<37	47	<170	1,300	<37	<280
2-Methylnaphthalene	<30	120	380	<29	<31	130	320	2,500	<31	420
Acenaphthene	<61	<54	<54	<58	<62	<60	<280	800	<62	<460
Anthracene	<6.1	10	33	<5.8	<6.2	13	<28	310	<6.2	<46
Benzo (a) anthracene	6.6	56	200	<5.8	<6.2	91	120	870	<6.2	270
Benzo (a) pyrene	<6.1	42	200	<5.8	<6.2	64	84	71	<6.2	210
Benzo (b) fluoranthene	<6.1 L2	42 L2	150 L2	<5.8 L2	<6.2 L2	54	86 L2	85 L2	<6.2 L2	190 L2
Benzo (g,h,i) perylene	<6.1	47	140	<5.8	<6.2	44	63	<58	<6.2	200
Benzo (k) fluoranthene	<6.1 L2	13 L2	82 L2	<5.8	<6.2	36	33	<58	<6.2	120
Chrysene	<6.1	11	25	<5.8	<6.2	15	73	250	<6.2	53
Dibenzo (a,h) anthracene	<9.1 L2	<8.1 L2	26 L2	<8.6 L2	<9.3 L2	<8.9	<41 L2	<86 L2	<9.3 L2	<69 L2
Fluoranthene	14	190	520	<12	<12	200	430	3,900	<12	540
Fluorene	<12	12	<11	<12	<12	13	<55	1,000	<12	<92
Indeno (1,2,3-cd) pyrene	<6.1 L2	33 L2	130 L2	<5.8 L2	<6.2 L2	40	56 L2	<58 L2	<6.2 L2	160 L2
Naphthalene	<36	<32	84	<35	<37	<36	<170	<350	<37	<280
Phenanthrene	7.3	88	240	<5.8	<6.2	94	270	2,400	<6.2	330
Pyrene	33	100	430	<5.8	<6.2	280	260	3,200	<6.2	570

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-83	GP-84	GP-85	GP-86	GP-88	GP-89	GP-90	GP-91	GP-93	GP-94	GP-95
Sample Depth (feet)	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/19/05	10/18/05	10/18/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<170	<47	37	100	280	70,000	6,000	<180	<35	<37	54
2-Methylnaphthalene	<140	<39	88	120	710	82,000	3,200	<150	<29	<31	49
Acenaphthene	<280	<78	<61	<64	<280	7,300	400	<290	<59	<62	<52
Anthracene	<28	<7.8	6.6	<6.4	93	7,900	260	<29	<5.9	<6.2	20
Benzo (a) anthracene	100	22	37	31	460	13,000	650	74	<5.9	<6.2	190
Benzo (a) pyrene	37	14	31	22	350	<120	82	57	<5.9	<6.2	28
Benzo (b) fluoranthene	56 L2	13	32	23	330 L2	<120 L2	63 L2	60 L2	<5.9 L2	<6.2 L2	37 L2
Benzo (g,h,i) perylene	<28	18	33	22	250	<120	40	63	<5.9	<6.2	32
Benzo (k) fluoranthene	69	<7.8	13	12	170	<120	30 L2	<29	<5.9	<6.2 L2	13 L2
Chrysene	63	9.1	<6.1	7.2	79	4,400	190	<29	<5.9	<6.2	250
Dibenzo (a,h) anthracene	<42 L2	<12	<9.2	<9.6	<42 L2	<180 L2	10 L2	<44 L2	<8.8 L2	<9.3 L2	<7.8 L2
Fluoranthene	240	61	140	31	1,300	110,000	3,900	170	<12	<12	330
Fluorene	<56	<16	<12	<13	160	21,000	1,200	<59	<12	<12	46
Indeno (1,2,3-cd) pyrene	<28 L2	9.7	34	21	220 L2	<120 L2	33 L2	44 L2	<5.9 L2	<6.2 L2	28 L2
Naphthalene	<170	<47	<37	<38	<170	2,900	370	<180	<35	<37	66
Phenanthrene	130	31	77	24	540	50,000	2,100	80	<5.9	<6.2	110
Pyrene	410	76	91	60	1,200	96,000	3,200	120	<5.9	<6.2	350

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-96	GP-97	GP-98	GP-99	GP-100	GP-101	GP-102	GP-103	GP-104	GP-105
Sample Depth (feet)	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05
PAHs (µg/kg)										
1-Methylnaphthalene	<u>59,000</u>	710	<37	150	<190	<38	<990	<260	430	<180
2-Methylnaphthalene	<u>480,000</u>	3,500	91	310	170	<31	2,200	<220	370	<150
Acenaphthene	<u>99,000</u>	1,000	<62	<62	<310	<63	<1,700	<440	<310	<300
Anthracene	280,000	360	19	22	31	<6.3	720	<44	57	41
Benzo (a) anthracene	<u>280,000</u>	<u>4,200</u>	94	36	<u>620</u>	<6.3	<u>2,200</u>	70	<u>390</u>	<u>130</u>
Benzo (a) pyrene	<u>250,000</u>	<u>7,100</u>	89	<u>14</u>	<31	<6.3	<u>1,500</u>	<44	<u>100</u>	<u>96</u>
Benzo (b) fluoranthene	<u>130,000</u>	<u>6,100</u>	66	8.9	<31	<6.3	<u>1,300</u>	49	80	70
Benzo (g,h,i) perylene	<u>110,000</u>	<u>5,600</u>	70	<6.2	<31	<6.3	1,100	<44	80	72
Benzo (k) fluoranthene	<u>92,000</u>	<u>3,100</u>	38	<6.2	<31	<6.3	860	<44	33	43
Chrysene	<u>260,000</u>	3,500	200	36	670	<6.3	4,600	120	84	110
Dibenzo (a,h) anthracene	<u>21,000</u>	<u>940</u>	<u>12</u>	<9.3	<46	<9.4	<250	<65	<46	<45
Fluoranthene	<u>1,000,000</u>	3,700	190	210	530	<13	5,100	180	1,200	320
Fluorene	<u>140,000</u>	210	<12	28	<62	<13	430	<87	200	<61
Indeno (1,2,3-cd) pyrene	<u>110,000</u>	<u>5,000</u>	64	<6.2	<31	<6.3	<u>920</u>	44	67	62
Naphthalene	<u>130,000</u>	<290	<37	73	<190	<38	<990	<260	<180	<180
Phenanthrene	<u>1,000,000</u>	1,400	97	150	130	<6.3	<u>2,800</u>	97	420	200
Pyrene	<u>910,000</u>	4,000	190	95	390	<6.3	5,000	200	1,200	330

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-106	GP-107	GP-108	GP-109	GP-110	GP-111	GP-112	GP-113	GP-114	GP-115	GP-116
Sample Depth (feet)	2-4'	2-4'	0-2'	0-2'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	<330	2,600	2,600	<170	150	<35	<31	<32	<37	<37	<36
2-Methylnaphthalene	2,500	16,000	16,000	280	420	<29	<26	<27	<31	50	<30
Acenaphthene	<560	2,100	1,600	<290	<56	<58	<52	<53	<61	<61	<61
Anthracene	890	7,000	6,500	82	36	<5.8	<5.2	<5.3	<6.1	10	<6.1
Benzo (a) anthracene	4,300	16,000	17,000	320	99	<5.8	<5.2	<5.3	<6.1	36	<6.1
Benzo (a) pyrene	3,100	11,000	11,000	230	320	<5.8	<5.2	<5.3	<6.1	26	<6.1
Benzo (b) fluoranthene	2,300	7,300	8,100	230	320 L2	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	20 L2	<6.1 L2
Benzo (g,h,i) perylene	2,000	6,100	6,300	160	270	<5.8	<5.2	<5.3	<6.1	20	<6.1
Benzo (k) fluoranthene	1,500	5,300	5,500	140	180 L2	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	12 L2	<6.1 L2
Chrysene	3,000	12,000	12,000	290	52	<5.8	<5.2	<5.3	<6.1	43	<6.1
Dibenzo (a,h) anthracene	460	1,300	1,400	44	51 L2	<8.7 L2	<7.9 L2	<8.0 L2	<9.2 L2	<9.1 L2	<9.1 L2
Fluoranthene	8,300	38,000	40,000	680	610	<12	<10	<11	<12	89	<12
Fluorene	550	3,600	3,400	<57	31	<12	<10	<11	<12	<12	<12
Indeno (1,2,3-cd) pyrene	1,800	5,900	5,800	150	270 L2	<5.8 L2	<5.2 L2	<5.3 L2	<6.1 L2	17 L2	<6.1 L2
Naphthalene	<330	1,900	1,700	<170	82	<35	<31	<32	<37	<37	<36
Phenanthrene	3,500	24,000	25,000	360	230	<5.8	<5.2	<5.3	<6.1	47	<6.1
Pyrene	8,100	35,000	35,000	610	580	<5.8	<5.2	<5.3	<6.1	76	<6.1

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-117	GP-118	GP-119	GP-120	GP-121	GP-122	GP-123	GP-124	GP-125	GP-126	GP-127
Sample Depth (feet)	2-4'	2-4'	2-4'	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	0-2'	0-2'
Sample Date	10/19/05	10/19/05	10/19/05	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06
PAHs (µg/kg)											
1-Methylnaphthalene	<35	<35	<32	360	<150	<610	<1,900	<210	<950	<140	<280
2-Methylnaphthalene	<29	<29	<26	870	250	570	<1,600	<170	<790	<110	<240
Acenaphthene	<58	<58	<53	<380	<240	<1,000	<3,200	<350	<1,600	<230	<470
Anthracene	<5.8	<5.8	<5.3	150	67	220	320	320	<160	92	240
Benzo (a) anthracene	<5.8	<5.8	14	1,000	330	630	900	550	<160	280	820
Benzo (a) pyrene	<5.8	<5.8	13	760	360	620	800	380	<160	280	1,000
Benzo (b) fluoranthene	<5.8 L2	<5.8 L2	14 L2	460	260	500	590	250	<160	200	730
Benzo (g,h,i) perylene	<5.8	<5.8	13	450	250	470	540	280	290	180	670
Benzo (k) fluoranthene	<5.8 L2	<5.8 L2	11 L2	350	180	370	450	210	220	160	440
Chrysene	<5.8	<5.8	<5.3	530	280	560	820	370	<160	230	700
Dibenzo (a,h) anthracene	<8.6 L2	<8.7 L2	<7.9 L2	83	43	<150	<480	57	<240	39	110
Fluoranthene	<12	<12	32	1,300	690	1,300	2,100	1,000	<320	470	1800
Fluorene	<12	<12	<11	160	<49	<200	<640	<69	<320	<46	<95
Indeno (1,2,3-cd) pyrene	<5.8 L2	<5.8 L2	9.5 L2	490	250	410	480	210	<160	160	690
Naphthalene	<35	<35	<32	<230	<150	<610	<1,900	<210	<950	<140	<280
Phenanthrene	<5.8	<5.8	14	850	370	700	900	670	160	290	830
Pyrene	<5.8	<5.8	28	620	500	860	1,500	940	<160	510	1,800

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-128	GP-129	GP-130	GP-131	GP-132	GP-133	GP-134	GP-135	GP-136	GP-137	GP-138
Sample Depth (feet)	0-2'	2-4'	0-2'	0-2'	2-4'	2-4'	0-2'	0-2'	0-2'	0-2'	0-2'
Sample Date	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	<210	<37	<93	<210	<320	<480	<460	<610	<1,000	<280	<38
2-Methylnaphthalene	<170	<31	<78	<180	<270	<400	<380	<510	8,800	540	<32
Acenaphthene	<340	<62	<160	<350	<540	<790	<760	<1,000	4,800	<470	<63
Anthracene	290	<6.2	<16	<35	140	<79	<76	250	11,000	320	<6.3
Benzo (a) anthracene	1,100	11	45	<35	500	<79	400	950	9,300	1,100	<6.3
Benzo (a) pyrene	1,200	9.4	42	47	400	<79	240	540	3,300	1,400	<6.3
Benzo (b) fluoranthene	950	6.4	53	67	340	<79	250	850	2,900	750	<6.3
Benzo (g,h,i) perylene	770	<6.2	49	<35	350	<79	210	<100	1,500	860	7.0
Benzo (k) fluoranthene	600	<6.2	27	60	290	<79	97	320	2,400	660	<6.3
Chrysene	870	8.7	43	44	390	<79	220	500	7,100	820	<6.3
Dibenzo (a,h) anthracene	130	<9.2	<23	<53	110	<120	<110	<150	270	180	<9.5
Fluoranthene	1800	34	120	<70	750	<160	380	1,400	30,000	2,000	19
Fluorene	<68	<12	<31	<70	<110	<160	<150	<200	4,100	120	<13
Indeno (1,2,3-cd) pyrene	710	<6.2	29	<35	330	<79	<76	340	1,500	1,000	<6.3
Naphthalene	<210	<37	<93	<210	<320	<480	<460	<610	<1000	<280	<38
Phenanthrene	1,400	30	68	38	530	<79	250	300	19,000	1,100	11
Pyrene	2,000	15	71	<35	850	<79	93	780	12,000	1,700	9.3

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-139	GP-140	GP-141	GP-142	GP-143	GP-144	GP-145	GP-146	GP-147	GP-148	GP-149
Sample Depth (feet)	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	2-4'	0-2'	0-2'
Sample Date	11/10/06	11/10/06	11/10/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	2,000	<320	<400	2,600	<980	1,400	<180	<15,000	<1,300	5,000	<u>110,000</u>
2-Methylnaphthalene	7,200	<270	<330	<u>25,000</u>	1,200	7,200	420	<u>28,000</u>	<1,100	<u>22,000</u>	<u>540,000</u>
Acenaphthene	1,300	<530	<660	7,700	<1,600	1,900	<300	<25,000	<2,200	<4,000	<u>110,000</u>
Anthracene	640	87	690	7,500	380	1,600	250	16,000	450	10,000	240,000
Benzo (a) anthracene	<u>430</u>	<u>270</u>	<u>1,900</u>	<u>7,600</u>	<u>1,500</u>	<u>7,400</u>	<u>900</u>	<u>30,000</u>	<u>3,000</u>	<u>26,000</u>	<u>310,000</u>
Benzo (a) pyrene	<u>200</u>	<u>240</u>	<u>1,900</u>	<u>4,500</u>	<u>790</u>	<u>4,300</u>	<u>650</u>	<u>16,000</u>	<u>2,300</u>	<u>16,000</u>	<u>230,000</u>
Benzo (b) fluoranthene	<u>210</u>	<u>210</u>	<u>1,200</u>	<u>4,300</u>	<u>590</u>	<u>3,600</u>	<u>410</u>	<u>11,000</u>	<u>1,600</u>	<u>10,000</u>	<u>160,000</u>
Benzo (g,h,i) perylene	<57	210	1,200	3,300	530	2,600	470	9,600	1,400	7,600	<u>110,000</u>
Benzo (k) fluoranthene	210	<53	<u>1,100</u>	<u>2,700</u>	440	<u>2,400</u>	360	<u>8,400</u>	<u>1,200</u>	<u>7,400</u>	<u>110,000</u>
Chrysene	230	210	1,500	6,100	880	5,100	650	20,000	2,200	16,000	<7,500
Dibenzo (a,h) anthracene	<86	<80	<u>220</u>	<u>510</u>	<240	<u>500</u>	<u>90</u>	<3,700	<330	<u>1,400</u>	<u>22,000</u>
Fluoranthene	1,100	540	3,600	27,000	2,300	16,000	1,900	91,000	4,900	53,000	<u>870,000</u>
Fluorene	970	<110	<130	6,600	<330	1,900	170	7,800	<440	5,400	<u>170,000</u>
Indeno (1,2,3-cd) pyrene	<u>180</u>	<u>190</u>	<u>1,300</u>	<u>2,900</u>	<u>510</u>	<u>2,900</u>	<u>480</u>	<u>9,600</u>	<u>1,300</u>	<u>8,900</u>	<u>130,000</u>
Naphthalene	<u>9,500</u>	<320	<400	<u>15,000</u>	<980	<u>2,900</u>	<180	<15,000	<1,300	<u>4,200</u>	<u>220,000</u>
Phenanthrene	<u>2,200</u>	340	<u>3,000</u>	<u>27,000</u>	1,700	<u>13,000</u>	1,400	<u>56,000</u>	770	<u>40,000</u>	<u>860,000</u>
Pyrene	900	380	3,600	17,000	1,800	9,900	1,600	42,000	6,000	36,000	560,000

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-150	GP-151	GP-152	GP-153	GP-154	GP-155	GP-156	GP-157	GP-158	GP-159	GP-160
Sample Depth (feet)	0-2'	0-2'	2-4'	2-4'	0-2'	2-4'	2-4'	0-2'	0-2'	0-2'	2-4'
Sample Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	140	4,800	<36	<91	<37	<37	8,500	6,800	310	110	300
2-Methylnaphthalene	590	<u>25,000</u>	<30	490	<31	<31	5,900	7,900	520	130	450
Acenaphthene	93	<5,600	<61	<150	<61	<62	580	530	<110	<140	<320
Anthracene	220	13,000	<6.1	180	130	<6.2	870	900	57	<14	<32
Benzo (a) anthracene	<u>590</u>	<u>45,000</u>	8.6	<u>440</u>	<u>310</u>	9.9	<u>1,000</u>	<u>1,300</u>	<u>120</u>	<14	63
Benzo (a) pyrene	<u>320</u>	<u>29,000</u>	<6.1	<u>340</u>	<u>290</u>	8.1	<13	<27	<u>29</u>	<14	<32
Benzo (b) fluoranthene	<u>230</u>	<u>17,000</u>	<6.1	<u>250</u>	<u>190</u>	7.0	<13	77	19	<14	<32
Benzo (g,h,i) perylene	200	<u>15,000</u>	<6.1	190	160	<6.2	<13	<27	13	<14	<32
Benzo (k) fluoranthene	160	<u>13,000</u>	<6.1	190	140	6.8	<13	<27	<11	<14	<32
Chrysene	370	<u>28,000</u>	6.2	380	280	8.1	130	270	46	<14	<32
Dibenzo (a,h) anthracene	<u>37</u>	<u>2,600</u>	<9.1	<u>39</u>	<u>33</u>	<9.2	<20	<40	<16	<21	<48
Fluoranthene	1,200	74,000	17	1,200	440	19	5,400	4,000	430	51	250
Fluorene	130	3,700	<12	130	<12	<12	2,100	1,700	110	<29	70
Indeno (1,2,3-cd) pyrene	<u>210</u>	<u>16,000</u>	<6.1	<u>210</u>	<u>180</u>	6.2	<13	<27	28	<14	<32
Naphthalene	180	<3,400	<36	130	<37	<37	<u>660</u>	<u>670</u>	75	<86	<190
Phenanthrene	1,000	<u>41,000</u>	15	920	46	11	<u>4,300</u>	<u>3,300</u>	330	37	140
Pyrene	800	57,000	13	810	590	15	4,500	4,200	770	25	220

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-161	GP-162	GP-163	GP-164	GP-165	GP-166	GP-167	GP-168	GP-169	GP-170	GP-171
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	0-2'	2-4'	2-4'	0-2'	2-4'
Sample Date	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/09/07	01/10/07	01/10/07	01/09/07	01/09/07	01/09/07
PAHs (µg/kg)											
1-Methylnaphthalene	<4,900	<48	<790	<290	<240	<340	<290	<60	<120	960	200
2-Methylnaphthalene	<u>29,000</u>	<40	<660	260	430	340	640	76	330	4,600	860
Acenaphthene	<8,200	<79	<1,300	<490	<390	<570	<490	<100	<200	1,100	220
Anthracene	15,000	<7.9	<130	55	100	120	230	12	54	1,900	290
Benzo (a) anthracene	<u>38,000</u>	<7.9	<130	280	390	410	790	39	190	5,500	890
Benzo (a) pyrene	<u>25,000</u>	<7.9	<130	350	310	340	720	28	110	3,400	590
Benzo (b) fluoranthene	<u>20,000</u>	<7.9	<130	240	240	250	580	20	83	2,600	380
Benzo (g,h,i) perylene	<u>24,000</u>	<7.9	<130	380	260	270	430	27	110	2,300	440
Benzo (k) fluoranthene	<u>13,000</u>	<7.9	<130	170	160	180	360	13	48	1,600	310
Chrysene	<u>26,000</u>	<7.9	<130	250	410	330	640	29	120	3,600	570
Dibenzo (a,h) anthracene	<u>3,600</u>	<12	<200	<73	<59	<86	75	<15	<30	450	86
Fluoranthene	80,000	<16	<260	440	740	930	1,700	66	380	11,000	1,500
Fluorene	7,400	<16	<260	<98	<79	<110	<98	<20	39	860	110
Indeno (1,2,3-cd) pyrene	<u>19,000</u>	<7.9	<130	280	220	230	430	<10	110	1,900	360
Naphthalene	<u>9,000</u>	<48	<790	<290	<240	<340	<290	<60	<120	<270	320
Phenanthrene	<u>56,000</u>	<7.9	<130	260	470	490	820	66	280	7,700	1,100
Pyrene	51,000	<7.9	<130	330	550	630	1,400	40	230	6,400	1,400

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-172	GP-173	GP-174	GP-175	GP-176	GP-177	GP-178	GP-179	GP-180	GP-181
Sample Depth (feet)	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	2-4'	0-2'	0-2'	0-2'
Sample Date	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/10/07	01/09/07	01/09/07	01/09/07
PAHs (µg/kg)										
1-Methylnaphthalene	<420	<1,000	<1,400	<10,000	<u>45,000</u>	<130	3,500	<950	<1,200	<4,900
2-Methylnaphthalene	1,100	1,800	<1,200	9,100	<u>290,000</u>	<110	19,000	3,000	5,800	7,500
Acenaphthene	<700	<1,700	<2,400	<17,000	<u>90,000</u>	<220	2,700	<1600	<2,000	<8,100
Anthracene	430	450	<240	2,000	140,000	52	8,900	1,400	2,400	3,400
Benzo (a) anthracene	<u>1,800</u>	<u>1,300</u>	<u>730</u>	<u>13,000</u>	<u>290,000 E</u>	<u>160</u>	<u>22,000</u>	<u>3,300</u>	<u>6,000</u>	<u>12,000</u>
Benzo (a) pyrene	<u>1,200</u>	<u>1,000</u>	<u>630</u>	<u>10,000</u>	<u>200,000</u>	<u>120</u>	<u>13,000</u>	<u>2,300</u>	<u>4,500</u>	<u>7,000</u>
Benzo (b) fluoranthene	<u>980</u>	<u>760</u>	<u>700</u>	<u>7,000</u>	<u>130,000</u>	<u>89</u>	<u>8,300</u>	<u>1,600</u>	<u>3,400</u>	<u>5,900</u>
Benzo (g,h,i) perylene	790	830	920	9,300	<u>120,000</u>	100	8,900	1,600	3,700	5,800
Benzo (k) fluoranthene	640	550	420	5,000	<u>94,000</u>	65	5,800	<u>1,100</u>	2,400	3,600
Chrysene	1,300	930	530	8,800	<u>190,000 E</u>	130	14,000	2,300	4,200	7,300
Dibenzo (a,h) anthracene	<u>140</u>	<250	<360	<2600	<u>25,000</u>	<32	<u>1,800</u>	<u>320</u>	<u>610</u>	<1,200
Fluoranthene	5,200	2,700	1,300	16,000	<u>590,000 E</u>	330	43,000	7,000	14,000	20,000
Fluorene	<140	390	<470	<3400	79,000	<43	4,300	770	810	<1,600
Indeno (1,2,3-cd) pyrene	<u>640</u>	<u>690</u>	<u>720</u>	<u>6,900</u>	<u>100,000</u>	78	<u>7,400</u>	<u>1,300</u>	<u>2,800</u>	<u>4,400</u>
Naphthalene	<420	<1,000	<1,400	<10,000	<u>32,000</u>	<130	<u>3,700</u>	<950	<1,200	<4,900
Phenanthrene	900	1,800	570	<u>3,400</u>	<u>410,000 E</u>	210	<u>32,000</u>	<u>5,000</u>	<u>9,300</u>	<u>13,000</u>
Pyrene	3,800	1,900	960	14,000	390,000	250	31,000	4,600	8,800	14,000

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-182	GP-183	GP-184	GP-185	GP-186	GP-187	GP-189	GP-199	GP-200	
Sample Depth (feet)	0-2'	2-4'	0-2'	0-2'	0-2'	2-4'	4-6'	4-6'	0-2'	0-2'
Sample Date	01/09/07	01/09/07	01/09/07	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	11/08/07
PAHs (µg/kg)										
1-Methylnaphthalene	12,000	<290	<3,300	<u>48,000</u>	<5,400	<35	<290	<280	<1,200	<2,100
2-Methylnaphthalene	<u>65,000</u>	<240	3,600	<u>79,000</u>	<u>23,000</u>	<29	<240	<230	2,200	<1,800
Acenaphthene	<7,300	<480	<5,500	6,700	<8,900	<58	<480	<460	<2,000	<3,500
Anthracene	29,000	58	1,300	8,800	10,000	<5.8	<48	<46	650	2,000
Benzo (a) anthracene	<u>93,000</u>	230	<u>5,500</u>	<u>41,000 E</u>	<u>38,000</u>	6.1	<u>120</u>	61	<u>2,600</u>	<u>6,100</u>
Benzo (a) pyrene	<u>59,000</u>	150	<u>3,300</u>	<u>8,300</u>	<u>21,000</u>	<5.8	<u>88</u>	<u>55</u>	<u>2,100</u>	<u>5,200</u>
Benzo (b) fluoranthene	<u>42,000</u>	110	<u>2,600</u>	<u>5,200</u>	<u>17,000</u>	<5.8	74	49	<u>1,700</u>	<u>3,800</u>
Benzo (g,h,i) perylene	<u>40,000</u>	120	<u>3,200</u>	<u>6,200</u>	<u>11,000</u>	<5.8	92	47	1,600	<u>3,100</u>
Benzo (k) fluoranthene	<u>27,000</u>	77	<u>2,000</u>	<u>2,900</u>	<u>10,000</u>	<5.8	<48	<46	320	<u>2,200</u>
Chrysene	<u>55,000</u>	130	3,200	<u>14,000</u>	<u>20,000</u>	<5.8	83	50	2,000	4,900
Dibenzo (a,h) anthracene	<u>8,300</u>	<71	<830	<u>1,000</u>	<u>2,300</u>	<8.7	<73	<70	<u>340</u>	<530
Fluoranthene	160,000	410	8,100	120,000 E	62,000	12	270	130	6,900	15,000
Fluorene	15,000	<95	<1,100	25,000	6,700	<12	<97	<93	<400	1,000
Indeno (1,2,3-cd) pyrene	<u>33,000</u>	<u>99</u>	<u>2,600</u>	<u>4,800</u>	<u>13,000</u>	<5.8	81	<46	<u>1,400</u>	<u>3,200</u>
Naphthalene	<u>12,000</u>	<290	<3,300	<u>14,000</u>	<u>8,400</u>	<35	<290	<280	<1,200	<2,100
Phenanthrene	<u>98,000</u>	220	<u>4,200</u>	<u>68,000 E</u>	<u>39,000</u>	9.3	140	57	<u>2,100</u>	<u>9,500</u>
Pyrene	120,000	270	5,900	9,100	38,000	<5.8	170	86	3,600	9,500

Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).

Bold Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.

Italic Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.

Underline Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.

< Analyte detected below laboratory detection limits.

E Concentration exceeds the calibration range and therefore result is semi-quantitative.

L2 Laboratory control sample recovery was below acceptance limits.

M Matrix interference.

NA Not analyzed.

NE Not established.

PAH Polycyclic aromatic hydrocarbons.

RCL Residual contaminant level.

µg/kg Micrograms per kilogram.

WDNR Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-201	GP-202	GP-203			GP-204	GP-206	GP-207	GP-208	GP-210
Sample Depth (feet)	0-2'	2-4'	3-5'	6-8'	10-12'	2-4'	2-4'	0-2'	2-4'	0-2'
Sample Date	11/08/07	11/08/07	11/08/07	11/09/07	11/08/07	01/10/07	01/09/07	01/09/07	01/09/07	01/09/07
PAHs (µg/kg)										
1-Methylnaphthalene	<390	<u>27,000</u>	<86	<36	<36	<2,500	<37	<2,000	<57	<960
2-Methylnaphthalene	<330	<u>170,000</u>	<72	<30	<30	2,200	<31	6,700	220	1,900
Acenaphthene	<650	<u>43,000</u>	<140	<61	<60	<4,200	<62	<3,300	<95	<1,600
Anthracene	75	61,000	<14	<6.1	<6	1,500	<6.2	3,400	210	740
Benzo (a) anthracene	<u>280</u>	<u>240,000</u>	33	<6.1	<6	<u>2,000</u>	<6.2	<u>12,000</u>	<u>560</u>	<u>2,700</u>
Benzo (a) pyrene	<u>260</u>	<u>190,000</u>	<u>26</u>	<6.1	<6	<u>1,500</u>	<6.2	<u>8,700</u>	<u>400</u>	<u>2,300</u>
Benzo (b) fluoranthene	<u>150</u>	<u>110,000</u>	18	<6.1	<6	<u>1,200</u>	<6.2	<u>6,000</u>	<u>270</u>	<u>1,600</u>
Benzo (g,h,i) perylene	170	<u>95,000</u>	23	<6.1	<6	1,300	<6.2	<u>6,500</u>	300	1,700
Benzo (k) fluoranthene	110	<u>73,000</u>	<14	<6.1	<6	870	<6.2	<u>4,100</u>	210	<u>1,100</u>
Chrysene	210	<u>160,000</u>	18	<6.1	<6	1,800	<6.2	8,100	370	1,700
Dibenzo (a,h) anthracene	<98	<u>17,000</u>	<21	<9.1	<9	<620	<9.2	<u>1,100</u>	<u>56</u>	<u>290</u>
Fluoranthene	630	370,000	92	<12	<12	5,300	<12	21,000	1,100	4,600
Fluorene	<130	21,000	<29	<12	<12	<830	<12	940	42	<320
Indeno (1,2,3-cd) pyrene	<u>140</u>	<u>100,000</u>	20	<6.1	<6	<u>970</u>	<6.2	<u>5,600</u>	<u>250</u>	<u>1,800</u>
Naphthalene	<390	<u>13,000</u>	<86	<36	<36	<2,500	<37	<2,000	<57	<960
Phenanthrene	300	<u>210,000</u>	69	<6.1	7.4	<u>4,400</u>	<6.2	<u>11,000</u>	720	<u>2,600</u>
Pyrene	650	380,000	34	<6.1	11	3,500	<6.2	15,000	1,000	4,400

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

Table 3. Summary of Soil PAH Analytical Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-212	GP-213	GP-214	GP-215	GP-216	GP-217	GP-218	GP-219
Sample Depth (feet)	0-2'	2-4'	2-4'	2-4'	0-2'	0-2'	2-4'	0-2'
Sample Date	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07	01/09/07	01/10/07
PAHs (µg/kg)								
1-Methylnaphthalene	<470	<36	19,000	8,100	3,600	1,400	<2,100	<1,600
2-Methylnaphthalene	<390	<30	<u>91,000</u>	<u>47,000</u>	<u>23,000</u>	8,800	<1,700	4,000
Acenaphthene	<780	<60	17,000	13,000	6,400	<2,200	<3,500	<2,700
Anthracene	99	<6.0	48,000	22,000	13,000	3,600	630	1,400
Benzo (a) anthracene	<u>380</u>	<6.0	<u>79,000</u>	<u>54,000</u>	<u>34,000</u>	<u>13,000</u>	<u>2,800</u>	<u>4,400</u>
Benzo (a) pyrene	<u>360</u>	<6.0	<u>50,000</u>	<u>34,000</u>	<u>20,000</u>	<u>8,400</u>	<u>1,600</u>	<u>3,500</u>
Benzo (b) fluoranthene	<u>270</u>	<6.0	<u>28,000</u>	<u>21,000</u>	<u>13,000</u>	<u>6,300</u>	<u>1,300</u>	<u>2,500</u>
Benzo (g,h,i) perylene	290	<6.0	<u>33,000</u>	<u>23,000</u>	<u>14,000</u>	<u>6,300</u>	1,400	<u>3,000</u>
Benzo (k) fluoranthene	82	<6.0	<u>22,000</u>	<u>16,000</u>	<u>9,600</u>	<u>3,900</u>	840	<u>1,800</u>
Chrysene	280	<6.0	<u>53,000</u>	<u>35,000</u>	<u>22,000</u>	8,300	1,700	3,100
Dibenzo (a,h) anthracene	<120	<9.0	<u>5,800</u>	<u>4,800</u>	<u>2,600</u>	<u>1,300</u>	<520	<u>490</u>
Fluoranthene	660	<12	180,000	100,000	64,000	22,000	4,400	12,000
Fluorene	<160	<12	25,000	12,000	4,700	1,800	<690	920
Indeno (1,2,3-cd) pyrene	<u>270</u>	<6.0	<u>28,000</u>	<u>20,000</u>	<u>11,000</u>	<u>5,200</u>	<u>1,000</u>	<u>2,300</u>
Naphthalene	<470	<36	<u>28,000</u>	<5,400	<u>8,100</u>	<u>1,500</u>	<2,100	<1,600
Phenanthrene	450	<6.0	<u>170,000</u>	<u>86,000</u>	<u>42,000</u>	<u>13,000</u>	<u>2,200</u>	<u>4,900</u>
Pyrene	820	<6.0	110,000	70,000	45,000	16,000	3,300	6,100

	Concentration exceeds the NR 720 RCL (NR 720 Table 1 RCL is based on protection of groundwater pathway).
Bold	Concentration exceeds the WDNR Proposed Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<i>Italic</i>	Concentration exceeds the WDNR Proposed Non-Industrial Direct Contact RCL for Polycyclic Aromatic Hydrocarbons.
<u>Underline</u>	Concentration exceeds the WDNR Proposed Groundwater Protection RCL for Polycyclic Aromatic Hydrocarbons.
<	Analyte detected below laboratory detection limits.
E	Concentration exceeds the calibration range and therefore result is semi-quantitative.
L2	Laboratory control sample recovery was below acceptance limits.
M	Matrix interference.
NA	Not analyzed.
NE	Not established.
PAH	Polycyclic aromatic hydrocarbons.
RCL	Residual contaminant level.
µg/kg	Micrograms per kilogram.
WDNR	Wisconsin Department of Natural Resources.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	Relative Potency Factor	GP-2 6-8' 05/23/96	GP-6 6-8' 05/24/96	GP-12 4-6' 05/28/96	GP-17 4-6' 05/23/96	GP-20 6-8' 05/28/96	GP-21 2-4' 05/28/96	GP-24 2-4' 05/28/96	GP-25 6-8' 05/29/96	GP-27 6-8' 05/29/96	GP-30 6-8' 05/29/96
PAHs (µg/kg)											
1-Methylnaphthalene	0.001	12.5	12.5	490	3,700	250	12.5	520	12.5	68	12.5
2-Methylnaphthalene	0.001	12.5	1,200	300	3,500	250	12.5	480	12.5	94	12.5
Acenaphthene	0.001	20	20	20	400	400	20	20	20	20	20
Anthracene	0.01	33	4	4	80	80	4	20	4	68	9.6
Benzo (a) anthracene	0.1	120	1	1	20	20	130	800	180	200	89
Benzo (a) pyrene	1	110	2	2	40	40	2	170	2	250	6.9
Benzo (b) fluoranthene	0.1	41	1	1	20	20	1	36	1	100	26
Benzo (g,h,i) perylene	0.01	110	2	2	40	40	2	130	2	230	64
Benzo (k) fluoranthene	0.01	65	1	1	20	20	1	64	1	130	14
Chrysene	0.001	98	2	2	40	84	2	110	24	200	86
Dibenzo (a,h) anthracene	1	2	2	2	40	40	2	2	2	2	2
Fluoranthene	0.001	230	4	4	80	2,400	120	270	130	440	100
Fluorene	0.001	8	270	38	160	530	8	8	150	19	31
Indeno (1,2,3-cd) pyrene	0.1	60	2	2	40	40	2	79	2	160	46
Naphthalene	0.001	630	12.5	64	1,200	250	12.5	240	12.5	160	12.5
Phenanthrene	0.001	230	1,600	100	1,300	2,900	230	110	67	250	330
Pyrene	0.001	190	4	4	80	1,300	82	210	1,100	370	95
BaP_{equiv} (µg/kg)		137.61	7.60	5.49	99.86	97.76	17.87	267.61	23.90	303.90	26.58
BaP_{equiv} (mg/kg)		0.14	0.01	0.01	0.10	0.10	0.02	0.27	0.02	0.30	0.03
Minimum (mg/kg)		0.00									
Maximum (mg/kg)		331.90									
Sample Count		137									
Standard Deviation		51.21									
95% Upper Confidence Level		8.58									
Non-Industrial Ingestion RCL		880 µg/kg									
Industrial Ingestion RCL		3,900 µg/kg									

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-58	GP-59	GP-60	GP-61	GP-62	GP-63	GP-64	GP-67	GP-68	GP-69	GP-70
Sample Depth (feet)	0-2'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/19/05	10/19/05
PAHs (µg/kg)											
1-Methylnaphthalene	18	270	18	17.5	290	18	19	820	205	180	18
2-Methylnaphthalene	15	160	15	110	200	25	48	1200	430	720	120
Acenaphthene	30	29.5	30	29.5	30.5	30	32	39.5	340	32	30
Anthracene	3	2.95	3	7.8	42	3	20	11	34	74	16
Benzo (a) anthracene	11	2.95	13	33	220	16	45	64	400	640	110
Benzo (a) pyrene	11	2.95	9.5	17	14	9.3	37	33	200	370	140
Benzo (b) fluoranthene	9.1	2.95	12	20	24	8.7	30	33	270	360	97
Benzo (g,h,i) perylene	11	2.95	14	16	19	9.2	33	28	110	530	140
Benzo (k) fluoranthene	3	2.95	6.5	12	8.7	3	17	15	140	160	45
Chrysene	3	2.95	3	19	140	8.8	7.9	14	250	91	12
Dibenzo (a,h) anthracene	4.5	4.45	4.5	4.4	4.6	4.5	4.8	6	50	72	21
Fluoranthene	33	12	30	110	590	62	110	270	650	950	240
Fluorene	6	6	6	6	120	6	6.5	68	70	70	12
Indeno (1,2,3-cd) pyrene	9.5	2.95	7.9	12	12	7.2	35	25	99	310	100
Naphthalene	18	120	18	17.5	18.5	18	19	23.5	205	49	18
Phenanthrene	18	11	11	72	210	37	83	150	430	490	100
Pyrene	62	59	27	330	830	61	100	210	960	770	230
BaP_{equiv} (µg/kg)	18.83	9.04	17.68	28.97	47.33	17.41	53.93	54.54	333.28	583.99	194.49
BaP_{equiv} (mg/kg)	0.02	0.01	0.02	0.03	0.05	0.02	0.05	0.05	0.33	0.58	0.19
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-71	GP-72	GP-73	GP-76	GP-77	GP-80	GP-82	GP-83	GP-84	GP-85	GP-86
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	0-2'	2-4'	2-4'	2-4'	2-4'	2-4'	2-4'
Sample Date	10/19/05	10/19/05	10/19/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05	10/18/05
PAHs (µg/kg)											
1-Methylnaphthalene	18	53	120	47	85	1,300	140	85	23.5	37	100
2-Methylnaphthalene	15	120	380	130	320	2,500	420	70	19.5	88	120
Acenaphthene	30.5	27	27	30	140	800	230	140	39	30.5	32
Anthracene	3.05	10	33	13	14	310	23	14	3.9	6.6	3.2
Benzo (a) anthracene	6.6	56	200	91	120	870	270	100	22	37	31
Benzo (a) pyrene	3.05	42	200	64	84	71	210	37	14	31	22
Benzo (b) fluoranthene	3.05	42	150	54	86	85	190	56	13	32	23
Benzo (g,h,i) perylene	3.05	47	140	44	63	29	200	14	18	33	22
Benzo (k) fluoranthene	3.05	13	82	36	33	29	120	69	3.9	13	12
Chrysene	3.05	11	25	15	73	250	53	63	9.1	3.05	7.2
Dibenzo (a,h) anthracene	4.55	4.05	26	4.45	20.5	43	34.5	21	6	4.6	4.8
Fluoranthene	14	190	520	200	430	3,900	540	240	61	140	31
Fluorene	12	12	5.5	13	27.5	1,000	46	28	8	6	6.5
Indeno (1,2,3-cd) pyrene	3.05	33	130	40	56	29	160	14	9.7	34	21
Naphthalene	18	16	84	18	85	175	140	85	23.5	18.5	17
Phenanthrene	7.3	88	240	94	270	2,400	330	130	31	77	24
Pyrene	33	100	430	280	260	3,200	570	410	76	91	60
BaP_{equiv} (µg/kg)	9.11	60.47	278.38	88.71	133.49	231.61	312.40	77.22	25.02	46.92	35.07
BaP_{equiv} (mg/kg)	0.01	0.06	0.28	0.09	0.13	0.23	0.31	0.08	0.03	0.05	0.04
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-88	GP-89	GP-90	GP-91	GP-95	GP-96	GP-97	GP-98	GP-99	GP-100	GP-102
Sample Depth (feet)	0-2'	2-4'	0-2'	2-4'	2-4'	2-4'	0-2'	2-4'	2-4'	2-4'	0-2'
Sample Date	10/18/05	10/18/05	10/19/05	10/18/05	10/19/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05
PAHs (µg/kg)											
1-Methylnaphthalene	280	70,000	6,000	90	54	59,000	710	18.5	150	95	495
2-Methylnaphthalene	710	82,000	3,200	75	49	480,000	3,500	91	310	170	2,200
Acenaphthene	140	7,300	400	145	26	99,000	1,000	31	31	155	850
Anthracene	93	7,900	260	14.5	20	280,000	360	19	22	31	720
Benzo (a) anthracene	460	13,000	650	74	190	280,000	4,200	94	36	620	2,200
Benzo (a) pyrene	350	60	82	57	28	250,000	7,100	89	14	15.5	1,500
Benzo (b) fluoranthene	330	60	63	60	37	130,000	6,100	66	8.9	15.5	1,300
Benzo (g,h,i) perylene	250	60	40	63	32	110,000	5,600	70	3.1	15.5	1,100
Benzo (k) fluoranthene	170	60	30	14.5	13	92,000	3,100	38	3.1	15.5	860
Chrysene	79	4,400	190	14.5	250	260,000	3,500	200	36	670	4,600
Dibenzo (a,h) anthracene	21	90	10	22	3.9	21,000	940	12	4.65	23	125
Fluoranthene	1,300	110,000	3,900	170	330	1,000,000	3,700	190	210	530	5,100
Fluorene	160	21,000	1,200	29.5	46	140,000	210	6	28	31	430
Indeno (1,2,3-cd) pyrene	220	60	33	44	28	110,000	5,000	64	3.1	15.5	920
Naphthalene	85	2,900	370	90	66	130,000	145	18.5	73	95	495
Phenanthrene	540	50,000	2,100	80	110	1,000,000	1,400	97	150	130	2,800
Pyrene	1,200	96,000	3,200	120	350	910,000	4,000	190	95	390	5,000
BaP_{equiv} (µg/kg)	481.62	1,985.8	190.46	98.53	59.33	331,898	9,678.77	125.51	24.82	106.49	2,115.77
BaP_{equiv} (mg/kg)	0.48	1.99	0.19	0.10	0.06	331.90	9.68	0.13	0.02	0.11	2.12
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-103	GP-104	GP-105	GP-106	GP-107	GP-108	GP-109	GP-110	GP-115	GP-119	GP-120
Sample Depth (feet)	2-4'	0-2'	2-4'	2-4'	2-4'	0-2'	0-2'	0-2'	2-4'	2-4'	0-2'
Sample Date	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/20/05	10/19/05	10/19/05	10/19/05	11/10/06
PAHs (µg/kg)											
1-Methylnaphthalene	130	430	90	165	2,600	2,600	85	150	18.5	16	360
2-Methylnaphthalene	110	370	75	2,500	16,000	16,000	280	420	50	13	870
Acenaphthene	220	155	150	280	2,100	1,600	145	28	30.5	26.5	190
Anthracene	22	57	41	890	7,000	6,500	82	36	10	2.65	150
Benzo (a) anthracene	70	390	130	4,300	16,000	17,000	320	99	36	14	1,000
Benzo (a) pyrene	22	100	96	3,100	11,000	11,000	230	320	26	13	760
Benzo (b) fluoranthene	49	80	70	2,300	7,300	8,100	230	320	20	14	460
Benzo (g,h,i) perylene	22	80	72	2,000	6,100	6,300	160	270	20	13	450
Benzo (k) fluoranthene	22	33	43	1,500	5,300	5,500	140	180	12	11	350
Chrysene	120	84	110	3,000	12,000	12,000	290	52	43	2.65	530
Dibenzo (a,h) anthracene	32.5	23	22.5	460	1,300	1,400	44	51	4.55	3.95	83
Fluoranthene	180	1,200	320	8,300	38,000	40,000	680	610	89	32	1,300
Fluorene	43.5	200	30.5	550	3,600	3,400	28.5	31	6	5.5	160
Indeno (1,2,3-cd) pyrene	44	67	62	1,800	5,900	5,800	150	270	17	9.5	490
Naphthalene	130	90	90	165	1,900	1,700	85	82	18.5	16	115
Phenanthrene	97	420	200	3,500	24,000	25,000	360	230	47	14	850
Pyrene	200	1,200	330	8,100	35,000	35,000	610	580	76	28	620
BaP_{equiv} (µg/kg)	72.69	182.55	147.66	4,470.46	15,539.2	15,810.3	350.38	446.94	38.65	21.12	1,052.5
BaP_{equiv} (mg/kg)	0.07	0.18	0.15	4.47	15.54	15.81	0.35	0.45	0.04	0.02	1.05
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-121	GP-122	GP-123	GP-124	GP-125	GP-126	GP-127	GP-128	GP-129	GP-130	GP-131
Sample Depth (feet)	0-2'	0-2'	0-2'	2-4'	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	0-2'
Sample Date	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06
PAHs (µg/kg)											
1-Methylnaphthalene	75	305	950	105	475	70	140	105	18.5	46.5	105
2-Methylnaphthalene	250	570	800	85	395	55	120	85	15.5	39	90
Acenaphthene	120	500	1600	175	800	115	235	170	31	80	175
Anthracene	67	220	320	320	80	92	240	290	3.1	8	17.5
Benzo (a) anthracene	330	630	900	550	80	280	820	1,100	11	45	17.5
Benzo (a) pyrene	360	620	800	380	80	280	1,000	1,200	9.4	42	47
Benzo (b) fluoranthene	260	500	590	250	80	200	730	950	6.4	53	67
Benzo (g,h,i) perylene	250	470	540	280	290	180	670	770	3.1	49	17.5
Benzo (k) fluoranthene	180	370	450	210	220	160	440	600	3.1	27	60
Chrysene	280	560	820	370	80	230	700	870	8.7	43	44
Dibenzo (a,h) anthracene	43	75	240	57	120	39	110	130	4.6	11.5	26.5
Fluoranthene	690	1,300	2,100	1,000	160	470	1,800	1,800	34	120	35
Fluorene	24.5	100	320	34.5	160	23	47.5	34	6	15.5	35
Indeno (1,2,3-cd) pyrene	250	410	480	210	80	160	690	710	3.1	29	17.5
Naphthalene	75	305	950	105	475	70	140	105	18.5	46.5	105
Phenanthrene	370	700	900	670	160	290	830	1400	30	68	38
Pyrene	500	860	1,500	940	80	510	1,800	2,000	15	71	17.5
BaP_{equiv} (µg/kg)	494.35	864.80	1,260.04	549.58	232.69	389.15	1,353.31	1,629.17	16.32	67.57	85.29
BaP_{equiv} (mg/kg)	0.49	0.86	1.26	0.55	0.23	0.39	1.35	1.63	0.02	0.07	0.09
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-132	GP-134	GP-135	GP-136	GP-137	GP-138	GP-139	GP-140	GP-141	GP-142	GP-143
Sample Depth (feet)	2-4'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'
Sample Date	11/10/06	11/10/06	11/10/06	11/10/06	11/10/06	11/13/06	11/10/06	11/10/06	11/10/06	11/13/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	160	230	305	500	140	19	2,000	160	200	2,600	490
2-Methylnaphthalene	135	190	255	8,800	540	16	7,200	135	165	25,000	1,200
Acenaphthene	270	380	500	4,800	235	31.5	1,300	265	330	7,700	800
Anthracene	140	38	250	11,000	320	3.15	640	87	690	7,500	380
Benzo (a) anthracene	500	400	950	9,300	1,100	3.15	430	270	1,900	7,600	1,500
Benzo (a) pyrene	400	240	540	3,300	1,400	3.15	200	240	1,900	4,500	790
Benzo (b) fluoranthene	340	250	850	2,900	750	3.15	210	210	1,200	4,300	590
Benzo (g,h,i) perylene	350	210	50	1,500	860	7	28.5	210	1,200	3,300	530
Benzo (k) fluoranthene	290	97	320	2,400	660	3.15	210	26.5	1,100	2,700	440
Chrysene	390	220	500	7,100	820	3.15	230	210	1,500	6,100	880
Dibenzo (a,h) anthracene	110	55	75	270	180	4.75	43	40	220	510	120
Fluoranthene	750	380	1,400	30,000	2,000	19	1,100	540	3,600	27,000	2,300
Fluorene	55	75	100	4,100	120	6.5	970	55	65	6,600	165
Indeno (1,2,3-cd) pyrene	330	38	340	1,500	1,000	3.15	180	190	1,300	2,900	510
Naphthalene	160	230	305	500	140	19	9,500	160	200	15,000	490
Phenanthrene	530	250	300	19,000	1,100	11	2,200	340	3,000	27,000	1,700
Pyrene	850	93	780	12,000	1,700	9.3	900	380	3,600	17,000	1,800
BaP_{equiv} (µg/kg)	638.10	369.30	839.65	5,175.8	1,890.2	9.11	359.19	352.48	2,602.56	6,759.0	1,193.33
BaP_{equiv} (mg/kg)	0.64	0.37	0.84	5.18	1.89	0.01	0.36	0.35	2.60	6.76	1.19
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-144	GP-145	GP-146	GP-147	GP-148	GP-149	GP-150	GP-151	GP-152	GP-153	GP-154
Sample Depth (feet)	0-2'	2-4'	0-2'	2-4'	0-2'	0-2'	0-2'	0-2'	2-4'	2-4'	0-2'
Sample Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06
PAHs (µg/kg)											
1-Methylnaphthalene	1,400	90	7,500	650	5,000	110,000	140	4,800	18	45.5	18.5
2-Methylnaphthalene	7,200	420	28,000	550	22,000	540,000	590	25,000	15	490	15.5
Acenaphthene	1,900	150	12,500	1,100	2,000	110,000	93	2,800	30.5	75	30.5
Anthracene	1,600	250	16,000	450	10,000	240,000	220	13,000	3.05	180	130
Benzo (a) anthracene	7,400	900	30,000	3,000	26,000	310,000	590	45,000	8.6	440	310
Benzo (a) pyrene	4,300	650	16,000	2,300	16,000	230,000	320	29,000	3.05	340	290
Benzo (b) fluoranthene	3,600	410	11,000	1,600	10,000	160,000	230	17,000	3.05	250	190
Benzo (g,h,i) perylene	2,600	470	9,600	1,400	7,600	110,000	200	15,000	3.05	190	160
Benzo (k) fluoranthene	2,400	360	8,400	1,200	7,400	110,000	160	13,000	3.05	190	140
Chrysene	5,100	650	20,000	2,200	16,000	3750	370	28,000	6.2	380	280
Dibenzo (a,h) anthracene	500	90	1,850	165	1,400	22,000	37	2600	4.55	39	33
Fluoranthene	16,000	1,900	91,000	4,900	53,000	870,000	1,200	74,000	17	1,200	440
Fluorene	1,900	170	7,800	220	5,400	170,000	130	3,700	6	130	6
Indeno (1,2,3-cd) pyrene	2,900	480	9,600	1,300	8,900	130,000	210	16,000	3.05	210	180
Naphthalene	2,900	90	7,500	650	4,200	220,000	180	1,700	18	130	18.5
Phenanthrene	13,000	1,400	56,000	770	40,000	860,000	1,000	41,000	15	920	46
Pyrene	9,900	1,600	42,000	6,000	36,000	560,000	800	57,000	13	810	590
BaP_{equiv} (µg/kg)	6,315.3	936.27	23,522.3	3102.54	22,323.6	320,043.75	470.30	40,048	9.30	478.78	396.75
BaP_{equiv} (mg/kg)	6.32	0.94	23.52	3.10	22.32	320.04	0.47	40.05	0.01	0.48	0.40
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-155	GP-156	GP-157	GP-158	GP-159	GP-160	GP-161	GP-164	GP-165	GP-166	GP-167
Sample Depth (feet)	2-4'	2-4'	0-2'	0-2'	0-2'	2-4'	2-4'	2-4'	0-2'	2-4'	0-2'
Sample Date	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	11/13/06	01/10/07	01/10/07	01/10/07	01/09/07	01/10/07
PAHs (µg/kg)											
1-Methylnaphthalene	18.5	8,500	6,800	310	110	300	2,450	145	120	170	145
2-Methylnaphthalene	15.5	5,900	7,900	520	130	450	29,000	260	430	340	640
Acenaphthene	31	580	530	55	70	160	4,100	145	195	285	245
Anthracene	3.1	870	900	57	7	16	15,000	55	100	120	230
Benzo (a) anthracene	9.9	1,000	1,300	120	7	63	38,000	280	390	410	790
Benzo (a) pyrene	8.1	6.5	13.5	29	7	16	25,000	350	310	340	720
Benzo (b) fluoranthene	7	6.5	77	19	7	16	20,000	240	240	250	580
Benzo (g,h,i) perylene	3.1	6.5	13.5	13	7	16	24,000	380	260	270	430
Benzo (k) fluoranthene	6.8	6.5	13.5	5.5	7	16	13,000	170	160	180	360
Chrysene	8.1	130	270	46	7	16	26,000	250	410	330	640
Dibenzo (a,h) anthracene	4.6	10	20	8	10.5	24	3,600	36.5	29.5	43	75
Fluoranthene	19	5,400	4,000	430	51	250	80,000	440	740	930	1,700
Fluorene	6	2,100	1,700	110	14.5	70	7,400	49	39.5	55	49
Indeno (1,2,3-cd) pyrene	6.2	6.5	13.5	28	7	16	19,000	280	220	230	430
Naphthalene	18.5	660	670	75	43	95	9,000	145	120	170	145
Phenanthrene	11	4,300	3,300	330	37	140	56,000	260	470	490	820
Pyrene	15	4,500	4,200	770	25	220	51,000	330	550	630	1,400
BaP_{equiv} (µg/kg)	15.28	158.70	211.19	57.10	20.30	51.68	37,084.95	474.57	432.77	481.10	990.98
BaP_{equiv} (mg/kg)	0.02	0.16	0.21	0.06	0.02	0.05	37.08	0.47	0.43	0.48	0.99
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-168	GP-169	GP-170	GP-171	GP-172	GP-173	GP-174	GP-175	GP-176	GP-177	GP-178
Sample Depth (feet)	2-4'	2-4'	0-2'	2-4'	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	2-4'
Sample Date	01/10/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/10/07
PAHs (µg/kg)											
1-Methylnaphthalene	30	60	960	200	210	500	700	5,000	45,000	65	3,500
2-Methylnaphthalene	76	330	4,600	860	1,100	1,800	600	9,100	290,000	55	19,000
Acenaphthene	50	100	1,100	220	350	850	1,200	8,500	90,000	110	2,700
Anthracene	12	54	1,900	290	430	450	120	2,000	140,000	52	8,900
Benzo (a) anthracene	39	190	5,500	890	1,800	1,300	730	13,000	290,000	160	22,000
Benzo (a) pyrene	28	110	3,400	590	1,200	1,000	630	10,000	200,000	120	13,000
Benzo (b) fluoranthene	20	83	2,600	380	980	760	700	7,000	130,000	89	8,300
Benzo (g,h,i) perylene	27	110	2,300	440	790	830	920	9,300	120,000	100	8,900
Benzo (k) fluoranthene	13	48	1,600	310	640	550	420	5,000	94,000	65	5,800
Chrysene	29	120	3,600	570	1,300	930	530	8,800	190,000	130	14,000
Dibenzo (a,h) anthracene	7.5	15	450	86	140	125	180	1,300	25,000	16	1,800
Fluoranthene	66	380	11,000	1,500	5,200	2,700	1,300	16,000	590,000	330	43,000
Fluorene	10	39	860	110	70	390	235	1,700	79,000	21.5	4,300
Indeno (1,2,3-cd) pyrene	5	110	1,900	360	640	690	720	6,900	100,000	78	7,400
Naphthalene	30	60	135	320	210	500	700	5,000	32,000	65	3,700
Phenanthrene	66	280	7,700	1,100	900	1,800	570	3,400	410,000	210	32,000
Pyrene	40	230	6,400	1,400	3,800	1,900	960	14,000	390,000	250	31,000
BaP _{equiv} (µg/kg)	42.82	167.02	4,944.36	855.68	1,713.74	1,429.67	1,046.40	14,224.50	282,656.00	172.11	18,959.20
BaP _{equiv} (mg/kg)	0.04	0.17	4.94	0.86	1.71	1.43	1.05	14.22	282.66	0.17	18.96
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-179	GP-180	GP-181	GP-182	GP-183	GP-184	GP-185	GP-186	GP-187	GP-189	GP-199
Sample Depth (feet)	0-2'	0-2'	0-2'	0-2'	2-4'	0-2'	0-2'	0-2'	2-4'	4-6'	4-6'
Sample Date	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/09/07	01/10/07	01/10/07	01/10/07	01/10/07	01/10/07
PAHs (µg/kg)											
1-Methylnaphthalene	475	600	2,450	12,000	145	1,650	48,000	2,700	17.5	145	140
2-Methylnaphthalene	3,000	5,800	7,500	65,000	120	3,600	79,000	23,000	14.5	120	115
Acenaphthene	800	1,000	4,050	3,650	240	2,750	6,700	4,450	29	240	230
Anthracene	1,400	2,400	3,400	29,000	58	1,300	8,800	10,000	2.9	24	23
Benzo (a) anthracene	3,300	6,000	12,000	93,000	230	5,500	41,000	38,000	6.1	120	61
Benzo (a) pyrene	2,300	4,500	7,000	59,000	150	3,300	8,300	21,000	2.9	88	55
Benzo (b) fluoranthene	1,600	3,400	5,900	42,000	110	2,600	5,200	17,000	2.9	74	49
Benzo (g,h,i) perylene	1,600	3,700	5,800	40,000	120	3,200	6,200	11,000	2.9	92	47
Benzo (k) fluoranthene	1,100	2,400	3,600	27,000	77	2,000	2,900	10,000	2.9	24	23
Chrysene	2,300	4,200	7,300	55,000	130	3,200	14,000	20,000	2.9	83	50
Dibenzo (a,h) anthracene	320	610	600	8,300	35.5	415	1,000	2,300	4.35	36.5	35
Fluoranthene	7,000	14,000	20,000	160,000	410	8,100	120,000	62,000	12	270	130
Fluorene	770	810	800	15,000	47.5	550	25,000	6,700	6	48.5	46.5
Indeno (1,2,3-cd) pyrene	1,300	2,800	4,400	33,000	99	2,600	4,800	13,000	2.9	81	23
Naphthalene	475	600	2,450	12,000	145	1,650	14,000	8,400	17.5	145	140
Phenanthrene	5,000	9,300	13,000	98,000	220	4,200	68,000	39,000	9.3	140	57
Pyrene	4,600	8,800	14,000	120,000	270	5,900	9,100	38,000	2.9	170	86
BaP_{equiv} (µg/kg)	3,305.42	6,460.11	10,029.55	85,600.65	233.68	4,881.60	14,962.8	30,614.25	8.64	154.76	105.22
BaP_{equiv} (mg/kg)	3.31	6.46	10.03	85.60	0.23	4.88	14.96	30.61	0.01	0.15	0.11
Minimum (mg/kg)	0										
Maximum (mg/kg)	331.90										
Sample Count	137										
Standard Deviation	51.21										
95% Upper Confidence Level	8.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-200	GP-200	GP-201	GP-202	GP-203	GP-203	GP-204	GP-207	GP-208	GP-210	GP-212
Sample Depth (feet)	0-2'	0-2'	0-2'	2-4'	10-12'	3-5'	2-4'	0-2'	2-4'	0-2'	0-2'
Sample Date	1/10/2007	11/8/2007	11/8/2007	11/8/2007	11/8/2007	11/8/2007	01/10/07	01/09/07	01/09/07	01/09/07	01/10/07
PAHs (µg/kg)											
1-Methylnaphthalene	600	1,050	195	27,000	18	43	1,250	1,000	29	480	235
2-Methylnaphthalene	2,200	900	165	170,000	15	36	2,200	6,700	220	1,900	195
Acenaphthene	1,000	1,750	325	43,000	30	70	2,100	1,650	48	800	390
Anthracene	650	2,000	75	61,000	3	7	1,500	3,400	210	740	99
Benzo (a) anthracene	2,600	6,100	280	240,000	3	33	2,000	12,000	560	2,700	380
Benzo (a) pyrene	2,100	5,200	260	190,000	3	26	1,500	8,700	400	2,300	360
Benzo (b) fluoranthene	1,700	3,800	150	110,000	3	18	1,200	6,000	270	1,600	270
Benzo (g,h,i) perylene	1,600	3,100	170	95,000	3	23	1,300	6,500	300	1,700	290
Benzo (k) fluoranthene	320	2,200	110	73,000	3	7	870	4,100	210	1,100	82
Chrysene	2,000	4,900	210	160,000	3	18	1,800	8,100	370	1,700	280
Dibenzo (a,h) anthracene	340	265	49	17,000	4.5	10.5	310	1,100	56	290	60
Fluoranthene	6,900	15,000	630	370,000	6	92	5,300	21,000	1,100	4,600	660
Fluorene	200	1,000	65	21,000	6	14.5	415	940	42	160	80
Indeno (1,2,3-cd) pyrene	1,400	3,200	140	100,000	3	20	970	5,600	250	1,800	270
Naphthalene	600	1,050	195	13,000	18	43	1,250	1,000	29	480	235
Phenanthrene	2,100	9,500	300	210,000	7.4	69	4,400	11,000	720	2,600	450
Pyrene	3,600	9,500	650	380,000	11	34	3,500	15,000	1,000	4,400	820
BaP_{equiv} (µg/kg)	3,054.90	6,892.65	372.29	255,684	8.60	44.39	2,285.92	12,366.39	574.76	3,252.52	520.06
BaP_{equiv} (mg/kg)	3.05	6.89	0.37	255.68	0.01	0.04	2.29	12.37	0.57	3.25	0.52
Minimum (mg/kg)	0.00										
Maximum (mg/kg)	255.68										
Sample Count	17										
Standard Deviation	62.23										
95% Upper Confidence Level	29.58										
Non-Industrial Ingestion RCL	880 µg/kg										
Industrial Ingestion RCL	3,900 µg/kg										

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 4. Benzo(a)pyrene Equivalent Residual Contaminant Level Calculations and Results, Union Pacific Bulter Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-214	GP-215	GP-216	GP-217	GP-218	GP-219
Sample Depth (feet)	2-4'	2-4'	0-2'	0-2'	2-4'	0-2'
Sample Date	01/10/07	01/10/07	01/10/07	01/10/07	01/09/07	01/10/07
PAHs (µg/kg)						
1-Methylnaphthalene	19,000	8,100	3,600	1,400	1,050	800
2-Methylnaphthalene	91,000	47,000	23,000	8,800	850	4,000
Acenaphthene	17,000	13,000	6,400	1,100	1,750	1,350
Anthracene	48,000	22,000	13,000	3,600	630	1,400
Benzo (a) anthracene	79,000	54,000	34,000	13,000	2,800	4,400
Benzo (a) pyrene	50,000	34,000	20,000	8,400	1,600	3,500
Benzo (b) fluoranthene	28,000	21,000	13,000	6,300	1,300	2,500
Benzo (g,h,i) perylene	33,000	23,000	14,000	6,300	1,400	3,000
Benzo (k) fluoranthene	22,000	16,000	9,600	3,900	840	1,800
Chrysene	53,000	35,000	22,000	8,300	1,700	3,100
Dibenzo (a,h) anthracene	5,800	4,800	2,600	1,300	260	490
Fluoranthene	180,000	100,000	64,000	22,000	4,400	12,000
Fluorene	25,000	12,000	4,700	1,800	345	920
Indeno (1,2,3-cd) pyrene	28,000	20,000	11,000	5,200	1,000	2,300
Naphthalene	28,000	2,700	8,100	1,500	1,050	800
Phenanthrene	170,000	86,000	42,000	13,000	2,200	4,900
Pyrene	110,000	70,000	45,000	16,000	3,300	6,100
BaP_{equiv} (µg/kg)	71,023	49,283.8	28,984.8	12,361.9	2,415.35	5,005.97
BaP_{equiv} (mg/kg)	71.02	49.28	28.98	12.36	2.42	5.01
Minimum (mg/kg)	0					
Maximum (mg/kg)	331.90					
Sample Count	137					
Standard Deviation	51.21					
95% Upper Confidence Level	8.58					
Non-Industrial Ingestion RCL	880 µg/kg					
Industrial Ingestion RCL	3,900 µg/kg					

BOLD Concentration exceeds the BaP_{equiv} Industrial Direct Contact RCL of 3,900 µg/kg or 3.9 mg/kg.

Italic Concentrations equal to one-half the detection limit were used in the calculations where sample results were reported below laboratory detection limits.

BaP_{equiv} Calculated benzo(a)pyrene equivalent concentration.

µg/kg Micrograms per kilogram.

mg/kg Milligrams per kilogram.

PAH Polycyclic aromatic hydrocarbons.

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Table 5. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	Enforcement	Preventive	GP-1		GP-3	GP-7		GP-9	GP-19	GP-27
Sample Date	Standard	Action Limit	06/06/96	06/07/96	06/06/96	06/06/96	06/07/96	06/07/96	06/06/96	06/06/96
Diesel Range Organics (mg/L)	NE	NE	NA	0.12 B	<0.10 B	NA	0.31 B	<0.10 B	<0.10 B	0.10 BH
VOCs (µg/L)										
Acetone	1,000	200	5.1 L	NA	5.3 L	<5.0	NA	<5.0	6.6 L	<5.0
Benzene	5	0.5	<0.50	NA	<0.50	<0.50	NA	<0.50	<0.50	<0.50
cis-1,2-Dichloroethene	70	7	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	700	140	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	<1.0
Isopropylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-Butyl Ether	60	12	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	1.4
Methylene Chloride	5	0.5	<10	NA	<10	38	NA	<10	<10	<10
4-Methyl-2-Pentanone	500	50	<1.0	NA	<1.0	2.3	NA	<1.0	<1.0	<1.0
Naphthalene	100	10	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1,000	200	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	1.5
1,2,4-Trimethylbenzene	480 (a)	96 (a)	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	480 (a)	96 (a)	<1.0	NA	<1.0	<1.0	NA	<1.0	<1.0	<1.0
Xylenes, Total	10,000	1,000	<3.0	NA	<3.0	<3.0	NA	<3.0	<3.0	<3.0

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.*Italic* Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

ARCADIS

Table 5. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GP-28	GP-30	GP-31	GP-41	GP-46	MW-3				GMMW-4	
Sample Date	06/06/96	06/06/96	06/07/96	12/02/96	12/02/96	12/24/96	06/09/99	10/25/04	01/04/07	12/24/96	06/09/99
Diesel Range Organics (mg/L)	<0.10 B	1.1	0.22 B	<20	12.8	650	2.4	NA	NA	<0.10	<0.10
VOCs (µg/L)											
Acetone	11 L	30 L	32	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	<0.50	<2.5	<0.50	<1	<1	<1.0	<0.13	<0.25	<0.2	<1.0	<0.13
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	NA	NA
Ethylbenzene	<1.0	<5.0	<1.0	<1	<1	<1.0	<0.22	<0.22	<0.5	<1.0	<0.22
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	0.66 J	NA	NA
Methyl tert-Butyl Ether	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<0.16	<0.23	<0.5	<1.0	<0.16
Methylene Chloride	<10	<50	<10	NA	NA	NA	NA	NA	<1	NA	NA
4-Methyl-2-Pentanone	1.3	<5.0	4.6	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	0.29 J	NA	NA
n-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	0.52 J	NA	NA
n-Propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	0.82 J	NA	NA
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	1.2	NA	NA
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	NA	NA
Toluene	43	36	43	1.7	1.2	<1.0	<0.20	<0.11	<0.2	<1.0	<0.20
1,2,4-Trimethylbenzene	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<0.22	<0.25	<0.2	<1.0	<0.22
1,3,5-Trimethylbenzene	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<0.29	<0.19	<0.2	<1.0	<0.29
Xylenes, Total	<3.0	<15	<3.0	<1.0	<1.0	<1.0	<0.23	<0.39	<0.5	<1.0	<0.23

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

Table 5. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-4 (continued)		GMMW-5			GMMW-6				GMMW-7	
Sample Date	10/25/04	01/04/07	06/09/99	10/26/04	01/04/07	12/24/96	09/24/97	10/26/04	01/04/07	12/24/96	11/03/97
Diesel Range Organics (mg/L)	NA	NA	2.8	NA	NA	2.8	2.8	NA	NA	<0.10	<0.10
VOCs (µg/L)											
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	<0.25	<0.2	2.2	0.41	0.32 J	NA	<1.0	<0.25	<0.2	NA	<1.0
cis-1,2-Dichloroethene	NA	<0.5	NA	NA	<0.5	NA	NA	NA	<0.5	NA	NA
Ethylbenzene	<0.22	<0.5	6.6	<0.22	<0.5	NA	<1.0	<0.22	<0.5	NA	<1.0
Isopropylbenzene	NA	<0.2	NA	NA	5.9	NA	NA	NA	0.25 J	NA	NA
Methyl tert-Butyl Ether	<0.23	<0.5	<1.6	<0.23	<0.5	NA	<1.0	<0.23	<0.5	NA	<1.0
Methylene Chloride	NA	<1	NA	NA	<1	NA	NA	NA	<1	NA	NA
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	<0.25	NA	NA	0.53 J	NA	NA	NA	<0.25	NA	NA
n-Butylbenzene	NA	<0.2	NA	NA	1.3	NA	NA	NA	<0.2	NA	NA
n-Propylbenzene	NA	<0.5	NA	NA	3.8	NA	NA	NA	<0.5	NA	NA
p-Isopropyltoluene	NA	<0.2	NA	NA	<0.2	NA	NA	NA	<0.2	NA	NA
sec-Butylbenzene	NA	<0.25	NA	NA	2.7	NA	NA	NA	<0.25	NA	NA
tert-Butylbenzene	NA	<0.2	NA	NA	0.36 J	NA	NA	NA	<0.2	NA	NA
Toluene	<0.11	<0.2	<2.0	0.12	<0.2	NA	<1.0	<0.11	<0.2	NA	<1.0
1,2,4-Trimethylbenzene	<0.25	<0.2	11	<0.25	1.2	NA	<1.0	<0.25	<0.2	NA	<1.0
1,3,5-Trimethylbenzene	<0.19	<0.2	<2.9	<0.19	<0.2	NA	<1.0	<0.19	<0.2	NA	<1.0
Xylenes, Total	<0.39	<0.5	7.8	0.83	0.61 J	NA	<1.0	<0.39	<0.5	NA	<1.0

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

Table 5. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-8					GMMW-9			GMMW-10		
Sample Date	12/24/96	11/03/97	06/08/99	10/25/04	01/05/07	06/09/99	10/26/04	01/04/07	06/08/99	10/25/04	01/05/07
Diesel Range Organics (mg/L)	<0.10	<0.10	0.22	NA	NA	0.82	NA	NA	1.3	NA	NA
VOCs (µg/L)											
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	<1.0	<0.13	<0.25	<0.2	<0.13	<0.25	<0.2	<0.13	<0.25	<0.2
cis-1,2-Dichloroethene	NA	NA	NA	NA	<0.5	NA	NA	<0.5	NA	NA	<0.5
Ethylbenzene	NA	<1.0	<0.22	<0.22	<0.5	<0.22	<0.22	<0.5	0.24	<0.22	<0.5
Isopropylbenzene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
Methyl tert-Butyl Ether	NA	<1.0	<0.16	<0.23	<0.5	<0.16	<0.23	<0.5	<0.16	<0.23	<0.5
Methylene Chloride	NA	NA	NA	NA	<1	NA	NA	<1	NA	NA	<1
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	<0.25	NA	NA	0.95	NA	NA	<0.25
n-Butylbenzene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
n-Propylbenzene	NA	NA	NA	NA	<0.5	NA	NA	<0.5	NA	NA	<0.5
p-Isopropyltoluene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
sec-Butylbenzene	NA	NA	NA	NA	<0.25	NA	NA	<0.25	NA	NA	<0.25
tert-Butylbenzene	NA	NA	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.2
Toluene	NA	<1.0	<0.20	<0.11	<0.2	<0.20	<0.11	<0.2	<0.20	<0.11	<0.2
1,2,4-Trimethylbenzene	NA	<1.0	<0.22	<0.25	<0.2	0.24	<0.25	<0.2	3.4	<0.25	<0.2
1,3,5-Trimethylbenzene	NA	<1.0	<0.29	<0.19	<0.2	<0.29	<0.19	<0.2	<0.29	<0.19	<0.2
Xylenes, Total	NA	<1.0	<0.23	<0.39	<0.5	0.8	<0.39	<0.5	0.58	<0.39	<0.5

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

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Table 5. Summary of Groundwater DRO and VOC Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-11			GMMW-12	GMMW-13			RT-1		RT-2	
Sample Date	06/08/99	10/25/04	01/03/07	06/08/99	06/08/99	10/26/04	01/03/07	10/26/04	01/05/07	10/26/04	01/04/07
Diesel Range Organics (mg/L)	0.6	NA	NA	1.6	1.4	NA	NA	NA	NA	NA	NA
VOCs (µg/L)											
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	<0.13	<0.25	<0.2	<0.13	<0.13	<0.25	<0.2	0.64	0.30 J	<0.25	0.50 J
cis-1,2-Dichloroethene	NA	NA	<0.5	NA	NA	NA	1.3 J	NA	<0.5	NA	<0.5
Ethylbenzene	<0.22	<0.22	<0.5	<0.22	0.32	<0.22	<0.5	12	1.4 J	<0.22	<0.5
Isopropylbenzene	NA	NA	<0.2	NA	NA	NA	1.5	NA	1.1	NA	0.95
Methyl tert-Butyl Ether	<0.16	<0.23	<0.5	<0.16	<0.16	<0.23	<0.5	0.6	<0.5	<0.23	<0.5
Methylene Chloride	NA	NA	<1	NA	NA	NA	<1	NA	<1	NA	<1
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	<0.25	NA	NA	NA	<0.25	NA	1.5	NA	0.69 J
n-Butylbenzene	NA	NA	<0.2	NA	NA	NA	0.35 J	NA	<0.2	NA	0.30 J
n-Propylbenzene	NA	NA	<0.5	NA	NA	NA	<0.5	NA	1.3 J	NA	1.0 J
p-Isopropyltoluene	NA	NA	<0.2	NA	NA	NA	<0.2	NA	1.4	NA	<0.2
sec-Butylbenzene	NA	NA	<0.25	NA	NA	NA	1.4	NA	1.7	NA	0.82 J
tert-Butylbenzene	NA	NA	<0.2	NA	NA	NA	<0.2	NA	<0.2	NA	<0.2
Toluene	<0.20	<0.11	<0.2	<0.20	<0.20	<0.11	<0.2	1.5	<0.2	0.29	<0.2
1,2,4-Trimethylbenzene	<0.22	<0.25	<0.2	<0.22	2.7	<0.25	<0.2	46	13	<0.25	<0.2
1,3,5-Trimethylbenzene	<0.29	<0.19	<0.2	<0.29	<0.29	<0.19	<0.2	<0.19	<0.2	<0.19	<0.2
Xylenes, Total	<0.23	<0.39	<0.5	<0.23	0.27	<0.39	<0.5	4.6	1.1 J	0.59	<0.5

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.*Italic* Concentration exceeds the WDNR NR 140 Preventive Action Limit.

(a) Add isomers together before comparing to criteria.

< Analyte detected below laboratory detection limits.

B Method blank is contaminated.

H Late eluting hydrocarbons present.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

L Common laboratory solvent and contaminant.

mg/L Milligrams per liter, equivalent to parts per million (ppm).

NA Not analyzed.

NE Not established.

µg/kg Micrograms per liter, equivalent to parts per billion (ppb).

VOC Volatile Organic Compounds.

WDNR Wisconsin Department of Natural Resources.

Table 6. Summary of Groundwater PAH Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	Enforcement	Preventive	GP-3	GP-9	GP-19	GP-27	GP-28	GP-30	GP-31	MW-3
Sample Date	Standard	Action Limit	06/06/96	06/07/96	06/06/96	06/06/96	06/06/96	06/06/96	06/07/96	01/04/07
PAHs										
1-Methylnaphthalene	NE	NE	NA	NA	NA	NA	NA	NA	NA	1.5
2-Methylnaphthalene	NE	NE	NA	NA	NA	NA	NA	NA	NA	2.0
Acenaphthene	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.44 J
Anthracene	3,000	600	<0.20	<0.20	<0.20	<0.20	<0.20	0.4	<0.20	0.15
Benzo(a)anthracene	NE	NE	<0.050	<0.050	<0.050	0.49	<0.050	<0.050	<0.050	0.28
Benzo(a)pyrene	0.2	0.02	<0.024	<0.024	<0.024	0.54	<0.024	<0.024	<0.024	0.032 J
Benzo(b)fluoranthene	0.2	0.02	<0.050	<0.050	<0.050	0.56	<0.050	<0.050	<0.050	<0.099
Benzo(g,h,i)perylene	NE	NE	<0.20	<0.20	<0.20	0.55	<0.20	<0.20	<0.20	<0.12
Benzo(k)fluoranthene	NE	NE	<0.050	<0.050	<0.050	0.23	<0.050	<0.050	<0.050	<0.049
Chrysene	0.2	0.02	<0.10	<0.10	<0.10	0.3	<0.10	<0.10	<0.10	0.088 J
Fluoranthene	400	80	<0.20	<0.20	<0.20	0.81	<0.20	<0.20	<0.20	0.5
Fluorene	400	80	<0.4	<0.4	<0.4	<0.4	<0.4	0.83	<0.4	0.69
Naphthalene	100	10	NA	NA	NA	NA	NA	NA	NA	<0.4
Phenanthrene	NE	NE	<0.40	<0.40	<0.40	<0.40	<0.40	1.3	<0.40	0.1
Pyrene	250	50	<0.20	<0.20	<0.20	0.59	<0.20	<0.20	<0.20	0.62

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

< Analyte detected below laboratory detection limits.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

NE Not established.

PAH Polycyclic Aromatic Hydrocarbons.

µg/L Micrograms per liter, equivalent to parts per billion (ppb).

WDNR Wisconsin Department of Natural Resources.

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Table 6. Summary of Groundwater PAH Analytical Results, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Sample Name	GMMW-4	GMMW-5	GMMW-6	GMMW-8	GMMW-9	GMMW-10	GMMW-11	GMMW-13	RT-1	RT-2	TW-176
Sample Date	01/04/07	01/04/07	01/04/07	01/05/07	01/04/07	01/05/07	01/03/07	01/03/07	01/05/07	01/04/07	01/12/07
PAHs											
1-Methylnaphthalene	<0.33	35	0.75 J	<0.32	3.0	1.1	<0.32	1.1	9.5	1.0 J	<0.32
2-Methylnaphthalene	<0.32	8.0	<0.32	<0.31	<0.32	<0.32	<0.31	2.2	8.0	2.7	<0.31
Acenaphthene	<0.34	2.7	<0.34	<0.33	<0.34	0.89 J	<0.33	2.3	2.6	0.80 J	<0.33
Anthracene	<0.039	0.64	<0.039	<0.038	<0.039	<0.04	<0.038	<0.038	1.7	0.92	0.15
Benzo(a)anthracene	<0.045	0.060 J	<0.045	<0.044	<0.045	<0.046	<0.044	<0.044	1.0	0.93	0.045 J
Benzo(a)pyrene	<0.033	<0.033	<0.033	<0.032	<0.033	<0.033	<0.032	<0.032	<0.033	<0.04	<0.032
Benzo(b)fluoranthene	<0.1	<0.1	<0.1	<0.099	<0.1	<0.1	<0.098	<0.099	<0.1	<0.12	<0.098
Benzo(g,h,i)perylene	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.15	<0.12
Benzo(k)fluoranthene	<0.05	<0.05	<0.05	<0.049	<0.05	<0.051	<0.049	<0.049	<0.05	<0.062	<0.049
Chrysene	<0.042	<0.042	<0.042	<0.041	<0.042	<0.043	<0.041	<0.041	1.5	1.3	<0.041
Fluoranthene	<0.083	1.1	<0.083	<0.082	<0.083	<0.084	<0.081	<0.082	8.4	4.1	0.13 J
Fluorene	<0.063	5.2	0.20 J	<0.063	<0.063	0.58	<0.062	2.7	4.3	1.8	0.17 J
Naphthalene	<0.41	6.5	<0.41	<0.4	0.42 J	0.60 J	<0.4	0.92 J	5.7	2.2	<0.4
Phenanthrene	<0.031	1.6	<0.031	<0.03	<0.031	0.076 J	<0.03	0.15	1.7	0.59	0.17
Pyrene	<0.045	1.0	<0.045	<0.044	<0.045	<0.046	<0.044	<0.044	7.0	4.0	0.080 J

Bold Concentration exceeds the WDNR NR 140 Enforcement Standard.

Italic Concentration exceeds the WDNR NR 140 Preventive Action Limit.

< Analyte detected below laboratory detection limits.

J Results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

NE Not established.

PAH Polycyclic Aromatic Hydrocarbons.

µg/L Micrograms per liter, equivalent to parts per billion (ppb).

WDNR Wisconsin Department of Natural Resources.

Table 7. Summary of Historical Quantities of LNAPL Recovered from Area No. 1 (Monitoring Well MW-1 and Recovery Trench RT-1), Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

							LNAPL Mass Summary		
					Volume of Product	Mass of Product	Monthly	Cumulative	
	Month of Operation	Date of Product Removal	Depth to Product (ft)	Depth to Water (ft)	Product Thickness	Removed (gal)	Removed (lbs)	Mass Removed (lbs)	Mass Removed (lbs)
1997	May	05/14/97	8.12	14.17	6.05	2.0	13.3	38.0	38
		05/21/97	8.83	10.92	2.09	2.2	14.7		
		05/29/97	8.96	9.96	1.00	1.5	10.0		
	June	06/05/97	8.93	9.65	0.72	1.0	6.7	28.6	67
		06/11/97	8.98	10.02	1.04	1.9	12.7		
		06/20/97	8.98	9.76	0.78	0.6	4.2		
		06/27/97	8.59	9.71	1.12	0.8	5.1		
	July	07/03/97	8.72	9.91	1.19	0.4	2.5	15.7	82
		07/11/97	8.29	10.62	2.33	1.0	6.3		
		07/18/97	8.56	9.2	0.64	0.8	5.6		
		07/25/97	8.56	9.25	0.69	0.2	1.3		
	August	08/01/97	8.3	9.24	0.94	1.0	6.8	32.0	114
		08/08/97	8.2	9.67	1.47	1.0	6.8		
		08/15/97	8.68	10.15	1.47	0.9	5.7		
		08/22/97	8.32	9.52	1.2	1.9	12.7		
	September	09/05/97	8.84	9.56	0.72	1.7	11.3	11.3	126
	November	11/21/97	10.82	14.52	3.7	2.8	18.7	33.4	159
		11/24/97	10.94	12.71	1.77	2.2	14.7		
	December	12/12/97	10.85	16.71	5.86	2.5	16.7	16.7	176
1998	January	01/07/98	10.72	16.42	5.7	2.5	16.7	52.0	228
		01/16/98	10.2	14.25	4.05	2.5	16.7		
		01/23/98	10.25	13.92	3.67	2.8	18.7		
	February	02/04/98	9.65	14.8	5.15	2.5	16.7	35.4	263
		02/19/98	9.15	12.84	3.69	2.8	18.7		
	March	03/06/98	9.29	11.75	2.46	1.0	6.6	25.3	288
		03/13/98	9.05	10.35	1.3	NP	0.0		
		03/27/98	9.51	11.25	1.74	2.8	18.7		
	June	06/04/98	9.8	15.31	5.51	NP	0.0	72.1	340
		06/12/98	9.6	14.55	4.95	2.5	16.7		
		06/19/98	10.4	12.6	2.2	2.5	16.7		
		06/30/98	9.65	11.15	1.5	2.8	18.7		
	July	07/09/98	9.9	11.75	1.85	3.0	20.0	20.0	360
1999	June	06/03/99	9.11	14.52	5.41	3.6	24.0	24.0	384
	July	07/12/99	9.19	11.35	2.16	2.2	14.7	59.4	444
		07/20/99	8.99	9.98	0.99	2.8	18.7		
		07/27/99	9.16	9.75	0.59	3.9	26.0		
	August	08/03/99	9.28	9.9	0.62	2.8	18.7	18.7	463
	September	09/01/99	9.65	10.41	0.76	3.0	20.0	32.9	495
		09/22/99	9.67	10.92	1.25	1.9	12.8		
	October	10/19/99	9.55	10.9	1.35	2.2	14.7	14.7	510
	December	12/09/99	9.98	11.38	1.4	2.0	13.3	13.3	523

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Table 7. Summary of Historical Quantities of LNAPL Recovered from Area No. 1 (Monitoring Well MW-1 and Recovery Trench RT-1), Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

	Month of Operation	Date of Product Removal	Depth to Product (ft)	Depth to Water (ft)	Product Thickness	Volume of Product Removed (gal)	Mass of Product Removed (lbs)	LNAPL Mass Summary	
								Monthly Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2001	April ⁽¹⁾	04/24/01	---	---	---	---	525.0	525.0	1,048
	October ⁽²⁾	10/03/01	---	---	---	7.3	48.7	48.7	1,097
	December	12/19/01	-	6.83	-	2.0	13.3	23.4	1,120
		12/27/01	6.75	6.77	0.02	1.5	10.0		
2002	January	01/03/02	7.01	7.03	0.02	2.0	13.3	43.4	1,164
		01/11/02	7.21	7.43	0.22	2.5	16.7		
		01/24/02	7.26	7.37	0.11	2.0	13.3		
	February ⁽²⁾	02/11/02	7.08	7.25	0.17	1.5	10.0	225.5	1,389
		02/22/02	-	-	-	32.3	215.5		
	March	03/07/02	6.88	7.00	0.12	1.5	10.0	10.0	1,399
	April	04/05/02	6.86	7.04	0.18	2.0	13.3	13.3	1,413
		04/23/02	6.33	6.35	0.02	---	---	---	
	May	---	---	---	---	---	---	---	
	June	06/06/02	5.58	6.22	0.64	2.0	13.3	13.3	1,426
	July	07/16/02	6.2	6.39	0.19	0.2	1.3	6.7	1,433
	August	08/16/02	5.65	5.90	0.25	1.0	6.7	6.7	1,439
	September	09/06/02	5.74	5.90	0.16	0.2	1.3	12.7	1,452
		09/19/02	6	6.95	0.954	1.7	11.3		
	October	10/18/02	6.05	6.06	0.01	0.6	3.7	3.7	1,456
		10/29/02	6.35	6.60	0.25	0.005	0.03		
	November	11/22/02	6.81	6.91	0.1	0.006	0.04	25.4	1,481
	December	12/04/02	7.1	7.15	0.05	0.4	2.7	2.9	1,484
		12/20/02	7.25	7.27	0.02	0.03	0.2		
2003	January	01/29/03	7.8	8.28	0.48	0.48	3.2	3.2	1487.3
	February	02/11/03	7.9	8.3	0.4	0.76	5.1	5.1	1492.4
	March	03/06/03	7.95	8.18	0.23	0.61	4.1	4.1	1496.5
	April	04/01/03	7.55	7.70	0.15	2.53	16.8	31.9	1528.4
		04/14/03	7.12	7.20	0.08	2.25	15.0		
	May	05/05/03	6.8	6.90	0.1	2.83	18.8	47.2	1575.6
		05/20/03	5.85	5.87	0.02	2.00	13.3		
		05/30/03		6.05		2.25	15.0		
	June	06/16/03	6.19	6.20	0.01	2.25	15.0	27.0	1602.7
		06/30/03	6.63	6.64	0.01	1.80	12.0		
	July	7/24/204	6.77	6.80	0.03	1.50	10.0	10.0	1612.7
	August	08/12/03	7.02	7.08	0.06	2.40	16.0	116.0	1728.7
		08/01/03	---	---	---	---	100.0		
	September	09/17/03	---	---	---	0.40	2.7	5.7	1734.3
		09/30/03	7.51	7.70	0.19	0.45	3.0		
	October	10/20/03	7.56	7.65	0.09	0.20	1.3	1.3	1735.7

Footnotes on Page 3.

Table 7. Summary of Historical Quantities of LNAPL Recovered from Area No. 1 (Monitoring Well MW-1 and Recovery Trench RT-1), Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

	Month of Operation	Date of Product Removal	Depth to Product (ft)	Depth to Water (ft)	Product Thickness	Volume of Product Removed (gal)	Mass of Product Removed (lbs)	LNAPL Mass Summary	
								Monthly Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2003 (continued)	November	11/12/03	6.31	6.41	0.1	0.15	1.0	1.3	1737.0
		11/26/03	6.65	6.68	0.03	0.05	0.3		
	December	12/19/03	6.68	6.69	0.01	0.05	0.3	0.3	1737.3
2004	January	01/09/04	7.15	7.16	0.01	0.03	0.2	0.2	1737.5
		01/30/04	7.53	7.54	0.01	0.00	0.0		
	February	02/13/04	7.77	7.78	0.01	0.00	0.0	0.0	1737.5
	March	03/10/04	6.15	6.16	0.01	0.00	0.0	0.0	1737.5
		03/22/04	6.79	6.80	0.01	0.00	0.0		
	April	04/02/04	NP	6.33	0.00	0.00	0.0	0.0	1737.5
	October	10/25/04	NP	7.51	0.00	0.00	0.0	0.0	1737.5
2007	January	01/03/07	NP	5.53	0.00	0.00	0.0	0.0	1737.5

Volumes of product removed are approximate.

--- Data not available.

(1) LNAPL recovered during April 2001 was removed with soil excavated during system installation.

(2) LNAPL recovered on October 3, 2001 and February 22, 2002 was removed via vacuum truck.

(3) LNAPL recovered during August 2003 was removed with soil excavated during system expansion.

gal Gallons.

NP No product.

lbs Pounds.

LNAPL Light Non-Aqueous Phase Liquid.

Table 8. Summary of Historical Quantities of LNAPL Recovered from Area No. 2 (Monitoring Well MW-2 and Recovery Trench RT-2), Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

								LNAPL Mass Summary	
						Volume of Product	Mass of Product	Monthly	Cumulative
	Month of	Date of	Depth to	Depth to	Product	Removed	Removed	Mass	Mass
	Operation	Product	Product	Water (ft)	Thickness	(gal)	(lbs)	Removed	Removed
		Removal	(ft)					(lbs)	(lbs)
1997	May	05/14/97	8.15	8.94	0.79	2	13.3	30.0	30
		05/21/97	8.69	10.15	1.46	1.5	10.0		
		05/29/97	8.77	10.25	1.48	1	6.7		
	June	06/05/97	8.6	9.98	1.38	1	6.7	24.0	54
		06/11/97	8.95	10.05	1.10	1.7	11.3		
		06/20/97	8.48	9.73	1.25	0.54	3.6		
		06/27/97	7.45	8.3	0.85	0.36	2.4		
	July	07/03/97	8.42	9.98	1.56	0.57	3.8	8.9	63
		07/11/97	7.88	8.36	0.48	0.17	1.1		
		07/18/97	8.29	8.99	0.70	0.17	1.1		
		07/25/97	8.45	9.33	0.88	0.42	2.8		
	August	08/01/97	8.27	9.02	0.75	0.28	1.9	18.1	81
		08/08/97	8.01	8.37	0.36	0.32	2.1		
		08/15/97	8.56	9.39	0.83	0.42	2.8		
		08/22/97	8.6	9.31	0.71	1.7	11.3		
	September	09/05/97	8.57	9.2	0.63	1.7	11.3	11.3	92
	November	11/21/97	9.85	10.65	0.80	1.7	11.3	20.7	113
		11/24/97	10.05	10.32	0.27	1.4	9.3		
	December	12/12/97	10.1	10.22	0.12	1.4	9.3	9.3	122
1998	January	01/07/98	8.91	9.35	0.44	1.4	9.3	33.4	156
		01/16/98	8.75	9.05	0.30	1.4	9.3		
		01/23/98	8.83	9.21	0.38	2.2	14.7		
	February	02/04/98	8.61	9.03	0.42	2.5	16.7	33.4	189
		02/19/98	8.15	8.45	0.30	2.5	16.7		
	March	03/06/98	8.43	8.64	0.21	1.7	11.3	30.0	219
		03/27/98	8.6	8.85	0.25	2.8	18.7		
	June	06/19/98	9.55	9.7	0.15	2.2	14.7	33.4	253
		06/30/98	8.55	8.65	0.10	2.8	18.7		
	July	07/09/98	8.63	8.67	0.04	2.8	18.7	18.7	271
1999	June	06/03/99	8.15	8.9	0.75	2.8	18.7	18.7	290
	July	07/12/99	8.74	9.25	0.51	1.9	12.7	62.0	352
		07/20/99	8.53	9.38	0.85	3.3	22.0		
		07/27/99	8.1	8.41	0.31	4.1	27.4		
	August	08/03/99	8.45	8.68	0.23	3.6	24.0	24.0	376
	September	09/01/99	9.04	9.23	0.19	3	20.0	40.0	416
		09/22/99	9.14	9.37	0.23	3	20.0		
	October	10/19/99	8.97	9.38	0.41	3	20.0	20.0	436
	December	12/09/99	9.28	9.57	0.29	2	13.3	13.3	449
	2001	April ⁽¹⁾	04/18/01	---	---	---	---	410.0	410.0
October ⁽²⁾		10/03/01	---	---	---	8.6	57.4	57.4	917
December		12/19/01	NP	5.95	0.0	---	---	---	---
		12/27/01	5.85	5.93	0.08	---	---	---	---

Footnotes on Page 3.

Table 8. Summary of Historical Quantities of LNAPL Recovered from Area No. 2 (Monitoring Well MW-2 and Recovery Trench RT-2), Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Month of Operation	Date of Product Removal	Depth to Product (ft)	Depth to Water (ft)	Product Thickness	Volume of Product Removed (gal)	Mass of Product Removed (lbs)	LNAPL Mass Summary	
							Monthly Mass Removed (lbs)	Cumulative Mass Removed (lbs)
2002	January	01/03/02	6.02	6.13	0.11	---	---	---
		01/11/02	6.2	6.37	0.17	---	---	---
		01/24/02	6.2	6.33	0.13	---	---	---
	February	02/11/02	6.11	6.13	0.02	---	---	---
	February ⁽²⁾	02/22/02	---	---	---	21.5	143.4	143.4
	March	03/07/02	6.1	6.16	0.06	---	---	---
	April	04/05/02	6.01	6.10	0.09	---	---	---
		04/23/02	5.44	5.61	0.17	1.0	6.7	1,067
	May	---	---	---	---	---	---	---
	June	06/06/02	-	4.81	0	---	---	1,067
	July	07/16/02	6.16	6.19	0.03	0.05	0.3	1,067
	August	08/16/02	4.81	4.85	0.04	0.0	0.0	1,067
	September	09/06/02	5.19	5.25	0.06	0.0	0.0	1,067
		09/19/02	NP	5.48	0.0	0.0	0.0	1,067
	October	10/18/02	5.5	5.52	0.02	0.1	0.7	1,068
		10/29/02	5.59	5.60	0.01	0.01	0.1	1,068
	November	11/22/02	5.87	5.88	0.01	0.001	0.01	1,068
	December	12/04/02	6.08	6.12	0.04	0.00	0.01	1,068
		12/20/02	6.12	6.20	0.08	0.013	0.1	1,068
2003	January	01/29/03	6.7	6.78	0.08	0.001	0.01	1068.24
	February	02/11/03	6.8	6.97	0.17	0.300	2.0	1070.24
	March	03/06/03	6.95	7.05	0.1	0.003	0.02	1070.26
	April	04/01/03	6.45	6.53	0.08	0.002	0.015	1070.28
		04/14/03	6.05	6.15	0.1	0.00	0.0	1070.28
	May	05/05/03	4.9	5.00	0.1	0.00	0.0	1070.28
		05/20/03	4.83	4.92	0.09	0.00	0.0	1070.28
		05/30/03	5.54	5.55	0.01	0.00	0.0	1070.28
	June	06/16/03	5.5	5.51	0.01	0.00	0.0	1070.28
		06/30/03	5.82	5.83	0.01	0.00	0.0	1070.28
	July	07/24/03	5.98	5.99	0.01	0.00	0.0	1070.28
	August	08/12/03	6.18	6.19	0.01	0.00	0.0	1070.28
	September	09/30/03	6.47	6.48	0.01	0.00	0.0	1070.28
	October	10/20/03	6.5	6.52	0.02	0.00	0.0	1070.28
	November	11/12/03	5.69	5.70	0.01	0.00	0.0	1070.28
		11/26/03	5.79	5.80	0.01	0.00	0.0	1070.28
	December	12/19/03	5.83	5.84	0.01	0.00	0.0	1070.28
2004	January	01/09/04	NP	6.17	0.00	0.00	0.0	1070.28
		01/30/04	NP	6.38	0.00	0.00	0.0	1070.28
	February	02/13/04	6.59	6.60	0.01	0.00	0.0	1070.28
	March	03/10/04	NP	5.39	0.00	0.00	0.0	1070.28
		03/22/04	NP	5.75	0.00	0.00	0.0	1070.28
	April	04/02/04	NP	5.33	0.00	0.00	0.0	1070.28
2007	January	01/03/07	NP	5.17	0.00	0.00	0.0	1070.28
		01/03/07	NP	5.17	0.00	0.00	0.0	1070.28

Footnotes on Page 3.

Table 8. Summary of Historical Quantities of LNAPL Recovered from Area No. 2 (Monitoring Well MW-2 and Recovery Trench RT-2), Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Volumes of product removed are approximate.

-- Data not available.

(1) LNAPL recovered during April was removed with soil excavated during system installation.

(2) LNAPL recovered on October 3, 2001 and February 22, 2002 was removed via vacuum truck.

gal Gallons.

NP No product.

lbs Pounds.

LNAPL Light Non-Aqueous Phase Liquid.

Table 9. VELR System Mass Removal Estimates Area 1 and 2, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Calculation of Monthly Vapor Mass Removed									
	Month of Operation	Sample Date	Concentration (ppmv)	Average Concentration (ppmv)	Effluent Air Flow Rate (ft/min)	Estimated Removal Rate (lbs/hr)	Estimated Days of Operation	Mass Removed (lbs)	Cum. Mass Removed (lbs)
Area 1 System									
2001	December	12/19/01	3.0	1.7	6,000	0.0032	12	0.9	0.9
		12/20/01	1.7						
		12/21/01	0.8						
		12/27/01	1.1						
2002	January	01/03/02	1.2	1.3	6,000	0.0024	29	1.7	2.6
		01/11/02	1.3						
	February	02/11/02	0.56	0.56	6,000	0.0011	27	0.7	3.3
	March	03/07/02	1.5	1.5	6,000	0.0029	29	2.0	5.4
	April	04/05/02	0.77	0.77	6,000	0.0015	29	1.0	6.4
	May	---	0.77	0.77	6,000	0.0015	29	1.1	7.5
	June	---	0.77	0.77	6,000	0.0015	29	1.0	8.5
	July	---	15.0	15.0	300	0.0014	29	1.0	9.5
	August	---	15.0	15.0	300	0.0014	29.5	1.0	10.5
	September	09/19/02	15.0	15.0	300	0.0014	29.5	1.0	11.5
	October	---	2.5	2.5	1,025	0.0008	28.5	0.6	12.1
	November	11/22/02	2.5	2.5	887	(1) 0.0007	29.5	0.5	12.6
2003	December	---	2.5	2.5	750	0.0006	29.5	0.4	13.0
	January	---	1.7	1.7	6,000	0.0033	29	2.3	15.3
	February	---	1.7	1.7	6,000	0.0033	27	2.1	17.4
	March	---	1.7	1.7	6,000	0.0033	29	2.3	19.7
	April	04/14/03	1.7	1.7	6,000	0.0033	29	2.2	22.0
	May	05/30/03	0.7	0.7	1185.0	0.0003	29	0.2	22.2
	June	---	0.7	0.7	150.0	0.00003	29	0.02	22.2
	July	---	0.7	0.7	150.0	0.00003	29	0.02	22.2
	August	08/12/03	0.8	0.8	1,100	0.0003	29	0.2	22.4
	September	---	0.8	0.8	1,100	0.0003	29	0.2	22.6
	October	---	0.8	0.8	1,100	0.0003	29	0.2	22.8

Footnotes on Page 3.

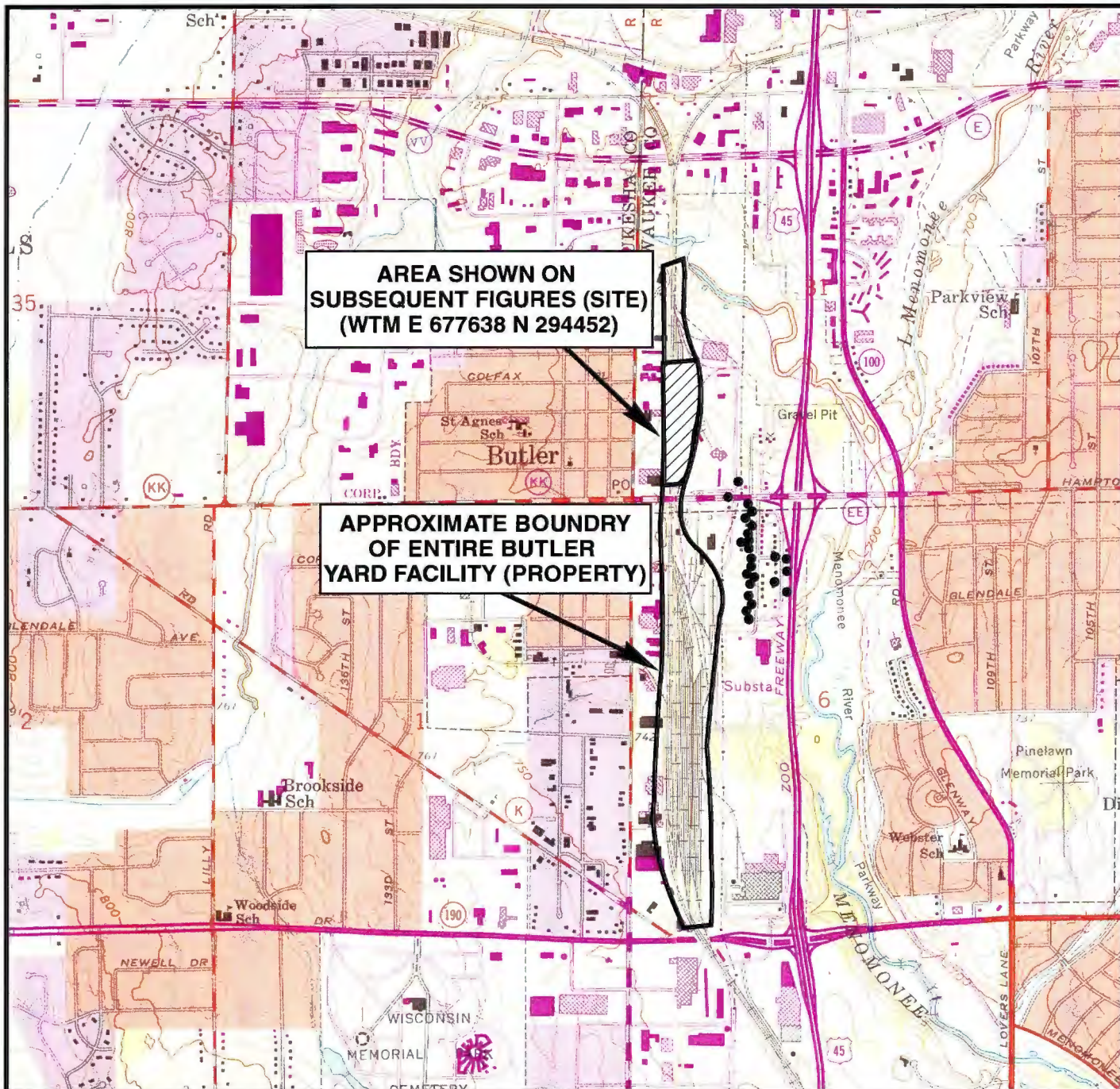
Table 9. VELR System Mass Removal Estimates Area 1 and 2, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

Calculation of Monthly Vapor Mass Removed								
Month of Operation	Sample Date	Concentration (ppmv)	Average Concentration (ppmv)	Effluent Air Flow Rate (ft/min)	Estimated Removal Rate (lbs/hr)	Estimated Days of Operation	Mass Removed (lbs)	Cum. Mass Removed (lbs)
2003 (continued)								
November	---	0.8	0.8	1,100	0.0003	29	0.2	23.0
December	12/19/03	<.70	0.8	2,500	0.0006	29	0.5	23.4
January	---	<.70	0.8	2,500	0.0006	29	0.5	23.9
Area 2 System								
2001	December	12/19/01	3.3	6,000	0.0071	12	2.1	2.1
		12/20/01	3.5					
		12/21/01	4.5					
		12/27/01	3.4					
2002	January	01/03/02	0.8	6,000	0.0050	29	3.5	5.6
		01/11/02	4.4					
2002	February	02/11/02	3.0	6,000	0.0058	27	3.7	9.3
	March	03/07/02	2.5	6,000	0.0048	29	3.4	12.7
	April	04/05/02	3.2	6,000	0.0062	29	4.2	17.0
	May	---	3.2	6,000	0.0062	29	4.4	21.3
	June	---	3.2	---	0.0000	6	0.0	21.3
	July	---	14.0	---	0.0000	0	0.0	21.3
	August	---	14.0	2,500	0.0113	24	6.4	27.8
	September	09/19/02	14.0	2,650	0.0119	29	8.2	35.9
	October	---	2.0	1,525	0.0010	29	0.7	36.6
	November	11/22/02	2.0	625 ⁽¹⁾	0.0004	29	0.3	36.9
2003	December	---	2.0	1,100	0.0007	29.5	0.5	37.4
	January	---	1.5	850	0.0004	29	0.3	37.7
	February	---	1.5	6,000	0.0029	27	1.8	39.5
	March	---	1.5	6,000	0.0029	29	2.0	41.6
	April	04/14/03	1.5	6,000	0.0026	29	1.8	43.4
	May	05/30/03	1.3	1,600	0.0007	29	0.5	43.9
	June	---	1.3	2,800	0.0013	87	2.6	46.5

Footnotes on Page 3.

Table 9. VELR System Mass Removal Estimates Area 1 and 2, Union Pacific Butler Yard Facility, Milwaukee, Wisconsin.

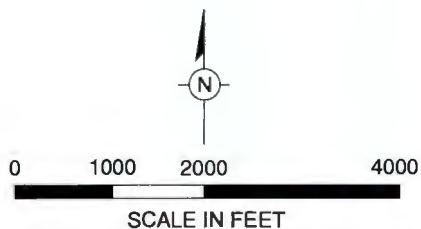
1	Data not available. Average flow of the previous and processeding months.
--	Data not available.
Cum	Cumulative.
ft/min	Feet per minute.
lbs	Pounds.
lbs/hr	Pounds per hour.
ppmv	Parts per million by volume.



SOURCE: USGS 7.5 Minute Topographic Map, WAUWATOSA, WISCONSIN Quadrangle, 1976



• PRIVATE WELL LOCATIONS

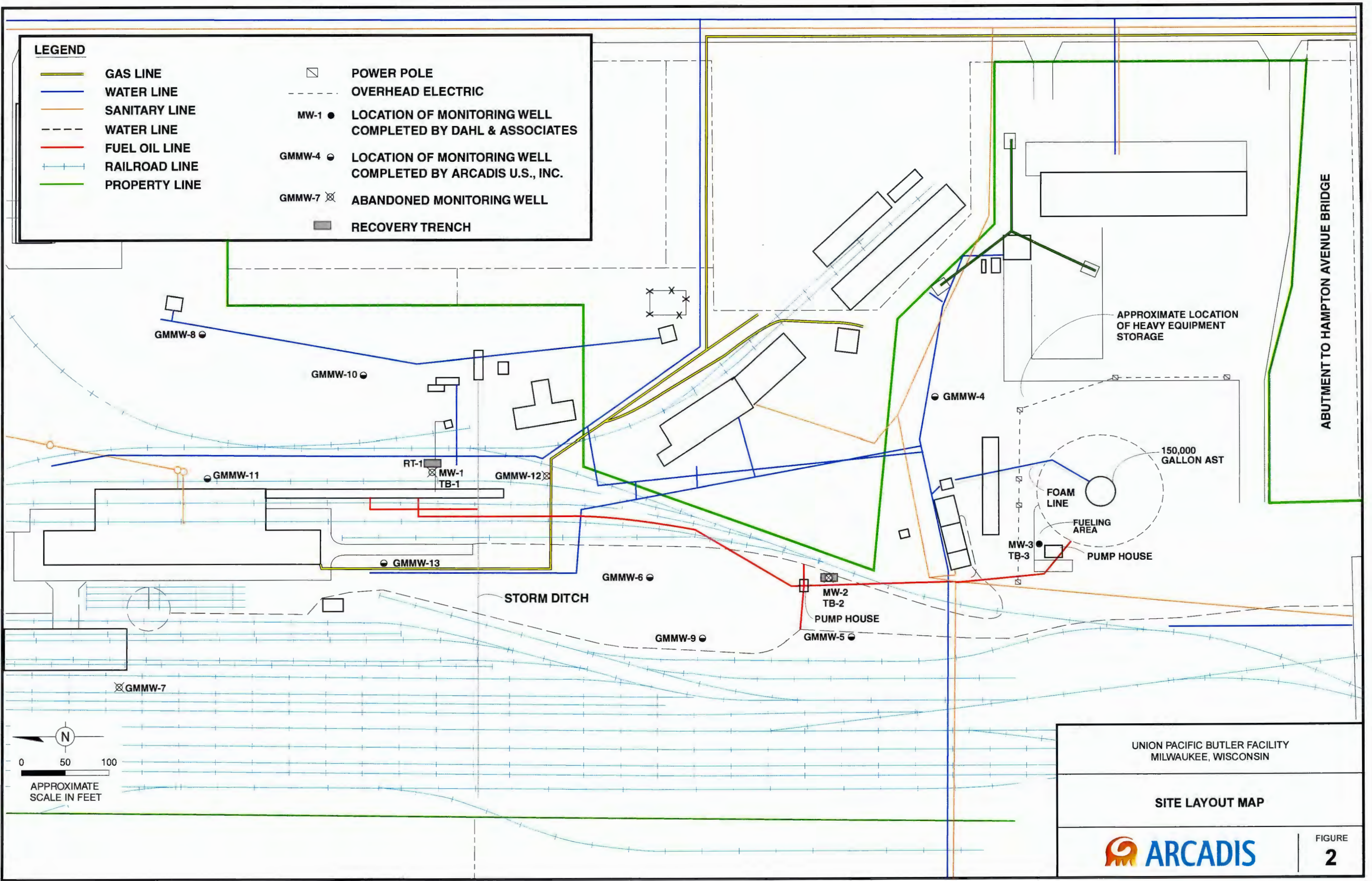


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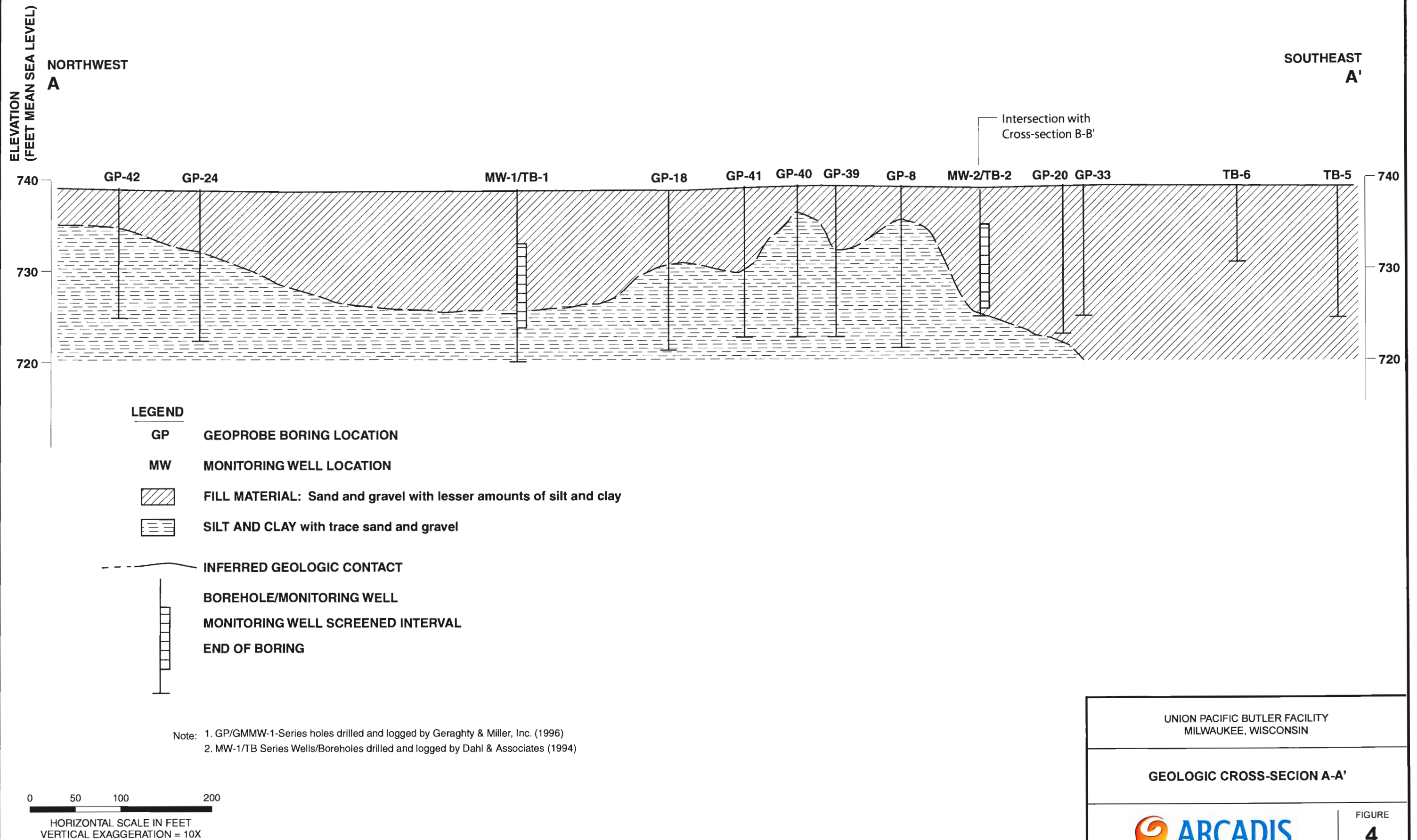
PROPERTY AND SITE LOCATION MAP



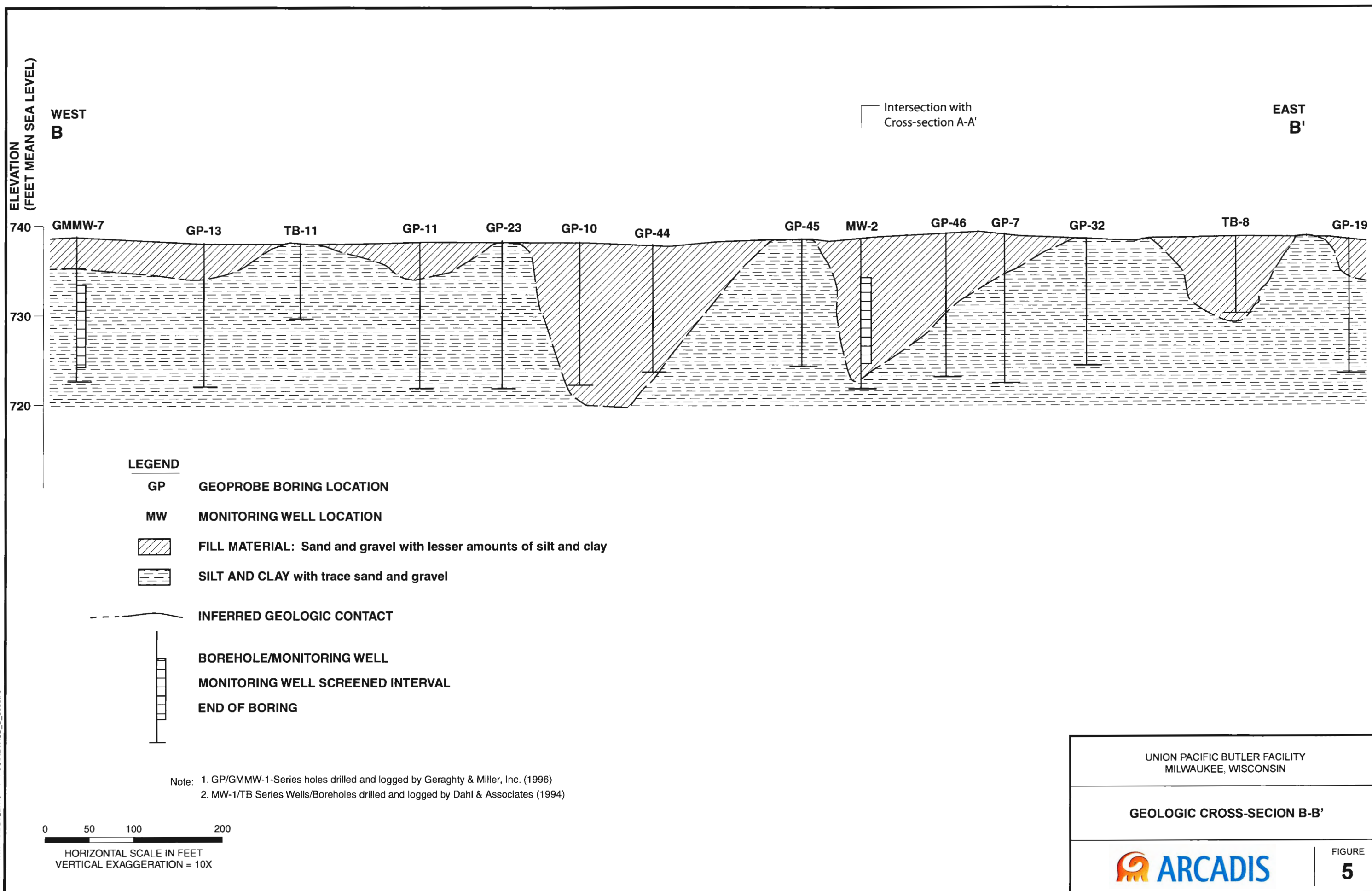
FIGURE
1

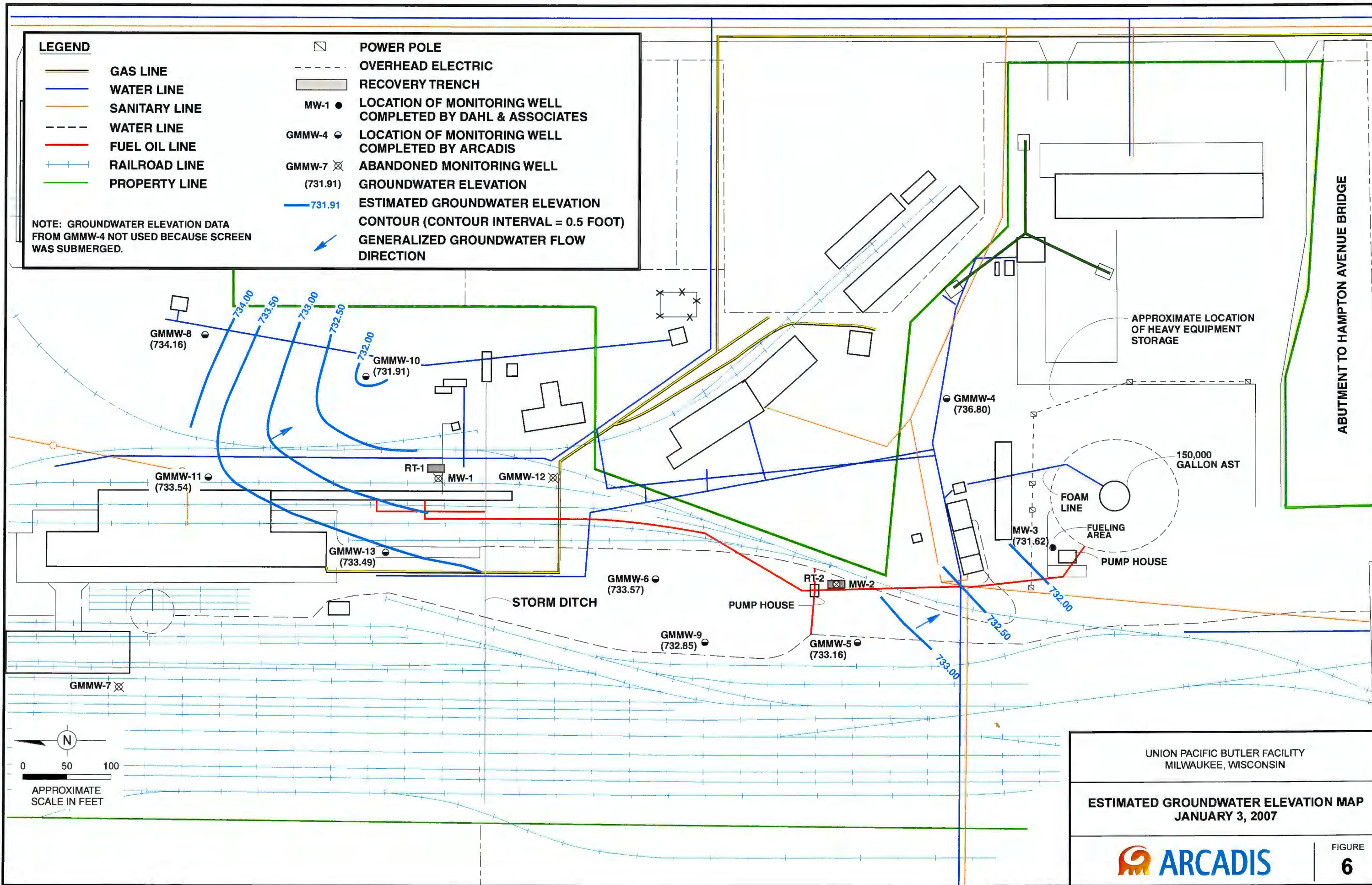


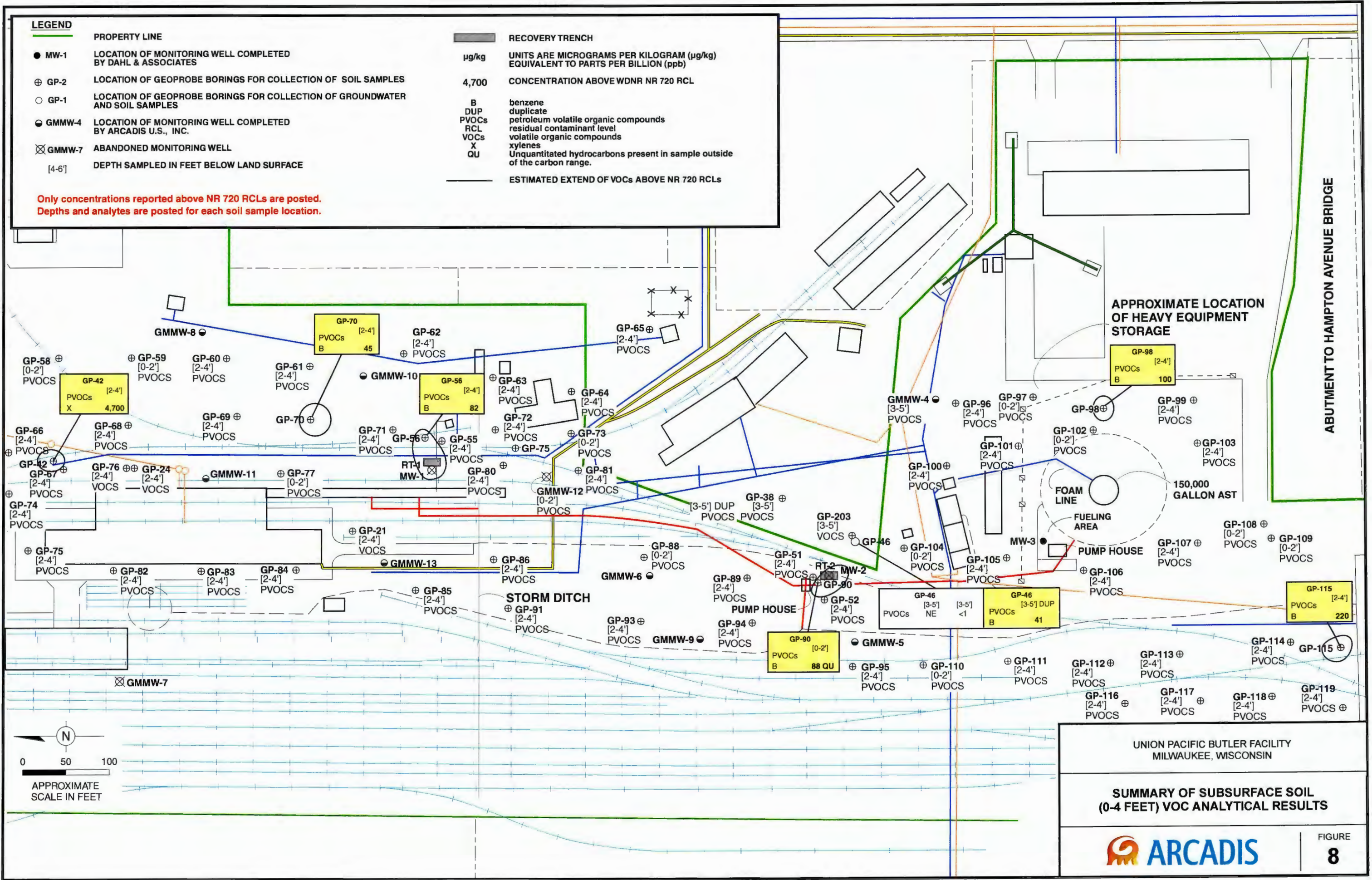
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UPACRRW1145BUTLERGRAPHICSREVXSB_B_0305.AI





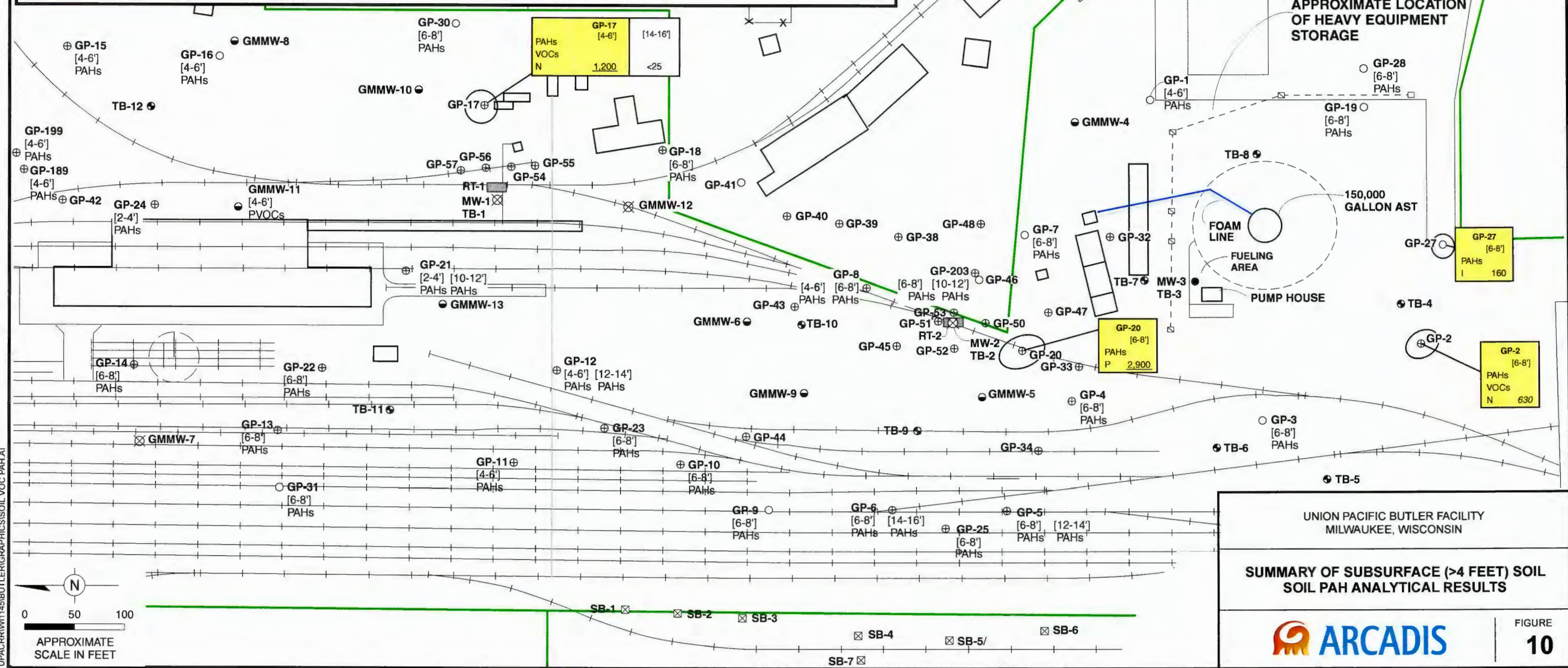


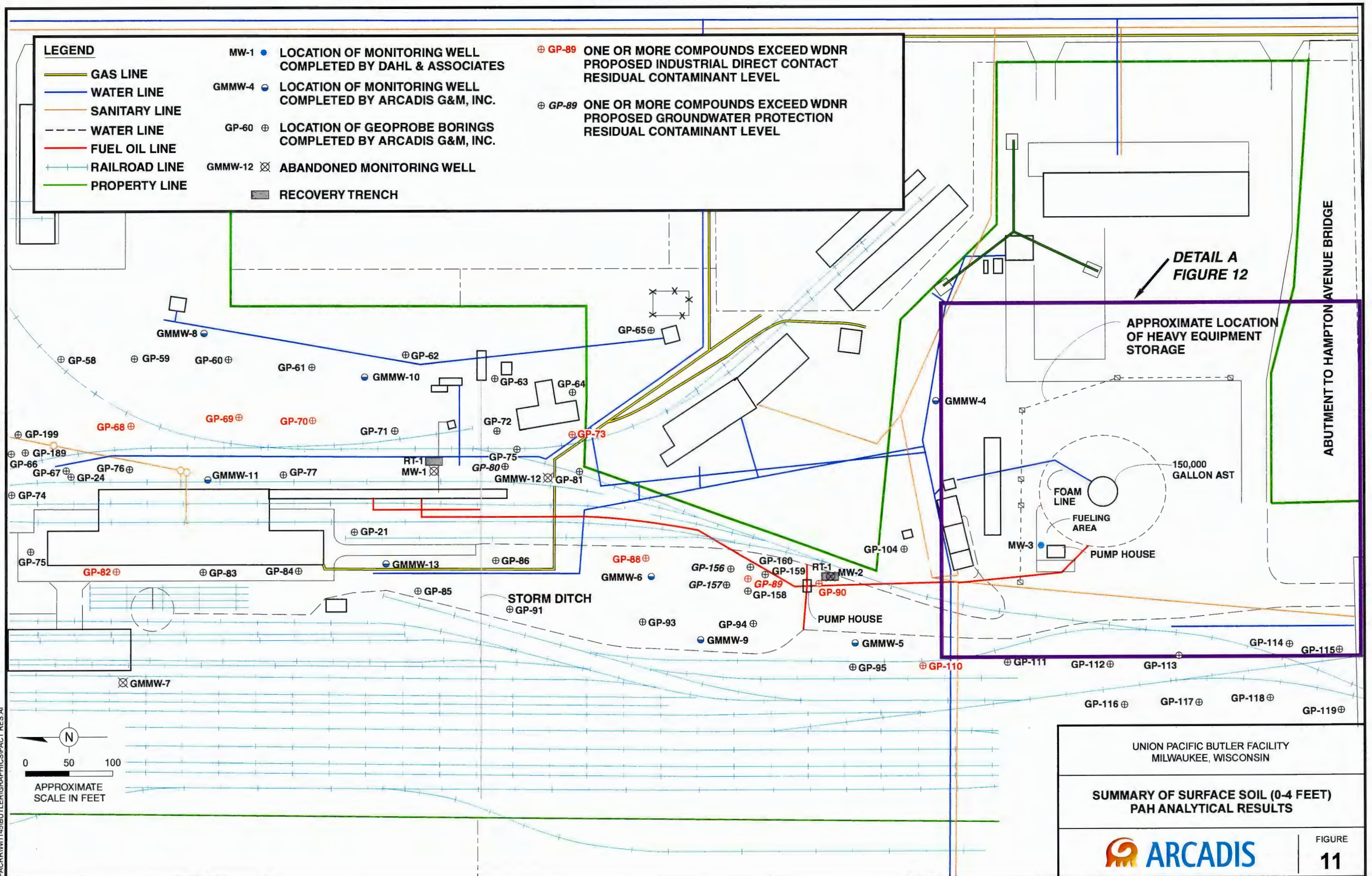
LEGEND

- MW-1 LOCATION OF MONITORING WELL COMPLETED BY DAHL & ASSOCIATES
- ⊕ TB-4 LOCATION OF SOIL BORING COMPLETED BY DAHL & ASSOCIATES
- ⊕ GP-2 LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF SOIL SAMPLES
- GP-1 LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF GROUNDWATER AND SOIL SAMPLES
- GMMW-4 LOCATION OF MONITORING WELL COMPLETED BY ARCADIS U.S., INC.
- ⊗ SB-1 SOIL BORING LOCATION FOR COLLECTION OF SOIL SAMPLES
- ⊗ GMMW-7 ABANDONED MONITORING WELL
- [4-6'] DEPTH SAMPLED IN FEET BELOW LAND SURFACE
- * SOIL SAMPLES ANALYZED USING AN ON-SITE GAS CHROMATOGRAPH

- RECOVERY TRENCH
- μg/kg UNITS ARE MICROGRAMS PER KILOGRAM (μg/kg) EQUIVALENT TO PARTS PER BILLION (ppb)
- 4,700 ABOVE WDNR NR 720 RCL
- 4,700 CONCENTRATION ABOVE PROPOSED GROUNDWATER RCL
- BA benzo(a)anthracene
- BP benzo(a)pyrene
- I indeno(1,2,3-cd)pyrene
- N naphthalene
- P phenanthrene
- PAHs polycyclic aromatic hydrocarbons
- RCLs residual contaminant levels
- VOCs volatile organic compounds
- ESTIMATED EXTENT OF PAHs ABOVE RCLs

Only concentrations reported above proposed PAH industrial direct contact or groundwater protection RCLs are posted and highlighted yellow. Depths and analytes are posted for each soil sample location.



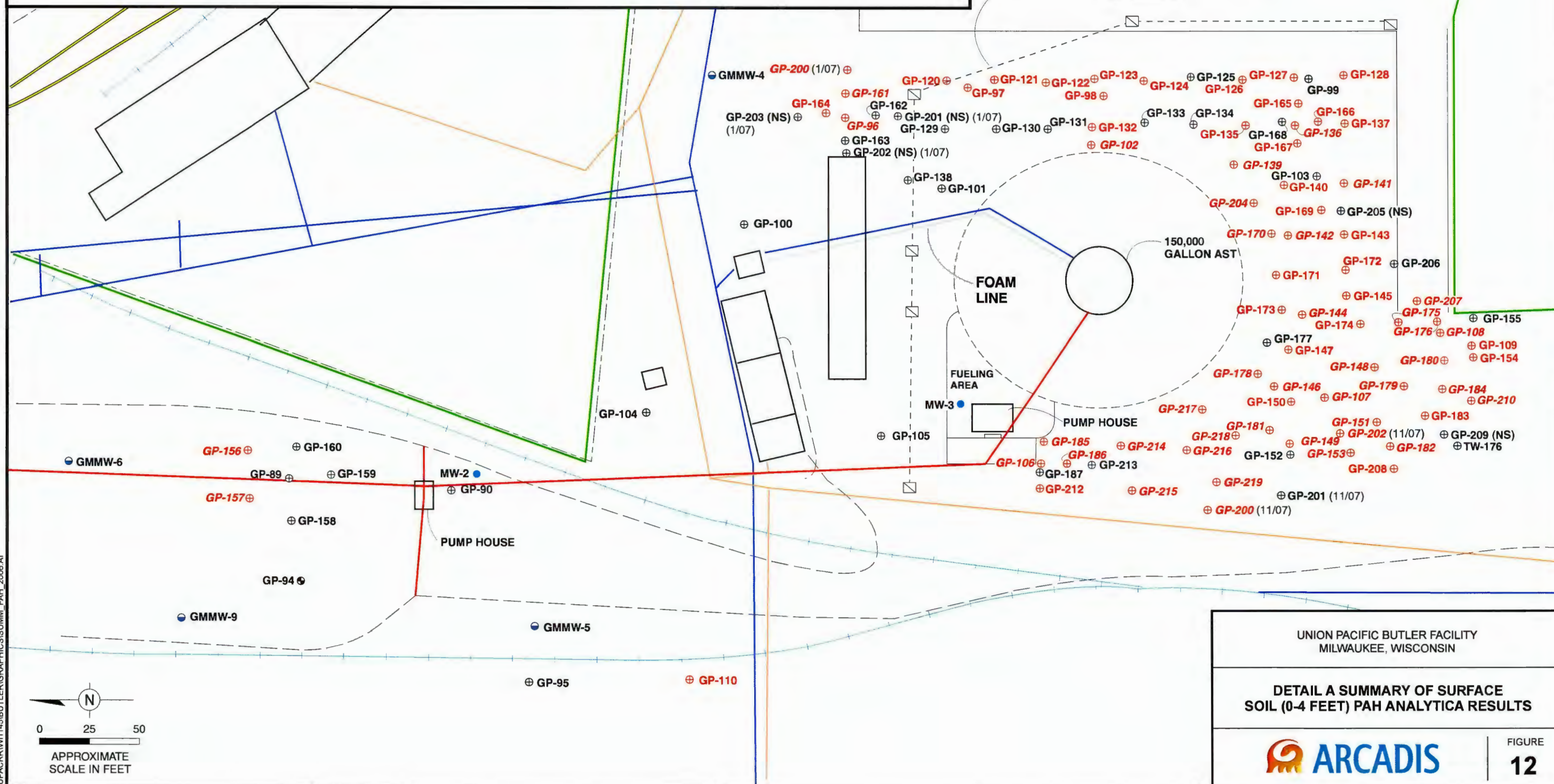


LEGEND

GAS LINE
 WATER LINE
 SANITARY LINE
 --- WATER LINE
 FUEL OIL LINE
 RAILROAD LINE
 PROPERTY LINE

MW-1 ● LOCATION OF MONITORING WELL COMPLETED BY DAHL & ASSOCIATES
 GMMW-4 ● LOCATION OF MONITORING WELL COMPLETED BY ARCADIS G&M, INC.
 GP-60 ⊕ LOCATION OF GEOPROBE BORINGS COMPLETED BY ARCADIS G&M, INC.
 GMMW-12 ⊗ ABANDONED MONITORING WELL
 RECOVERY TRENCH

⊕ GP-89 ONE OR MORE COMPOUNDS EXCEED WDNR PROPOSED INDUSTRIAL DIRECT CONTACT RESIDUAL CONTAMINANT LEVEL
 ⊕ GP-89 ONE OR MORE COMPOUNDS EXCEED WDNR PROPOSED GROUNDWATER PROTECTION RESIDUAL CONTAMINANT LEVEL
 NS NOT SAMPLED
 1/07 MONTH AND YEAR SAMPLED



UNION PACIFIC BUTLER FACILITY
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DETAIL A SUMMARY OF SURFACE
 SOIL (0-4 FEET) PAH ANALYTICA RESULTS

FIGURE
 12

LEGEND

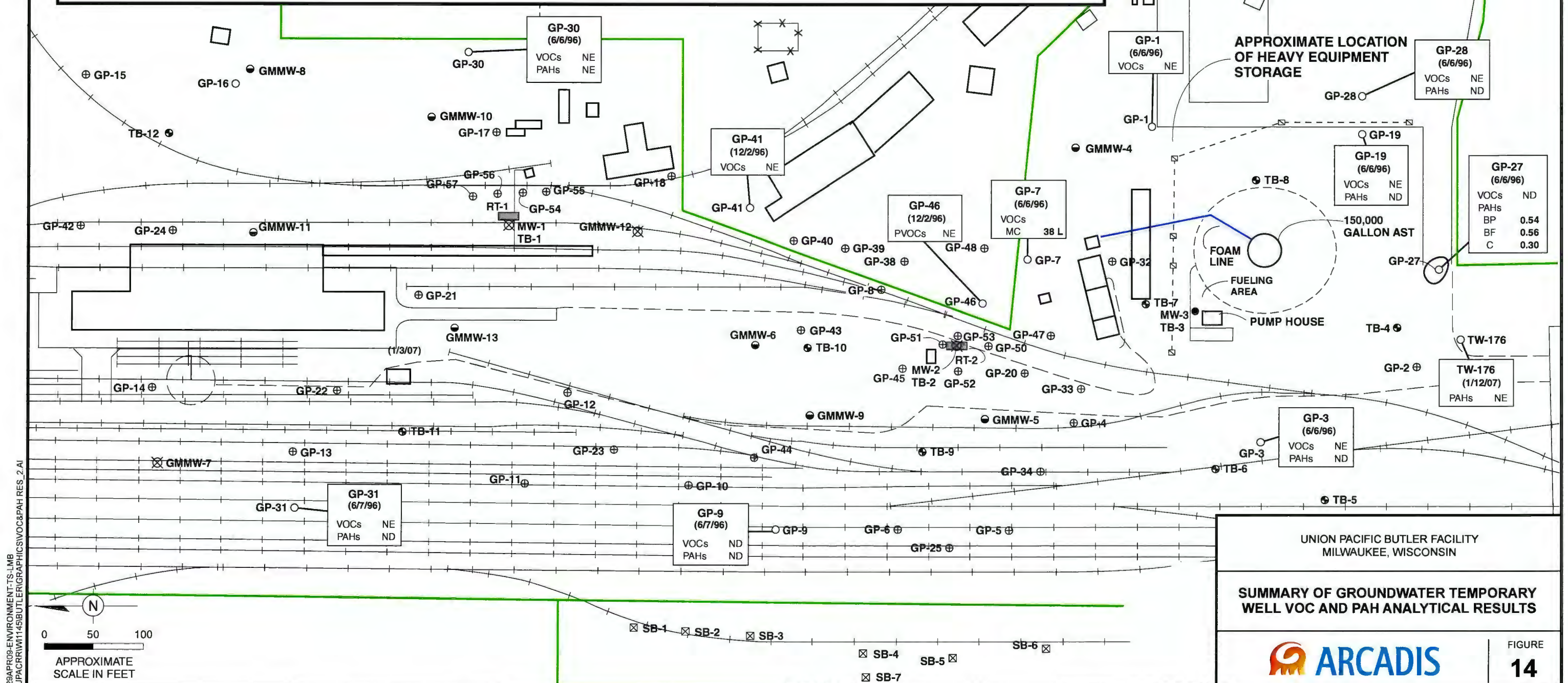
- PROPERTY LINE
- MW-1 ● LOCATION OF MONITORING WELL COMPLETED BY DAHL & ASSOCIATES
- TB-4 ● LOCATION OF SOIL BORING COMPLETED BY DAHL & ASSOCIATES
- GP-2 ⊕ LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF SOIL SAMPLES
- GP-1 ○ LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF GROUNDWATER AND SOIL SAMPLES
- GMMW-4 ● LOCATION OF MONITORING WELL COMPLETED BY GERAGHTY & MILLER, INC.
- SB-1 ⊗ SOIL BORING LOCATION FOR COLLECTION OF SOIL SAMPLES
- GMMW-7 ⊗ ABANDONED MONITORING WELL
- RECOVERY TRENCH

NOTES: Concentrations are presented in micrograms per liter (mg/L)

Methylene chloride (GP-7) is a common laboratory contaminant and not a contaminant of concern for this Site.

- 0.54 CONCENTRATION DETECTED AT A CONCENTRATION ABOVE NR 140 ENFORCEMENT STANDARD (ES)
- PVOCs petroleum volatile organic compounds
- PAHs polycyclic aromatic hydrocarbons
- VOCs volatile organic compounds
- BP benzo(a)pyrene
- BF benzo(b)fluoranthene
- C chrysene
- MC Methylene Chloride
- L Laboratory contaminant
- ND Not detected above laboratory limits of detection.
- NE Concentrations detected, but are below NR 140 regulatory standards.
- ESTIMATED EXTENT OF PAH CONCENTRATIONS ABOVE NR 140 PAL OR ES.

Only concentrations reported above NR 140 ES or PAL are shown.



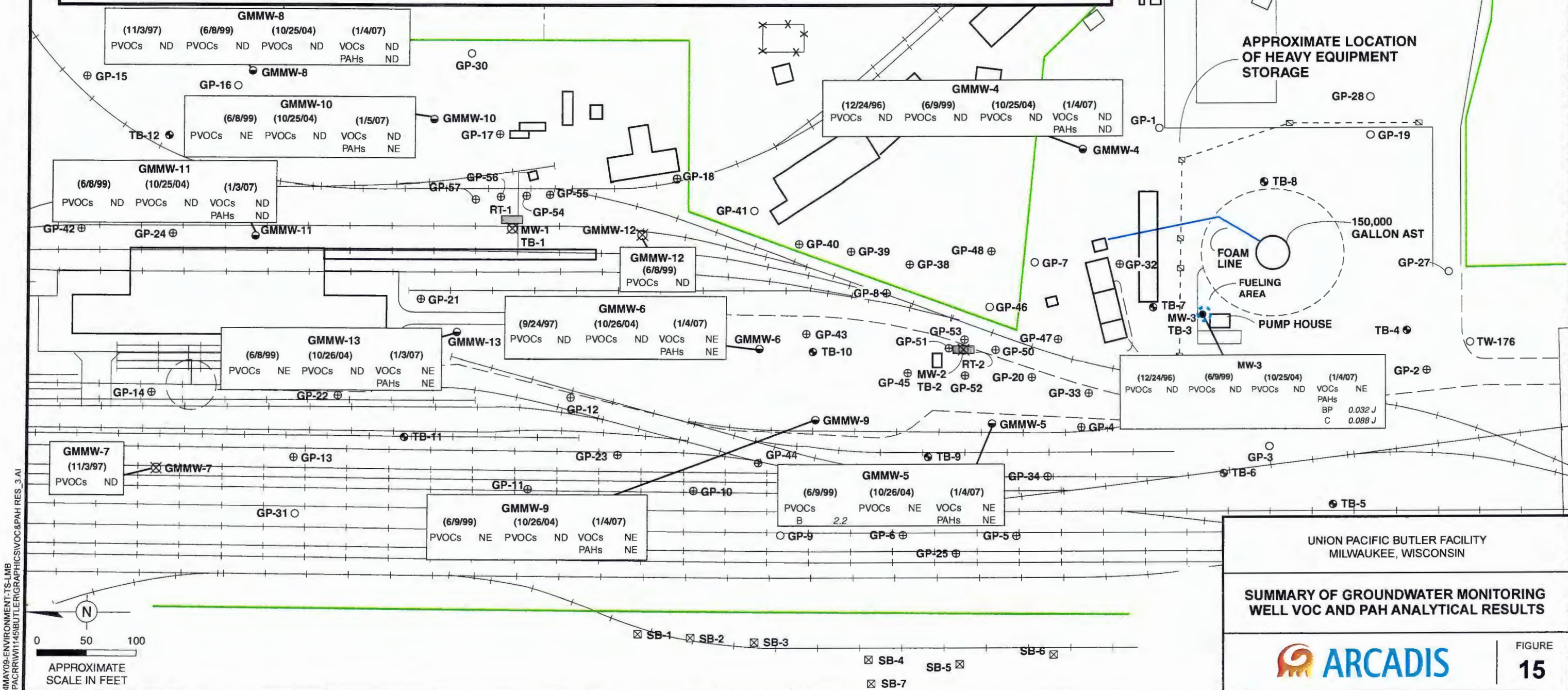
LEGEND

- PROPERTY LINE
- MW-1 ● LOCATION OF MONITORING WELL COMPLETED BY DAHL & ASSOCIATES
- TB-4 ● LOCATION OF SOIL BORING COMPLETED BY DAHL & ASSOCIATES
- GP-2 ⊕ LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF SOIL SAMPLES
- GP-1 ○ LOCATION OF GEOPROBE BORINGS FOR COLLECTION OF GROUNDWATER AND SOIL SAMPLES
- GMMW-4 ● LOCATION OF MONITORING WELL COMPLETED BY GERAGHTY & MILLER, INC.
- SB-1 ⊠ SOIL BORING LOCATION FOR COLLECTION OF SOIL SAMPLES
- GMMW-7 ⊠ ABANDONED MONITORING WELL
- RECOVERY TRENCH

NOTES: Concentrations are presented in micrograms per liter (mg/L)

- 0.54 CONCENTRATION DETECTED AT A CONCENTRATION ABOVE NR 140 ENFORCEMENT STANDARD (ES)
- 0.64 CONCENTRATIONS DETECTED AT A CONCENTRATION ABOVE NR 140 PREVENTIVE ACTION LIMIT (PAL)
- ESTIMATED EXTENT OF GROUNDWATER IMPACTS ABOVE NR 140 PAL.
- PVOCs petroleum volatile organic compounds
- PAHs polycyclic aromatic hydrocarbons
- VOCs volatile organic compounds
- B benzene
- BP benzo(a)pyrene
- C chrysene
- J estimated
- L laboratory contaminant
- ND Not detected above laboratory limits of detection.
- NE Concentrations detected, but are below NR 140 regulatory standards.

Only concentrations reported above NR 140 PAL are shown.



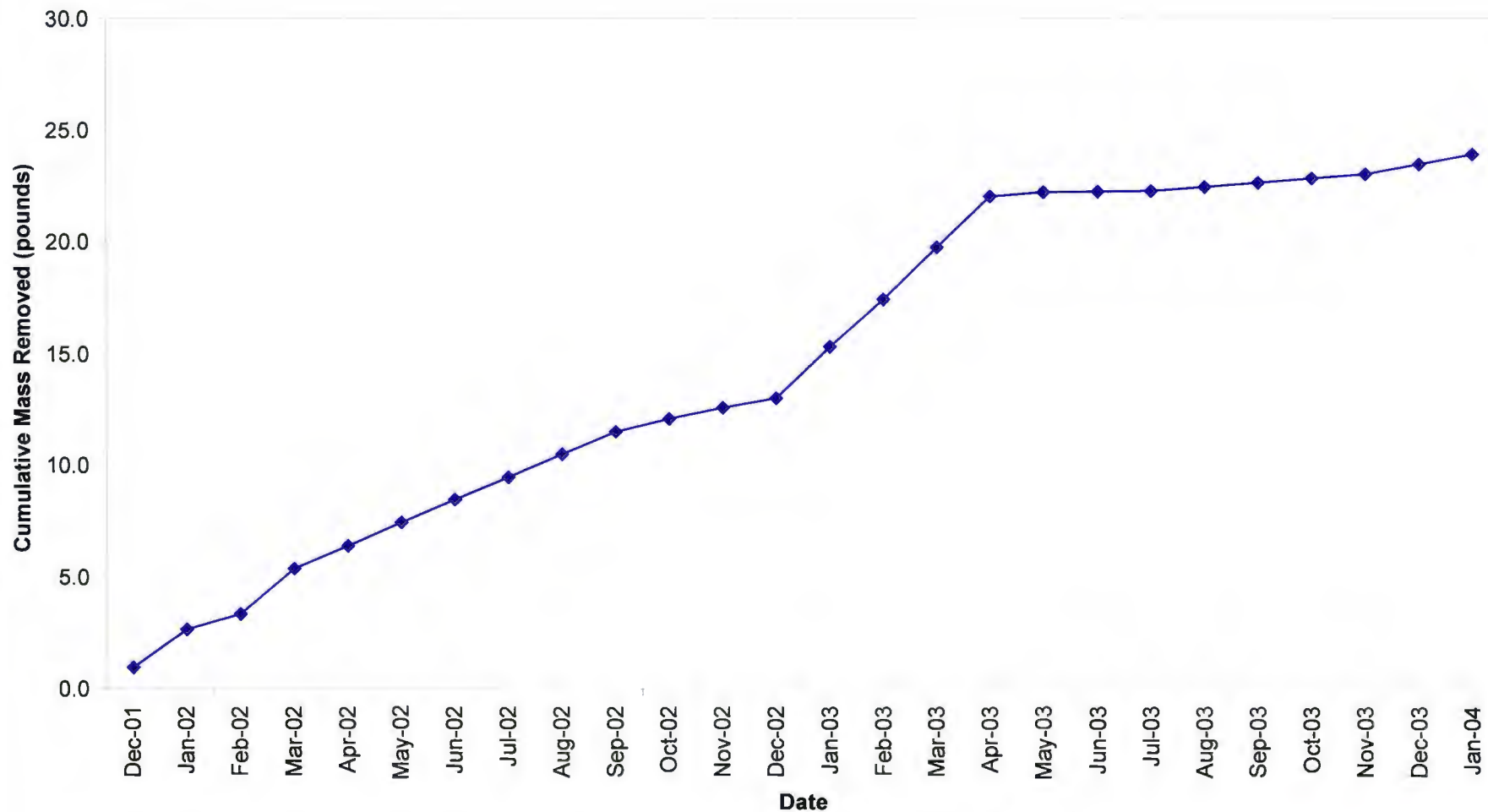
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MILWAUKEE, WISCONSIN

SUMMARY OF GROUNDWATER MONITORING
WELL VOC AND PAH ANALYTICAL RESULTS



FIGURE

15

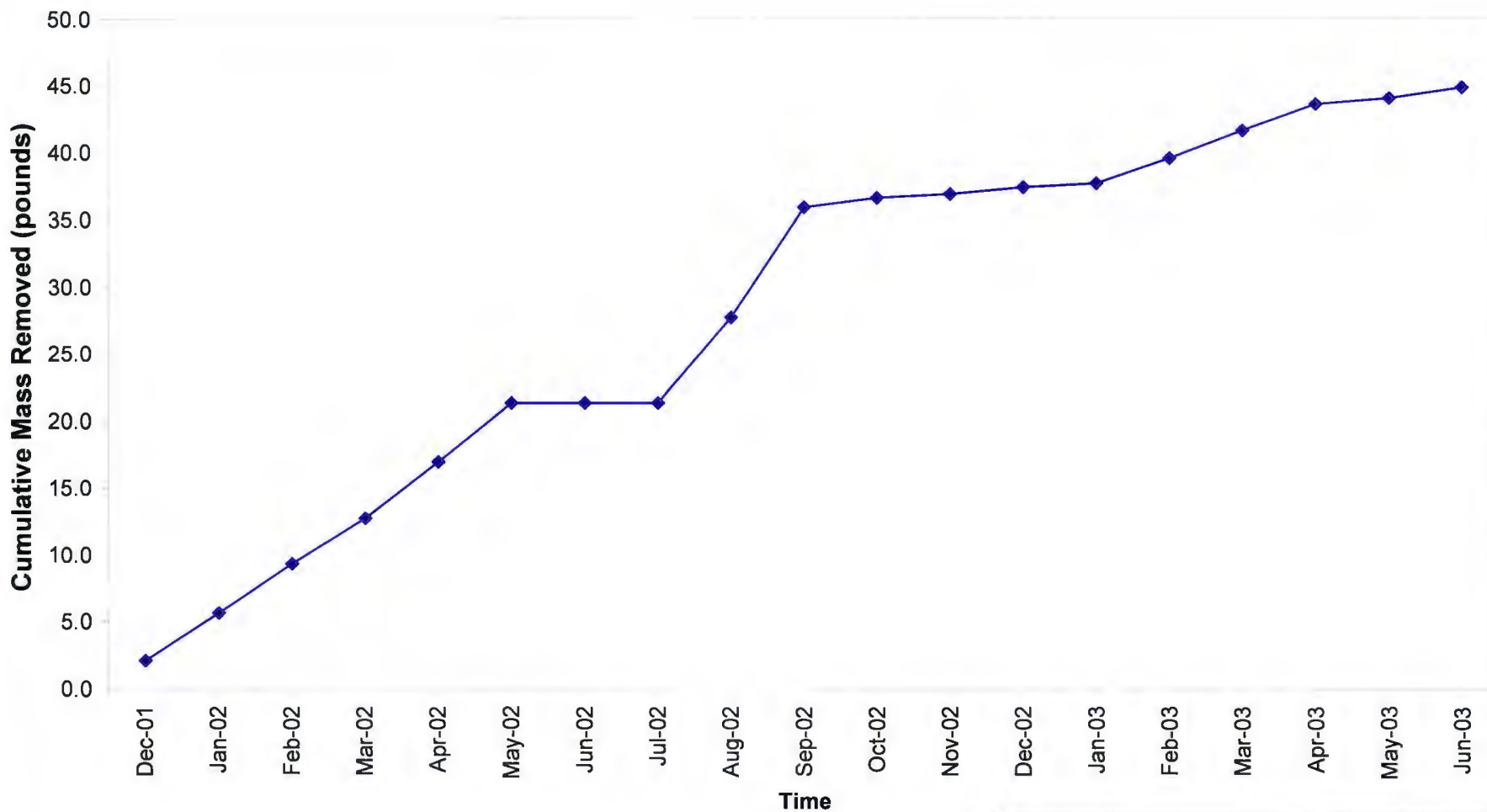


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**CUMULATIVE VAPOR PHASE MASS REMOVED
 VERSUS TIME AREA NO. 1**



FIGURE
16

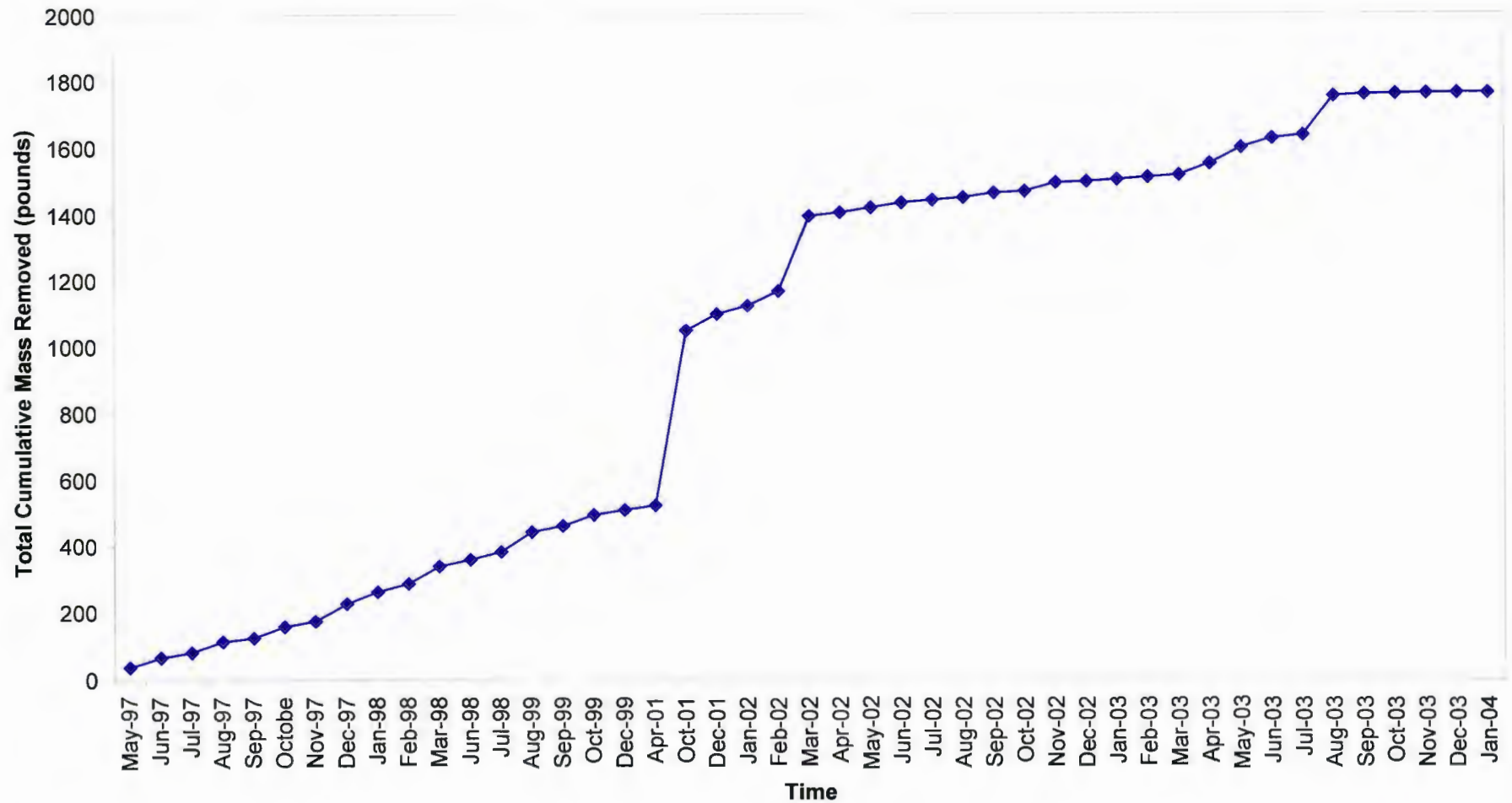


UNION PACIFIC BUTLER FACILITY
MILWAUKEE, WISCONSIN

CUMULATIVE VAPOR PHASE MASS REMOVED
VERSUS TIME AREA NO. 2



FIGURE
17

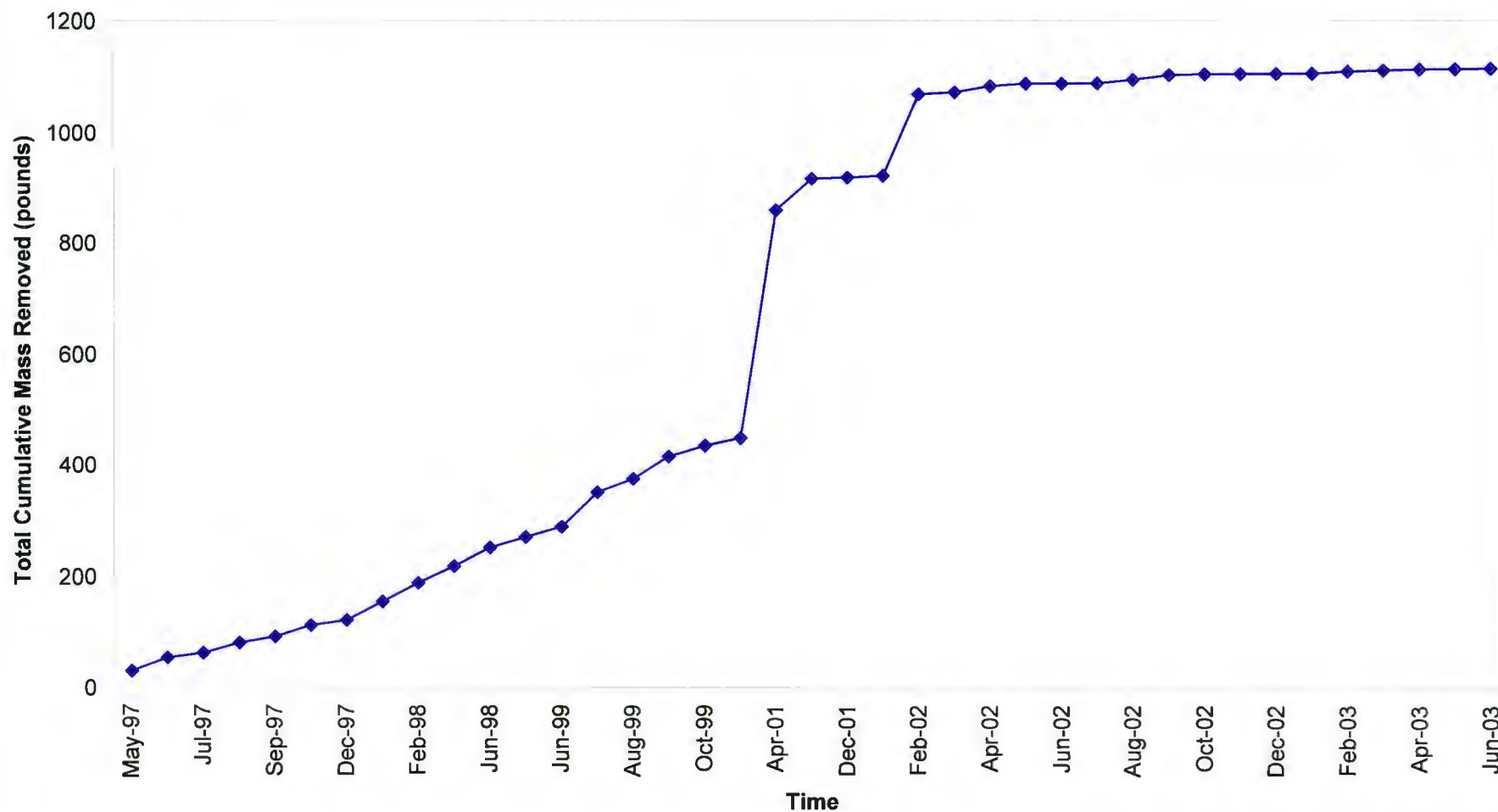


UNION PACIFIC BUTLER FACILITY
MILWAUKEE, WISCONSIN

**TOTAL CUMULATIVE MASS REMOVED
VERSUS TIME AREA NO. 1**



FIGURE
18

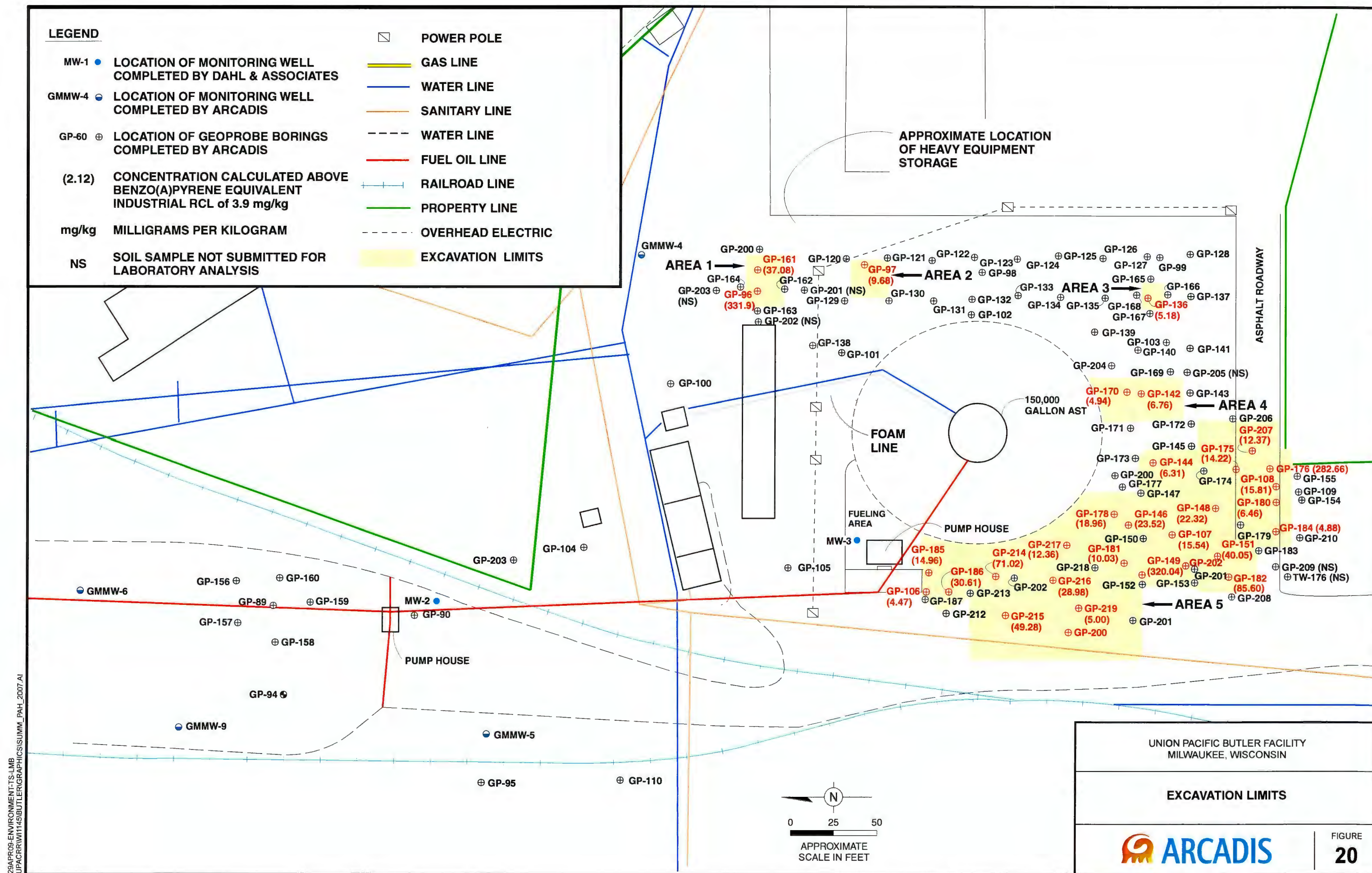


UNION PACIFIC BUTLER FACILITY
MILWAUKEE, WISCONSIN

CUMULATIVE MASS REMOVED VERSUS TIME
AREA NO. 2



FIGURE
19



ARCADIS

Appendix A

NR 712 Certification

Submittal Certification

This appendix was prepared to satisfy the requirements of Wisconsin Administrative Code Chapter NR 712.09 and is applicable to the following document.

Closure Report
Union Pacific Butler Yard Facility
Milwaukee, Wisconsin

"I, Ed Buc, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

Ed Buc Principal Engineer # 32096
Signature, Title and P.E. Number



P.E. Stamp

"I, _____, hereby certify that I am a scientist as that term is defined in s. NR 712.03 (3), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

James E Bannantien
Signature and Title Senior Hydrogeologist

5/15/09
Date

ARCADIS

Appendix B

Soil Boring Logs and
Abandonment Forms

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name Union Pacific Butler Yard/WI001145.0001			License/Permit/Monitoring Number		Boring Number GP-200		
Boring Drilled By: Name of crew chief (first, last) and Firm First Name Jim Last Name Blair Firm Giles Engineering Associates, Inc.			Date Drilling Started 11/18/07		Date Drilling Completed 11/18/07		
Drilling Method Geoprobe							
WI Unique Well No.		DNR Well ID No.		Well Name		Final Static Water Level Feet	
						Surface Elevation Feet MSL	
						Borehole Diameter 2 inches	
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐			Local Grid Location				
State Plane ☐ N, ☐ E ☐ S ☐ C ☐ N ☐ E ☒ W			Lat ☐ N ☐ E ☐ S ☐ W			Long ☐ N ☐ E ☐ S ☐ W	
SW 1/4 of SW 1/4 of Section 31 , T 8 N, R 21							

Facility ID 21401860		County Milwaukee		County Code 41		Civil Town/City/Village Milwaukee	
--------------------------------	--	----------------------------	--	--------------------------	--	---	--

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length All. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1	30		0	0-4/ 0-6" Gravel, Sand: Brown (7.5 YR 3/2), gravel subround up to 1/2", sand fine to medium, poorly sorted, loose, trace clay with depth. 6-18" Clay: Black (7.5 YR 2.5/1), low plasticity, some gravel fine up to 1/4" subangular, some fine sand, roots, trace wood, trace slag, crumbly. 18-30" Clay: Brown (7.5 YR 4/3), very firm, low plasticity, trace gravel fine up to 1/4" subround, gray mottling.				0-2 2083						
			2					2-4 560						
			4		EOB @ 4'									
			6											
			8											
			10											

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

Signature <i>William A. Burrows</i>	Firm ARCADIS 126 N. Jefferson St., Suite 400 Milwaukee, WI (414) 276-7742
--	---

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name Union Pacific Butler Yard/WI001145.0001			License/Permit/Monitoring Number		Boring Number GP-201	
Boring Drilled By: Name of crew chief (first, last) and Firm First Name Jim Last Name Blair Firm Giles Engineering Associates, Inc.			Date Drilling Started 11/18/07		Date Drilling Completed 11/18/07	
Drilling Method Geoprobe						
WI Unique Well No.		DNR Well ID No.		Well Name		Final Static Water Level Feet
						Surface Elevation Feet MSL
						Borehole Diameter 2 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane N , E ☐ S ☐ C ☐ N ☐ SW 1/4 of SW 1/4 of Section 31 , T 8 N, R 21 ☒ E ☐ W Lat 43° 05' 00" N Long 88° 05' 00" W			Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W			

Facility ID **21401860** County **Milwaukee** County Code **41** Civil Town/City/Village **Milwaukee**

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length All & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1			0	0-4" 0-4" Sand, Gravel: Brown (7.5 YR 4/2), sand fine to medium, gravel fine subangular up to 1/4", loose, poorly sorted.				0-2 10.31						
			2	4-10" Sand, Gravel: Pinkish white (7.5 YR 8/2), sand fine to medium, gravel fine subangular, loose, poorly sorted, pulverized cement.				2-4 0.58						
			4	10-16" Sand, Gravel, Silt: Dark brown (7.5 YR 3/3), sand fine to medium, gravel fine subangular up to 1/2", brick fragments, loose, poorly sorted.										
				16-20" Sandy Clay: Brown (7.5 YR 5/4), firm, trace gravel fine, sand fine to medium.										
				20-30" Clay: Brown (7.5 YR 4/4), firm, trace gravel, orange mottling, low plasticity.										
			6	EOB @ 4'										
			8											
			10											

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

Signature

Wesley Brumms

Firm

ARCADIS
126 N. Jefferson St., Suite 400
Milwaukee, WI (414) 276-7742

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name Union Pacific Butler Yard/WI001145.0001			License/Permit/Monitoring Number		Boring Number GP-202		
Boring Drilled By: Name of crew chief (first, last) and Firm First Name Jim Last Name Blair Firm Giles Engineering Associates, Inc.			Date Drilling Started 11/18/07		Date Drilling Completed 11/18/07		
WI Unique Well No.		DNR Well ID No.		Well Name		Final Static Water Level Feet	
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐		State Plane ☐ N, ☐ E S ☐ C ☐ N ☐ Lat ☐ N ☐ E		Local Grid Location ☐ N ☐ E		Feet ☐ S ☐ W	
SW 1/4 of SW 1/4 of Section 31 , T 8 N, R 21 ☒ E ☐ W		County Milwaukee		County Code 41		Civil Town/City/Village Milwaukee	
Facility ID 21401860		County Milwaukee		County Code 41		Civil Town/City/Village Milwaukee	

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Ali. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1	30		0	0-4/ 0-6" Sand, Gravel: Dark brown (7.5 YR 3/3), sand fine to medium, gravel up to 1/4" subangular, loose, poorly sorted.				0-2 1.04						
			2	6-30" Sand, Gravel, Silt: Black (7.5 YR 2.5/1), sand fine to medium, gravel fine subangular, brick fragments up to 2" at base, wet with depth, poorly sorted.				2-4 9.02						
			4	EOB @ 4'										
			6											
			8											
			10											

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

Signature <i>Rebecca A. Bunows</i>	Firm ARCADIS 126 N. Jefferson St., Suite 400 Milwaukee, WI (414) 276-7742
---------------------------------------	---

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 2

Facility/Project Name Union Pacific Butler Yard/WI001145.0001			License/Permit/Monitoring Number		Boring Number GP-203	
Boring Drilled By: Name of crew chief (first, last) and Firm First Name Jim Last Name Blair Firm Giles Engineering Associates, Inc.			Date Drilling Started 11/08/07		Date Drilling Completed 11/08/07	
Drilling Method Geoprobe						
WI Unique Well No.		DNR Well ID No.		Well Name		Final Static Water Level Feet
						Surface Elevation Feet MSL
						Borehole Diameter 2 inches
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐ State Plane _____ N, _____ E S ☐ C ☐ N ☐ Lat _____ SW 1/4 of SW 1/4 of Section 31 , T 8 N, R 21 E ☒ W ☐ Long _____						Local Grid Location ☐ N ☐ E Feet ☐ S _____ Feet ☐ W

Facility ID 21401860	County Milwaukee	County Code 41	Civil Town/City or Village Milwaukee
--------------------------------	----------------------------	--------------------------	--

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length All. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1	18		0	0-4/ 0-12" Sand, Gravel, Silt: Dark brown (7.5 YR 3/2), sand fine to medium, gravel subangular up to 1/4", loose, poorly sorted. 12-18" Clay: Brown (7.5 YR 4/3), firm, trace sand, some fine gravel, low plasticity, soft spot 3-4'.				0-3 4.13						
2	34		4	4-8/ 0-4" Sand, Gravel, Clay: Dark brown (7.5 YR 3/2) gravel subround up to 2", sand fine to medium, clay low plasticity, wet, odor, loose, poorly sorted. 4-34" Clay: Brown (7.5 YR 5/3), firm, low plasticity, gravel up to 1-1/2", uniform, native.				3-5 48.57						
3	48		8	8-12/ 0-6" Sand, Gravel, Clay: Sluff. 6-48" Clay: Brown (7.5 YR 5/3), firm, gray mottling, trace gravel up to 1/4", wet.				5-6 16.81						
			6					6-8 236						
			10					8-10 33.37						
								10-12 15.70						

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

Signature <i>Rebecca D. Burns</i>	Firm ARCADIS 126 N. Jefferson St., Suite 400 Milwaukee, WI (414) 276-7742
--------------------------------------	---

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 purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information				2. Facility/Owner Information			
WI Unique Well No.		DNR Well ID No.		County		Facility Name	
				Milwaukee		Union Pacific Butler Yard	
Common Well Name		Gov't Lot # (if applicable)		Facility ID		License/Permit/Monitoring No.	
GP-200				21401860			
1/4 / 1/4		Section		Township		Range	
SW SW		31		8 N		21	
Well Location		Datum		Street Address of Well		City, Village or Town	
ft. / M (Local Grid) N / S E / W				4823 N. 119th Street		Milwaukee	
WTM- UTM- Latitude/Longitude- State Plane- S C N		Zone		Present Well Owner		Original Well Owner	
Local Grid Origin ft. / M N, E / W		Datum		Street Address or Route of Owner			
WTM- UTM- Latitude/Longitude- State Plane- S C N		Zone		City		State ZIP Code	
Reason For Abandonment		WI Unique Well No. of Replacement Well		4. Pump, Liner, Screen, Casing & Sealing Material			
Sample Complete				Pump and piping removed? ☐ Yes ☐ No ☒ N/A			
3. Well/Drillhole/Borehole Information		Original Construction Date		Liner(s) removed? ☐ Yes ☐ No ☒ N/A			
☐ Monitoring Well		11/8/07		Screen removed? ☐ Yes ☐ No ☒ N/A			
☐ Water Well		If a Well Construction Report is available, please attach.		Casing left in place? ☐ Yes ☐ No ☒ N/A			
☒ Borehole/Drillhole				Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A			
Construction Type:				Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A			
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug				Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A			
☒ Other (specify): Geoprobe				If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A			
Formation Type:				If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☐ N/A			
☒ Unconsolidated Formation ☐ Bedrock				Required Method of Placing Sealing Material			
Total Well Depth From Groundsurface (ft.)		Casing Diameter (in.)		☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped			
4				☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain):			
Lower Drillhole Diameter (in.)		Casing Depth (ft.)		Sealing Materials			
2				☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)			
Was well annular space grouted? ☐ Yes ☒ No ☐ Unknown				☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "			
If yes, to what depth (feet)?		Depth to Water (feet)		☐ Concrete ☐ Bentonite Chips			
		NA		For Monitoring Wells and Monitoring Well Boreholes Only:			
5. Material Used to Fill Well/Drillhole				☐ Bentonite Chips ☐ Bentonite - Cement Grout			
Granules Bentonite				☒ Granular Bentonite ☐ Bentonite - Sand Slurry			
From (ft.)		To (ft.)		No. Yards, Sacks Sealant or Volume (circle one)		Mix Ratio or Mud Weight	
Surface		4		1/8 bag			
6. Comments							

7. Supervision of Work		DNR Use Only	
Name of Person or Firm Doing Sealing Work		Date of Abandonment	
Rebecca Burrows/ARCADIS		11/8/07	
Street or Route		Telephone Number	
126 N. Jefferson Street, Suite 400		(414) 276-7742	
City Milwaukee		Comments	
State WI ZIP Code 53202		Signature of Person Doing Work	
upacrr/wi1145/butler/graphics/loqs/qp200_A aban.ai		Rebecca Burrows	
		Date Signed	
		11/20/07	

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information				2. Facility/Owner Information			
WI Unique Well No.		DNR Well ID No.		County Milwaukee		Facility Name Union Pacific Butler Yard	
Common Well Name GP-201		Gov't Lot # (if applicable)		Facility ID 21401860		License/Permit/Monitoring No. City, Village or Town Milwaukee	
1/4 1/4 SW SW		Section 31		Township 8 N		Range 21 ☒ E ☐ W	
Well Location ☐ ft. / ☐ M (Local Grid ☐)		Datum N / S		Present Well Owner		Original Well Owner	
WTM- ☐ UTM- ☐ Latitude/Longitude- ☐ State Plane- ☐ S ☐ C ☐ N		Zone		Street Address of Well 4823 N. 119th Street			
Local Grid Origin ☐ ft. / ☐ M		Datum N, ☐ E / ☐ W		Street Address or Route of Owner			
WTM- ☐ UTM- ☐ Latitude/Longitude- ☐ State Plane- ☐ S ☐ C ☐ N		Zone		City		State ZIP Code	
Reason For Abandonment Sample Complete		WI Unique Well No. of Replacement Well		4. Pump, Liner, Screen, Casing & Sealing Material			
3. Well/Drillhole/Borehole Information				Pump and piping removed? ☐ Yes ☐ No ☒ N/A			
☐ Monitoring Well		Original Construction Date 11/8/07		Liner(s) removed? ☐ Yes ☐ No ☒ N/A			
☐ Water Well		If a Well Construction Report is available, please attach.		Screen removed? ☐ Yes ☐ No ☒ N/A			
☒ Borehole/Drillhole				Casing left in place? ☐ Yes ☐ No ☒ N/A			
Construction Type:				Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A			
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug				Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A			
☒ Other (specify): Geoprobe				Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A			
Formation Type:				If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A			
☒ Unconsolidated Formation ☐ Bedrock				If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☐ N/A			
Total Well Depth From Groundsurface (ft.) 4		Casing Diameter (in.)		Required Method of Placing Sealing Material			
Lower Drillhole Diameter (in.) 2		Casing Depth (ft.)		☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped			
Was well annular space grouted? ☐ Yes ☒ No ☐ Unknown				☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____			
If yes, to what depth (feet)?		Depth to Water (feet) NA		Sealing Materials			
				☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)			
				☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "			
				☐ Concrete ☐ Bentonite Chips			
				For Monitoring Wells and Monitoring Well Boreholes Only:			
				☐ Bentonite Chips ☐ Bentonite - Cement Grout			
				☒ Granular Bentonite ☐ Bentonite - Sand Slurry			
5. Material Used to Fill Well/Drillhole				From (ft.) To (ft.) No. Yards, Sacks Sealant or Volume (circle one) Mix Ratio or Mud Weight			
Granules Bentonite				Surface 4 1/8 bag			
6. Comments							

7. Supervision of Work		DNR Use Only	
Name of Person or Firm Doing Sealing Work Rebecca Burrows/ARCADIS		Date of Abandonment 11/8/07	
Street or Route 126 N. Jefferson Street, Suite 400		Date Received Noted By	
City Milwaukee		Telephone Number (414) 276-7742	
State WI ZIP Code 53202		Comments	
Signature of Person Doing Work Rebecca Burrows		Date Signed 11/20/07	

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information				2. Facility/Owner Information			
WI Unique Well No.		DNR Well ID No.		County Milwaukee		Facility Name Union Pacific Butler Yard	
Common Well Name GP-202		Gov't Lot # (if applicable)		Facility ID 21401860		License/Permit/Monitoring No. City, Village or Town Milwaukee	
#4 / 1/4 SW SW		Section 31		Township 8 N		Range 21 E	
Well Location ft. / M (Local Grid ☐) N / S E / W		Datum		Street Address of Well 4823 N. 119th Street			
UTM- ☐ UTM- ☐ Latitude/Longitude- ☐ State Plane - ☐ S ☐ C ☐ N		Zone		Present Well Owner			
Local Grid Origin ft. / M N, E / W		Datum		Original Well Owner			
UTM- ☐ UTM- ☐ Latitude/Longitude- ☐ State Plane - ☐ S ☐ C ☐ N		Zone		Street Address or Route of Owner			
Reason For Abandonment Sample Complete		WI Unique Well No. of Replacement Well		City State ZIP Code			
3. Well/Drillhole/Borehole Information				4. Pump, Liner, Screen, Casing & Sealing Material			
☐ Monitoring Well ☐ Water Well ☒ Borehole/Drillhole		Original Construction Date 11/8/07		Pump and piping removed? ☐ Yes ☐ No ☒ N/A			
Construction Type: ☐ Drilled ☐ Driven (Sandpoint) ☐ Dug ☒ Other (specify): Geoprobe		If a Well Construction Report is available, please attach.		Liner(s) removed? ☐ Yes ☐ No ☒ N/A			
				Screen removed? ☐ Yes ☐ No ☒ N/A			
Formation Type: ☒ Unconsolidated Formation ☐ Bedrock		Total Well Depth From Groundsurface (ft.) 4		Casing Diameter (in.) 2		Casing left in place? ☐ Yes ☐ No ☒ N/A	
						Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A	
Lower Drillhole Diameter (in.) 2		Casing Depth (ft.)		Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A			
				Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A			
Was well annular space grouted? ☐ Yes ☒ No ☐ Unknown		If yes, to what depth (feet)?		Depth to Water (feet)		If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A	
						If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☐ N/A	
5. Material Used to Fill Well/Drillhole		Granular Bentonite		Required Method of Placing Sealing Material ☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped ☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain):			
				Sealing Materials ☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.) ☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " " ☐ Concrete ☐ Bentonite Chips			
6. Comments				For Monitoring Wells and Monitoring Well Boreholes Only: ☐ Bentonite Chips ☐ Bentonite - Cement Grout ☒ Granular Bentonite ☐ Bentonite - Sand Slurry			
7. Supervision of Work		Name of Person or Firm Doing Sealing Work Rebecca Burrows/ARCADIS		Date of Abandonment 11/8/07		No. Yards, Sacks Sealant or Volume (circle one)	
						Mix Ratio or Mud Weight	
						From (ft.) To (ft.)	
						Surface 4 1/8 bag	

7. Supervision of Work		DNR Use Only	
Name of Person or Firm Doing Sealing Work Rebecca Burrows/ARCADIS		Date Received	
Date of Abandonment 11/8/07		Noted By	
Street or Route 126 N. Jefferson Street, Suite 400		Telephone Number (414) 276-7742	
City Milwaukee		Comments	
State WI ZIP Code 53202		Signature of Person Doing Work	
upacrr/wi1145/butler/graphics/logs/gp202 aban_2.ai		Date Signed 11/20/07	

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, 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. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

Route to:

☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other: _____

1. General Information				2. Facility/Owner Information			
WI Unique Well No.		DNR Well ID No.		County Milwaukee		Facility Name Union Pacific Butler Yard	
Common Well Name GP-203		Gov't Lot # (if applicable)		Facility ID 21401860		License/Permit/Monitoring No. City, Village or Town Milwaukee	
1/4 / 1/4 SW	1/4 SW	Section 31	Township 8 N	Range 21 E	☒ E ☐ W		
Well Location ☐ ft. / ☐ M (Local Grid ☐) ☐ N / ☐ S ☐ E / ☐ W Datum				Street Address of Well 4823 N. 119th Street			
Present Well Owner				Original Well Owner			
Street Address or Route of Owner				City			
State				ZIP Code			
Reason For Abandonment Sample Complete				WI Unique Well No. of Replacement Well			
3. Well/Drillhole/Borehole Information				4. Pump, Liner, Screen, Casing & Sealing Material			
☐ Monitoring Well ☐ Water Well ☒ Borehole/Drillhole		Original Construction Date 11/8/07		Pump and piping removed? ☐ Yes ☐ No ☒ N/A			
Construction Type: ☐ Drilled ☐ Driven (Sandpoint) ☐ Dug ☒ Other (specify): Geoprobe		If a Well Construction Report is available, please attach.		Liner(s) removed? ☐ Yes ☐ No ☒ N/A			
				Screen removed? ☐ Yes ☐ No ☒ N/A			
Formation Type: ☒ Unconsolidated Formation ☐ Bedrock		Total Well Depth From Groundsurface (ft.) 12		Casing Diameter (in.) 2		Casing left in place? ☐ Yes ☐ No ☒ N/A	
						Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A	
Lower Drillhole Diameter (in.) 2		Casing Depth (ft.)		Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A			
				Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A			
Was well annular space grouted? ☐ Yes ☒ No ☐ Unknown		If yes, to what depth (feet)?		Depth to Water (feet)		If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A	
						If bentonite chips were used, were they hydrated with water from a known safe source? ☐ Yes ☐ No ☐ N/A	
5. Material Used to Fill Well/Drillhole Granular Bentonite		From (ft.) Surface		To (ft.) 4		Required Method of Placing Sealing Material	
						☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped ☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain):	
						Sealing Materials	
						☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.) ☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " " ☐ Concrete ☐ Bentonite Chips	
						For Monitoring Wells and Monitoring Well Boreholes Only:	
						☐ Bentonite Chips ☐ Bentonite - Cement Grout ☒ Granular Bentonite ☐ Bentonite - Sand Slurry	
6. Comments							

7. Supervision of Work		DNR Use Only	
Name of Person or Firm Doing Sealing Work Rebecca Burrows/ARCADIS		Date of Abandonment 11/8/07	
Street or Route 126 N. Jefferson Street, Suite 400		Date Received Noted By	
City Milwaukee		Telephone Number (414) 276-7742	
State WI ZIP Code 53202		Comments	
Signature of Person Doing Work Rebecca Burrows		Date Signed 11/20/07	

ARCADIS

Appendix C

Soil Analytical Reports and Chain-of-Custody Form

November 20, 2007

Client: ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202

Work Order: WQK0371
Project Name: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Attn: Mr. Jim Bannantine

Date Received: 11/09/07

An executed copy of the chain of custody is also included as an addendum to this report.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-833-7036

SAMPLE IDENTIFICATION	LAB NUMBER	COLLECTION DATE AND TIME
GP-200 0-2	WQK0371-01	11/08/07 13:05
GP-201 0-2	WQK0371-02	11/08/07 13:10
GP-202 2-4	WQK0371-03	11/08/07 13:12
GP-203 3-5	WQK0371-04	11/08/07 13:15
GP-203 10-12	WQK0371-05	11/08/07 15:50
Trip Blank	WQK0371-06	11/08/07
GP-203 6-8	WQK0371-07	11/09/07 08:00

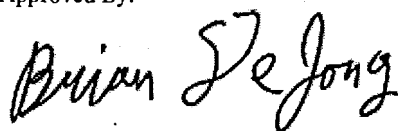
Samples were received into laboratory on ice.

Wisconsin Certification Number: 128053530

The Chain of Custody, 1 page, is included and is an integral part of this report.

Unless subcontracted, volatiles analyses (including VOC, PVOC, GRO, BTEX, and TPH gasoline) performed by TestAmerica Watertown at 1101 Industrial Drive, Units 9&10. All other analyses performed at the address shown in the heading of this report.

Approved By:



TestAmerica - Watertown, WI
Brian DeJong For Warren L. Topel
Project Manager

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-01 (GP-200 0-2 - Soil)						Sampled: 11/08/07 13:05			
General Chemistry Parameters									
% Solids	88		%	NA	1	11/13/07 16:40	klb	7110400	SW 5035
NAs by SW8310									
Acenaphthene	<3500		ug/kg dry	3500	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Acenaphthylene	<6000		ug/kg dry	6000	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Anthracene	2000		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Benzo (a) anthracene	6100		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Benzo (b) fluoranthene	3800		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Benzo (k) fluoranthene	2200		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Benzo (a) pyrene	5200		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Benzo (g,h,i) perylene	3100		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Chrysene	4900		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Dibenzo (a,h) anthracene	<530		ug/kg dry	530	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Fluoranthene	15000		ug/kg dry	710	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Fluorene	1000		ug/kg dry	710	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Indeno (1,2,3-cd) pyrene	3200		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
1-Methylnaphthalene	<2100		ug/kg dry	2100	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
2-Methylnaphthalene	<1800		ug/kg dry	1800	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Naphthalene	<2100		ug/kg dry	2100	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Phenanthrene	9500		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Pyrene	9500		ug/kg dry	350	62.5	11/18/07 12:18	CLJ	7110451	SW 8310
Surr: 2-Fluorobiphenyl (61-128%)	95 %								

Sample ID: WQK0371-02 (GP-201 0-2 - Soil)					Sampled: 11/08/07 13:10				
General Chemistry Parameters									
% Solids	95	%	NA	1	11/13/07 16:40	klb	7110400	SW 5035	
NAS by SW8310									
Acenaphthene	<650	ug/kg dry	650	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Acenaphthylene	<1100	ug/kg dry	1100	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Anthracene	75	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Benzo (a) anthracene	280	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Benzo (b) fluoranthene	150	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Benzo (k) fluoranthene	110	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Benzo (a) pyrene	260	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Benzo (g,h,i) perylene	170	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Chrysene	210	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Dibenzo (a,h) anthracene	<98	ug/kg dry	98	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Fluoranthene	630	ug/kg dry	130	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Fluorene	<130	ug/kg dry	130	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Indeno (1,2,3-cd) pyrene	140	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
1-Methylnaphthalene	<390	ug/kg dry	390	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
2-Methylnaphthalene	<330	ug/kg dry	330	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Naphthalene	<390	ug/kg dry	390	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Phenanthrene	300	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Pyrene	650	ug/kg dry	65	12.5	11/18/07 11:14	CLJ	7110451	SW 8310	
Surr: 2-Fluorobiphenyl (61-128%)	89 %								

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-03 (GP-202 2-4 - Soil)						Sampled: 11/08/07 13:12			
General Chemistry Parameters									
% Solids	84		%	NA	1	11/13/07 16:40	klb	7110400	SW 5035
PNAs by SW8310									
Acenaphthene	43000		ug/kg dry	9300	156	11/18/07 13:52	CLJ	7110451	SW 8310
Acenaphthylene	<16000		ug/kg dry	16000	156	11/18/07 13:52	CLJ	7110451	SW 8310
Anthracene	61000		ug/kg dry	930	156	11/18/07 13:52	CLJ	7110451	SW 8310
Benzo (a) anthracene	240000		ug/kg dry	4700	781	11/19/07 18:13	CLJ	7110451	SW 8310
Benzo (b) fluoranthene	110000		ug/kg dry	930	156	11/18/07 13:52	CLJ	7110451	SW 8310
Benzo (k) fluoranthene	73000		ug/kg dry	930	156	11/18/07 13:52	CLJ	7110451	SW 8310
Benzo (a) pyrene	190000		ug/kg dry	4700	781	11/19/07 18:13	CLJ	7110451	SW 8310
Benzo (g,h,i) perylene	95000		ug/kg dry	930	156	11/18/07 13:52	CLJ	7110451	SW 8310
Chrysene	160000		ug/kg dry	4700	781	11/19/07 18:13	CLJ	7110451	SW 8310
Dibenzo (a,h) anthracene	17000		ug/kg dry	1400	156	11/18/07 13:52	CLJ	7110451	SW 8310
Fluoranthene	370000		ug/kg dry	9300	781	11/19/07 18:13	CLJ	7110451	SW 8310
Fluorene	21000		ug/kg dry	1900	156	11/18/07 13:52	CLJ	7110451	SW 8310
Indeno (1,2,3-cd) pyrene	100000		ug/kg dry	930	156	11/18/07 13:52	CLJ	7110451	SW 8310
1-Methylnaphthalene	27000		ug/kg dry	5600	156	11/18/07 13:52	CLJ	7110451	SW 8310
2-Methylnaphthalene	170000		ug/kg dry	4700	156	11/18/07 13:52	CLJ	7110451	SW 8310
Naphthalene	13000		ug/kg dry	5600	156	11/18/07 13:52	CLJ	7110451	SW 8310
Phenanthrene	210000		ug/kg dry	4700	781	11/19/07 18:13	CLJ	7110451	SW 8310
Pyrene	380000		ug/kg dry	4700	781	11/19/07 18:13	CLJ	7110451	SW 8310
Surr: 2-Fluorobiphenyl (61-128%)	75 %								
Sample ID: WQK0371-04 (GP-203 3-5 - Soil)						Sampled: 11/08/07 13:15			
General Chemistry Parameters									
% Solids	87		%	NA	1	11/13/07 16:40	klb	7110400	SW 5035
VOCs by SW8260B									
Benzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Bromobenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Bromochloromethane	<44		ug/kg dry	44	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Bromodichloromethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Bromoform	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Bromomethane	<130		ug/kg dry	130	1.1	11/14/07 17:27	lg	7110407	SW 8260B
n-Butylbenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
sec-Butylbenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
tert-Butylbenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Carbon Tetrachloride	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Chlorobenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Chlorodibromomethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Chloroethane	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Chloroform	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Chloromethane	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
2-Chlorotoluene	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
4-Chlorotoluene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2-Dibromo-3-chloropropane	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2-Dibromoethane (EDB)	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Dibromomethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2-Dichlorobenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,3-Dichlorobenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,4-Dichlorobenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Dichlorodifluoromethane	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,1-Dichloroethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2-Dichloroethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-04 (GP-203 3-5 - Soil) - cont.						Sampled: 11/08/07 13:15			
VOCs by SW8260B - cont.									
1,1-Dichloroethene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
cis-1,2-Dichloroethene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
trans-1,2-Dichloroethene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2-Dichloropropane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,3-Dichloropropane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
2,2-Dichloropropane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,1-Dichloropropene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
cis-1,3-Dichloropropene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
trans-1,3-Dichloropropene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
2,3-Dichloropropene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Isopropyl Ether	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Ethylbenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Hexachlorobutadiene	<44		ug/kg dry	44	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Isopropylbenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
p-Isopropyltoluene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Methylene Chloride	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Methyl tert-Butyl Ether	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Naphthalene	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
m-Propylbenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Styrene	<31		ug/kg dry	31	1.1	11/15/07 16:59	lg	7110464	SW 8260B
1,1,1,2-Tetrachloroethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,1,2,2-Tetrachloroethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,1,2,2-Tetrachloroethene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Toluene	48		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2,3-Trichlorobenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2,4-Trichlorobenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,1,1-Trichloroethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,1,2-Trichloroethane	<44		ug/kg dry	44	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Trichloroethene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Trichlorofluoromethane	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2,3-Trichloropropane	<63		ug/kg dry	63	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,2,4-Trimethylbenzene	47		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
1,3,5-Trimethylbenzene	<31		ug/kg dry	31	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Vinyl chloride	<44		ug/kg dry	44	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Xylenes, total	<110		ug/kg dry	110	1.1	11/14/07 17:27	lg	7110407	SW 8260B
Surr: Dibromofluoromethane (82-112%)	95 %								
Surr: Dibromofluoromethane (82-112%)	96 %								
Surr: Toluene-d8 (91-106%)	99 %								
Surr: Toluene-d8 (91-106%)	99 %								
Surr: 4-Bromofluorobenzene (89-110%)	101 %								
Surr: 4-Bromofluorobenzene (89-110%)	99 %								
PNAs by SW8310									
Acenaphthene	<140		ug/kg dry	140	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Acenaphthylene	<240		ug/kg dry	240	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Anthracene	<14		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Benzo (a) anthracene	33		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Benzo (b) fluoranthene	18		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Benzo (k) fluoranthene	<14		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Benzo (a) pyrene	26		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Benzo (g,h,i) perylene	23		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Chrysene	18		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Dibenzo (a,h) anthracene	<21		ug/kg dry	21	2.5	11/18/07 10:10	CLJ	7110451	SW 8310

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
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Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-04 (GP-203 3-5 - Soil) - cont.						Sampled: 11/08/07 13:15			
NAs by SW8310 - cont.									
Fluoranthene	92		ug/kg dry	29	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Fluorene	<29		ug/kg dry	29	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Indeno (1,2,3-cd) pyrene	20		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
1-Methylnaphthalene	<86		ug/kg dry	86	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
2-Methylnaphthalene	<72		ug/kg dry	72	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Naphthalene	<86		ug/kg dry	86	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Phenanthrene	69		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Pyrene	34		ug/kg dry	14	2.5	11/18/07 10:10	CLJ	7110451	SW 8310
Surr: 2-Fluorobiphenyl (61-128%)	81 %								
Sample ID: WQK0371-05 (GP-203 10-12 - Soil)						Sampled: 11/08/07 15:50			
General Chemistry Parameters									
% Solids	83		%	NA	1	11/13/07 16:40	kls	7110400	SW 5035
VOCs by SW8260B									
Benzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Bromobenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Bromochloromethane	<51		ug/kg dry	51	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Bromodichloromethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Bromoform	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Bromomethane	<140		ug/kg dry	140	1.2	11/14/07 17:54	lg	7110407	SW 8260B
n-Butylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
sec-Butylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
tert-Butylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Carbon Tetrachloride	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Chlorobenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Chlorodibromomethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Chloroethane	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Chloroform	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Chloromethane	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
2-Chlorotoluene	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
4-Chlorotoluene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2-Dibromo-3-chloropropane	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2-Dibromoethane (EDB)	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Dibromomethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2-Dichlorobenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,3-Dichlorobenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,4-Dichlorobenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Dichlorodifluoromethane	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,1-Dichloroethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2-Dichloroethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,1-Dichloroethene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
cis-1,2-Dichloroethene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
trans-1,2-Dichloroethene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2-Dichloropropane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,3-Dichloropropane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
2,2-Dichloropropane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,1-Dichloropropene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
cis-1,3-Dichloropropene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
trans-1,3-Dichloropropene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
2,3-Dichloropropene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Isopropyl Ether	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Ethylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-05 (GP-203 10-12 - Soil) - cont.					Sampled: 11/08/07 15:50				
HOCs by SW8260B - cont.									
Hexachlorobutadiene	<51		ug/kg dry	51	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Isopropylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
p-Isopropyltoluene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Methylene Chloride	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Methyl tert-Butyl Ether	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Naphthalene	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
m-Propylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
styrene	<36		ug/kg dry	36	1.2	11/15/07 17:27	lg	7110464	SW 8260B
1,1,1,2-Tetrachloroethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,1,2,2-Tetrachloroethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Tetrachloroethene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Toluene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2,3-Trichlorobenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2,4-Trichlorobenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,1,1-Trichloroethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,1,2-Trichloroethane	<51		ug/kg dry	51	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Trichloroethene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Trichlorofluoromethane	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2,3-Trichloropropane	<72		ug/kg dry	72	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,2,4-Trimethylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
1,3,5-Trimethylbenzene	<36		ug/kg dry	36	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Vinyl chloride	<51		ug/kg dry,	51	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Xylenes, total	<120		ug/kg dry	120	1.2	11/14/07 17:54	lg	7110407	SW 8260B
Surr: Dibromofluoromethane (82-112%)	96 %								
Surr: Dibromofluoromethane (82-112%)	96 %								
Surr: Toluene-d8 (91-106%)	99 %								
Surr: Toluene-d8 (91-106%)	100 %								
Surr: 4-Bromofluorobenzene (89-110%)	101 %								
Surr: 4-Bromofluorobenzene (89-110%)	100 %								
PNAs by SW8310									
Acenaphthene	<60		ug/kg dry	60	1	11/16/07 23:12	CLJ	7110451	SW 8310
Acenaphthylene	<100		ug/kg dry	100	1	11/16/07 23:12	CLJ	7110451	SW 8310
Anthracene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Benzo (a) anthracene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Benzo (b) fluoranthene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Benzo (k) fluoranthene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Benzo (a) pyrene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Benzo (g,h,i) perylene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Chrysene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Dibenzo (a,h) anthracene	<9.0		ug/kg dry	9.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Fluoranthene	<12		ug/kg dry	12	1	11/16/07 23:12	CLJ	7110451	SW 8310
Fluorene	<12		ug/kg dry	12	1	11/16/07 23:12	CLJ	7110451	SW 8310
Indeno (1,2,3-cd) pyrene	<6.0		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
1-Methylnaphthalene	<36		ug/kg dry	36	1	11/16/07 23:12	CLJ	7110451	SW 8310
2-Methylnaphthalene	<30		ug/kg dry	30	1	11/16/07 23:12	CLJ	7110451	SW 8310
Naphthalene	<36		ug/kg dry	36	1	11/16/07 23:12	CLJ	7110451	SW 8310
Phenanthrene	7.4		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Pyrene	11		ug/kg dry	6.0	1	11/16/07 23:12	CLJ	7110451	SW 8310
Surr: 2-Fluorobiphenyl (61-128%)	106 %								

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Work Order: WQK0371
Project: Union Pacific Butler
Project Number: W11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-06 (Trip Blank - Misc. Liquid)						Sampled: 11/08/07			
VOCs by SW8260B									
Benzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Bromobenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Bromochloromethane	<35		ug/kg wet	35	1	11/14/07 17:00	lg	7110407	SW 8260B
Bromodichloromethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Bromoform	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Bromomethane	<100		ug/kg wet	100	1	11/14/07 17:00	lg	7110407	SW 8260B
n-Butylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
sec-Butylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
tert-Butylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Carbon Tetrachloride	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Chlorobenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Chlorodibromomethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Chloroethane	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
Chloroform	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Chloromethane	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
2-Chlorotoluene	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
4-Chlorotoluene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2-Dibromo-3-chloropropane	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2-Dibromoethane (EDB)	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Dibromomethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2-Dichlorobenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,3-Dichlorobenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,4-Dichlorobenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Dichlorodifluoromethane	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
1,1-Dichloroethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2-Dichloroethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,1-Dichloroethene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
cis-1,2-Dichloroethene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
trans-1,2-Dichloroethene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2-Dichloropropane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,3-Dichloropropane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
2,2-Dichloropropane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,1-Dichloropropene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
cis-1,3-Dichloropropene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
trans-1,3-Dichloropropene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
2,3-Dichloropropene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Isopropyl Ether	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Ethylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Hexachlorobutadiene	<35		ug/kg wet	35	1	11/14/07 17:00	lg	7110407	SW 8260B
Isopropylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
p-Isopropyltoluene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Methylene Chloride	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
Methyl tert-Butyl Ether	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Naphthalene	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
n-Propylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Styrene	<25		ug/kg wet	25	1	11/15/07 13:49	lg	7110464	SW 8260B
1,1,1,2-Tetrachloroethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,1,2,2-Tetrachloroethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Tetrachloroethene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Toluene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2,3-Trichlorobenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2,4-Trichlorobenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
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Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-06 (Trip Blank - Misc. Liquid) - cont.						Sampled: 11/08/07			
VOCs by SW8260B - cont.									
1,1,1-Trichloroethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,1,2-Trichloroethane	<35		ug/kg wet	35	1	11/14/07 17:00	lg	7110407	SW 8260B
Trichloroethene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Trichlorofluoromethane	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2,3-Trichloropropane	<50		ug/kg wet	50	1	11/14/07 17:00	lg	7110407	SW 8260B
1,2,4-Trimethylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
1,3,5-Trimethylbenzene	<25		ug/kg wet	25	1	11/14/07 17:00	lg	7110407	SW 8260B
Vinyl chloride	<35		ug/kg wet	35	1	11/14/07 17:00	lg	7110407	SW 8260B
Xylenes, total	<85		ug/kg wet	85	1	11/14/07 17:00	lg	7110407	SW 8260B
Surr: Dibromofluoromethane (82-112%)	94 %								
Surr: Dibromofluoromethane (82-112%)	96 %								
Surr: Toluene-d8 (91-106%)	99 %								
Surr: Toluene-d8 (91-106%)	100 %								
Surr: 4-Bromofluorobenzene (89-110%)	101 %								
Surr: 4-Bromofluorobenzene (89-110%)	99 %								
Sample ID: WQK0371-07 (GP-203 6-8 - Soil)						Sampled: 11/09/07 08:00			
General Chemistry Parameters									
% Solids	82		%	NA	1	11/13/07 16:40	kls	7110400	SW 5035
VOCs by SW8260B									
Benzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Bromobenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Bromochloromethane	<42		ug/kg dry	42	1	11/14/07 18:21	lg	7110407	SW 8260B
Bromodichloromethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Bromoform	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Bromomethane	<120		ug/kg dry	120	1	11/14/07 18:21	lg	7110407	SW 8260B
n-Butylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
sec-Butylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
tert-Butylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Carbon Tetrachloride	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Chlorobenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Chlorodibromomethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Chloroethane	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
Chloroform	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Chloromethane	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
2-Chlorotoluene	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
4-Chlorotoluene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2-Dibromo-3-chloropropane	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2-Dibromoethane (EDB)	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Dibromomethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2-Dichlorobenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,3-Dichlorobenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,4-Dichlorobenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Dichlorodifluoromethane	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
1,1-Dichloroethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2-Dichloroethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,1-Dichloroethene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
cis-1,2-Dichloroethene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
trans-1,2-Dichloroethene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2-Dichloropropane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,3-Dichloropropane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
2,2-Dichloropropane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-07 (GP-203 6-8 - Soil) - cont.					Sampled: 11/09/07 08:00				
VOCs by SW8260B - cont.									
1,1-Dichloropropene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
cis-1,3-Dichloropropene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
trans-1,3-Dichloropropene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
2,3-Dichloropropene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Isopropyl Ether	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Ethylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Hexachlorobutadiene	<42		ug/kg dry	42	1	11/14/07 18:21	lg	7110407	SW 8260B
Isopropylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
p-Isopropyltoluene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Methylene Chloride	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
Methyl tert-Butyl Ether	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Naphthalene	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
n-Propylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Styrene	<30		ug/kg dry	30	1	11/15/07 17:54	lg	7110464	SW 8260B
1,1,1,2-Tetrachloroethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,1,2,2-Tetrachloroethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Tetrachloroethene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Toluene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2,3-Trichlorobenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2,4-Trichlorobenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,1,1-Trichloroethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,1,2-Trichloroethane	<42		ug/kg dry	42	1	11/14/07 18:21	lg	7110407	SW 8260B
Trichloroethene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Trichlorofluoromethane	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2,3-Trichloropropane	<61		ug/kg dry	61	1	11/14/07 18:21	lg	7110407	SW 8260B
1,2,4-Trimethylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
1,3,5-Trimethylbenzene	<30		ug/kg dry	30	1	11/14/07 18:21	lg	7110407	SW 8260B
Vinyl chloride	<42		ug/kg dry	42	1	11/14/07 18:21	lg	7110407	SW 8260B
Xylenes, total	<100		ug/kg dry	100	1	11/14/07 18:21	lg	7110407	SW 8260B
Surr: Dibromofluoromethane (82-112%)	97 %								
Surr: Dibromofluoromethane (82-112%)	96 %								
Surr: Toluene-d8 (91-106%)	99 %								
Surr: Toluene-d8 (91-106%)	98 %								
Surr: 4-Bromofluorobenzene (89-110%)	101 %								
Surr: 4-Bromofluorobenzene (89-110%)	102 %								
PNAs by SW8310									
Acenaphthene	<61		ug/kg dry	61	1	11/17/07 02:24	CLJ	7110451	SW 8310
Acenaphthylene	<100		ug/kg dry	100	1	11/17/07 02:24	CLJ	7110451	SW 8310
Anthracene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Benzo (a) anthracene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Benzo (b) fluoranthene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Benzo (k) fluoranthene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Benzo (a) pyrene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Benzo (g,h,i) perylene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Chrysene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Dibenzo (a,h) anthracene	<9.1		ug/kg dry	9.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Fluoranthene	<12		ug/kg dry	12	1	11/17/07 02:24	CLJ	7110451	SW 8310
Fluorene	<12		ug/kg dry	12	1	11/17/07 02:24	CLJ	7110451	SW 8310
Indeno (1,2,3-cd) pyrene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
1-Methylnaphthalene	<36		ug/kg dry	36	1	11/17/07 02:24	CLJ	7110451	SW 8310
2-Methylnaphthalene	<30		ug/kg dry	30	1	11/17/07 02:24	CLJ	7110451	SW 8310
Naphthalene	<36		ug/kg dry	36	1	11/17/07 02:24	CLJ	7110451	SW 8310

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
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Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

Analyte	Sample Result	Data Qualifiers	Units	MRL	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: WQK0371-07 (GP-203 6-8 - Soil) - cont.						Sampled: 11/09/07 08:00			
PNAs by SW8310 - cont.									
Phenanthrene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Pyrene	<6.1		ug/kg dry	6.1	1	11/17/07 02:24	CLJ	7110451	SW 8310
Surr: 2-Fluorobiphenyl (61-128%)	91 %								

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SAMPLE EXTRACTION DATA

Parameter	Batch	Lab Number	Wt/Vol Extracted	Extracted Vol	Date	Analyst	Extraction Method
INAs by SW8310							
SW 8310	7110451	WQK0371-01	2	2	11/15/07 09:06	TLH	SW 3550B
SW 8310	7110451	WQK0371-02	5	3	11/15/07 09:06	TLH	SW 3550B
SW 8310	7110451	WQK0371-03	2	3	11/15/07 09:06	TLH	SW 3550B
SW 8310	7110451	WQK0371-04	10	2	11/15/07 09:06	TLH	SW 3550B
SW 8310	7110451	WQK0371-05	25	2	11/15/07 09:06	TLH	SW 3550B
SW 8310	7110451	WQK0371-07	25	2	11/15/07 09:06	TLH	SW 3550B

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LABORATORY BLANK QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	%REC Limits	RPD RPD	RPD Limit	Q
VOCs by SW8260B														
Benzene	7110407			ug/kg wet	N/A	25	<25							
Bromobenzene	7110407			ug/kg wet	N/A	25	<25							
Bromochloromethane	7110407			ug/kg wet	N/A	35	<35							
Bromodichloromethane	7110407			ug/kg wet	N/A	25	<25							
Bromoform	7110407			ug/kg wet	N/A	25	<25							
Bromomethane	7110407			ug/kg wet	N/A	100	<100							
n-Butylbenzene	7110407			ug/kg wet	N/A	25	<25							
sec-Butylbenzene	7110407			ug/kg wet	N/A	25	<25							
tert-Butylbenzene	7110407			ug/kg wet	N/A	25	<25							
Carbon Tetrachloride	7110407			ug/kg wet	N/A	25	<25							
Chlorobenzene	7110407			ug/kg wet	N/A	25	<25							
Chlorodibromomethane	7110407			ug/kg wet	N/A	25	<25							
Chloroethane	7110407			ug/kg wet	N/A	50	<50							
Chloroform	7110407			ug/kg wet	N/A	25	<25							
Chloromethane	7110407			ug/kg wet	N/A	50	<50							
2-Chlorotoluene	7110407			ug/kg wet	N/A	50	<50							
4-Chlorotoluene	7110407			ug/kg wet	N/A	25	<25							
1,2-Dibromo-3-chloropropane	7110407			ug/kg wet	N/A	50	<50							
1,2-Dibromoethane (EDB)	7110407			ug/kg wet	N/A	25	<25							
Dibromomethane	7110407			ug/kg wet	N/A	25	<25							
1,2-Dichlorobenzene	7110407			ug/kg wet	N/A	25	<25							
1,3-Dichlorobenzene	7110407			ug/kg wet	N/A	25	<25							
1,4-Dichlorobenzene	7110407			ug/kg wet	N/A	25	<25							
Dichlorodifluoromethane	7110407			ug/kg wet	N/A	50	<50							
1,1-Dichloroethane	7110407			ug/kg wet	N/A	25	<25							
1,2-Dichloroethane	7110407			ug/kg wet	N/A	25	<25							
1,1-Dichloroethene	7110407			ug/kg wet	N/A	25	<25							
cis-1,2-Dichloroethene	7110407			ug/kg wet	N/A	25	<25							
trans-1,2-Dichloroethene	7110407			ug/kg wet	N/A	25	<25							
1,2-Dichloropropane	7110407			ug/kg wet	N/A	25	<25							
1,3-Dichloropropane	7110407			ug/kg wet	N/A	25	<25							
2,2-Dichloropropane	7110407			ug/kg wet	N/A	25	<25							
1,1-Dichloropropene	7110407			ug/kg wet	N/A	25	<25							
cis-1,3-Dichloropropene	7110407			ug/kg wet	N/A	25	<25							
trans-1,3-Dichloropropene	7110407			ug/kg wet	N/A	25	<25							
2,3-Dichloropropene	7110407			ug/kg wet	N/A	25	<25							
Isopropyl Ether	7110407			ug/kg wet	N/A	25	<25							
Ethylbenzene	7110407			ug/kg wet	N/A	25	<25							
Hexachlorobutadiene	7110407			ug/kg wet	N/A	35	<35							
Isopropylbenzene	7110407			ug/kg wet	N/A	25	<25							
p-Isopropyltoluene	7110407			ug/kg wet	N/A	25	<25							
Methylene Chloride	7110407			ug/kg wet	N/A	50	<50							
Methyl tert-Butyl Ether	7110407			ug/kg wet	N/A	25	<25							
Naphthalene	7110407			ug/kg wet	N/A	50	<50							
n-Propylbenzene	7110407			ug/kg wet	N/A	25	<25							

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

LABORATORY BLANK QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	RPD Limit	Q
VOCs by SW8260B														
Styrene	7110407			ug/kg wet	N/A	25	<25							
1,1,1,2-Tetrachloroethane	7110407			ug/kg wet	N/A	25	<25							
1,1,2,2-Tetrachloroethane	7110407			ug/kg wet	N/A	25	<25							
Tetrachloroethene	7110407			ug/kg wet	N/A	25	<25							
Toluene	7110407			ug/kg wet	N/A	25	<25							
1,2,3-Trichlorobenzene	7110407			ug/kg wet	N/A	25	<25							
1,2,4-Trichlorobenzene	7110407			ug/kg wet	N/A	25	<25							
1,1,1-Trichloroethane	7110407			ug/kg wet	N/A	25	<25							
1,1,2-Trichloroethane	7110407			ug/kg wet	N/A	35	<35							
Trichloroethene	7110407			ug/kg wet	N/A	25	<25							
Trichlorofluoromethane	7110407			ug/kg wet	N/A	25	<25							
1,2,3-Trichloropropane	7110407			ug/kg wet	N/A	50	<50							
1,2,4-Trimethylbenzene	7110407			ug/kg wet	N/A	25	<25							
1,3,5-Trimethylbenzene	7110407			ug/kg wet	N/A	25	<25							
Vinyl chloride	7110407			ug/kg wet	N/A	35	<35							
Xylenes, total	7110407			ug/kg wet	N/A	85	<85							
Surrogate: Dibromofluoromethane	7110407			ug/kg wet					94		82-112			
Surrogate: Toluene-d8	7110407			ug/kg wet					99		91-106			
Surrogate: 4-Bromofluorobenzene	7110407			ug/kg wet					101		89-110			
Styrene	7110464			ug/kg wet	N/A	25	<25							
Surrogate: Dibromofluoromethane	7110464			ug/kg wet					93		82-112			
Surrogate: Toluene-d8	7110464			ug/kg wet					100		91-106			
Surrogate: 4-Bromofluorobenzene	7110464			ug/kg wet					99		89-110			
PNAs by SW8310														
Acenaphthene	7110451			ug/kg wet	N/A	50	<50							
Acenaphthylene	7110451			ug/kg wet	N/A	85	<85							
Anthracene	7110451			ug/kg wet	N/A	5.0	<5.0							
Benzo (a) anthracene	7110451			ug/kg wet	N/A	5.0	<5.0							
Benzo (b) fluoranthene	7110451			ug/kg wet	N/A	5.0	<5.0							
Benzo (k) fluoranthene	7110451			ug/kg wet	N/A	5.0	<5.0							
Benzo (a) pyrene	7110451			ug/kg wet	N/A	5.0	<5.0							
Benzo (g,h,i) perylene	7110451			ug/kg wet	N/A	5.0	<5.0							
Chrysene	7110451			ug/kg wet	N/A	5.0	<5.0							
Dibenzo (a,h) anthracene	7110451			ug/kg wet	N/A	7.5	<7.5							
Fluoranthene	7110451			ug/kg wet	N/A	10	<10							
Fluorene	7110451			ug/kg wet	N/A	10	<10							
Indeno (1,2,3-cd) pyrene	7110451			ug/kg wet	N/A	5.0	<5.0							
1-Methylnaphthalene	7110451			ug/kg wet	N/A	30	<30							
2-Methylnaphthalene	7110451			ug/kg wet	N/A	25	<25							
Naphthalene	7110451			ug/kg wet	N/A	30	<30							
Phenanthrene	7110451			ug/kg wet	N/A	5.0	<5.0							
Pyrene	7110451			ug/kg wet	N/A	5.0	<5.0							
Surrogate: 2-Fluorobiphenyl	7110451			ug/kg wet					91		61-128			

ARCADIS - MILWAUKEE
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Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

CCV QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	Limit	Q
VOCs by SW8260B														
Benzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2390		96		80-120			
Bromobenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2250		90		80-120			
Bromochloromethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2370		95		80-120			
Bromodichloromethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2270		91		80-120			
Bromoform	7K14010		2500.0	ug/kg wet	N/A	N/A	2050		82		80-120			
Bromomethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2390		95		80-120			
n-Butylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2460		98		80-120			
sec-Butylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2380		95		80-120			
tert-Butylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2340		94		80-120			
Carbon Tetrachloride	7K14010		2500.0	ug/kg wet	N/A	N/A	2270		91		80-120			
Chlorobenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2400		96		80-120			
Chlorodibromomethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2140		86		80-120			
Chloroethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2350		94		80-120			
Chloroform	7K14010		2500.0	ug/kg wet	N/A	N/A	2340		94		80-120			
Chloromethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2320		93		80-120			
2-Chlorotoluene	7K14010		2500.0	ug/kg wet	N/A	N/A	2330		93		80-120			
4-Chlorotoluene	7K14010		2500.0	ug/kg wet	N/A	N/A	2350		94		80-120			
1,2-Dibromo-3-chloropropane	7K14010		2500.0	ug/kg wet	N/A	N/A	2160		87		80-120			
1,2-Dibromoethane (EDB)	7K14010		2500.0	ug/kg wet	N/A	N/A	2380		95		80-120			
Dibromomethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2430		97		80-120			
1,2-Dichlorobenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2350		94		80-120			
1,3-Dichlorobenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2370		95		80-120			
1,4-Dichlorobenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2380		95		80-120			
Dichlorodifluoromethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2270		91		80-120			
1,1-Dichloroethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2340		94		80-120			
1,2-Dichloroethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2370		95		80-120			
1,1-Dichloroethene	7K14010		2500.0	ug/kg wet	N/A	N/A	2390		95		80-120			
cis-1,2-Dichloroethene	7K14010		2500.0	ug/kg wet	N/A	N/A	2320		93		80-120			
trans-1,2-Dichloroethene	7K14010		2500.0	ug/kg wet	N/A	N/A	2050		82		80-120			
1,2-Dichloropropane	7K14010		2500.0	ug/kg wet	N/A	N/A	2340		93		80-120			
1,3-Dichloropropane	7K14010		2500.0	ug/kg wet	N/A	N/A	2360		94		80-120			
2,2-Dichloropropane	7K14010		2500.0	ug/kg wet	N/A	N/A	2380		95		80-120			
1,1-Dichloropropene	7K14010		2500.0	ug/kg wet	N/A	N/A	2350		94		80-120			
cis-1,3-Dichloropropene	7K14010		2500.0	ug/kg wet	N/A	N/A	2310		92		80-120			
trans-1,3-Dichloropropene	7K14010		2500.0	ug/kg wet	N/A	N/A	2310		93		80-120			
2,3-Dichloropropene	7K14010		2500.0	ug/kg wet	N/A	N/A	2340		93		80-120			
Isopropyl Ether	7K14010		2500.0	ug/kg wet	N/A	N/A	2270		91		80-120			
Ethylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2420		97		80-120			
Hexachlorobutadiene	7K14010		2500.0	ug/kg wet	N/A	N/A	2570		103		80-120			
Isopropylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2490		100		80-120			
p-Isopropyltoluene	7K14010		2500.0	ug/kg wet	N/A	N/A	2390		96		80-120			
Methylene Chloride	7K14010		2500.0	ug/kg wet	N/A	N/A	2320		93		80-120			
Methyl tert-Butyl Ether	7K14010		2500.0	ug/kg wet	N/A	N/A	2020		81		80-120			
Naphthalene	7K14010		2500.0	ug/kg wet	N/A	N/A	2520		101		80-120			
n-Propylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2340		94		80-120			

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CCV QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	RPD Limit	Q
WOCs by SW8260B														
Styrene	7K14010		2500.0	ug/kg wet	N/A	N/A	2420		97		80-120			
1,1,1,2-Tetrachloroethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2250		90		80-120			
1,1,2,2-Tetrachloroethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2260		90		80-120			
Tetrachloroethene	7K14010		2500.0	ug/kg wet	N/A	N/A	2480		99		80-120			
Toluene	7K14010		2500.0	ug/kg wet	N/A	N/A	2370		95		80-120			
1,2,3-Trichlorobenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2630		105		80-120			
1,2,4-Trichlorobenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2580		103		80-120			
1,1,1-Trichloroethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2310		92		80-120			
1,1,2-Trichloroethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2340		94		80-120			
Trichloroethene	7K14010		2500.0	ug/kg wet	N/A	N/A	2460		98		80-120			
Trichlorofluoromethane	7K14010		2500.0	ug/kg wet	N/A	N/A	2480		99		80-120			
1,2,3-Trichloropropane	7K14010		2500.0	ug/kg wet	N/A	N/A	2430		97		80-120			
1,2,4-Trimethylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2330		93		80-120			
1,3,5-Trimethylbenzene	7K14010		2500.0	ug/kg wet	N/A	N/A	2360		94		80-120			
Vinyl chloride	7K14010		2500.0	ug/kg wet	N/A	N/A	2430		97		80-120			
Xylenes, total	7K14010		7500.0	ug/kg wet	N/A	N/A	7320		98		80-120			
Surrogate: Dibromofluoromethane	7K14010			ug/kg wet					98		80-120			
Surrogate: Toluene-d8	7K14010			ug/kg wet					100		80-120			
Surrogate: 4-Bromofluorobenzene	7K14010			ug/kg wet					104		80-120			
Styrene	7K15013		2500.0	ug/kg wet	N/A	N/A	2410		96		80-120			
Surrogate: Dibromofluoromethane	7K15013			ug/kg wet					95		80-120			
Surrogate: Toluene-d8	7K15013			ug/kg wet					100		80-120			
Surrogate: 4-Bromofluorobenzene	7K15013			ug/kg wet					101		80-120			
PNAs by SW8310														
Acenaphthene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.92		98		85-115			
Acenaphthylene	7K16011		10.0000	ug/kg wet	N/A	N/A	9.98		100		85-115			
Anthracene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.515		103		85-115			
			0											
Benzo (a) anthracene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.477		95		85-115			
			0											
Benzo (b) fluoranthene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.05		105		85-115			
Benzo (k) fluoranthene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.503		101		85-115			
			0											
Benzo (a) pyrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.549		110		85-115			
			0											
Benzo (g,h,i) perylene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.08		108		85-115			
Chrysene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.494		99		85-115			
			0											
Dibenzo (a,h) anthracene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.06		106		85-115			
Fluoranthene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.00		100		85-115			
Fluorene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.01		101		85-115			
Indeno (1,2,3-cd) pyrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.468		94		85-115			
			0											
1-Methylnaphthalene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.86		97		85-115			
2-Methylnaphthalene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.95		99		85-115			
Naphthalene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.88		98		85-115			
Phenanthrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.508		102		85-115			
			0											
Pyrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.496		99		85-115			
			0											

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CCV QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	Limit	Q
PNAs by SW8310														
Surrogate: 2-Fluorobiphenyl	7K16011			ug/kg wet					96		85-115			
Acenaphthene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.97		99		85-115			
Acenaphthylene	7K16011		10.0000	ug/kg wet	N/A	N/A	9.94		99		85-115			
Anthracene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.517		103		85-115			
			0											
Benzo (a) anthracene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.478		96		85-115			
			0											
Benzo (b) fluoranthene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.05		105		85-115			
Benzo (k) fluoranthene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.503		101		85-115			
			0											
Benzo (a) pyrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.535		107		85-115			
			0											
Benzo (g,h,i) perylene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.02		102		85-115			
Chrysene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.494		99		85-115			
			0											
Dibenzo (a,h) anthracene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.06		106		85-115			
Fluoranthene	7K16011		1.0000	ug/kg wet	N/A	N/A	0.999		100		85-115			
Fluorene	7K16011		1.0000	ug/kg wet	N/A	N/A	1.05		105		85-115			
Indeno (1,2,3-cd) pyrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.481		96		85-115			
			0											
1-Methylnaphthalene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.88		98		85-115			
2-Methylnaphthalene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.95		99		85-115			
Naphthalene	7K16011		5.0000	ug/kg wet	N/A	N/A	4.85		97		85-115			
Phenanthrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.512		102		85-115			
			0											
Pyrene	7K16011		0.5000	ug/kg wet	N/A	N/A	0.493		99		85-115			
			0											
Surrogate: 2-Fluorobiphenyl	7K16011			ug/kg wet					95		85-115			
Acenaphthene	7K19014		5.0000	ug/kg wet	N/A	N/A	4.92		98		85-115			
Acenaphthylene	7K19014		10.0000	ug/kg wet	N/A	N/A	9.99		100		85-115			
Anthracene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.515		103		85-115			
			0											
Benzo (a) anthracene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.467		93		85-115			
			0											
Benzo (b) fluoranthene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.08		108		85-115			
Benzo (k) fluoranthene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.506		101		85-115			
			0											
Benzo (a) pyrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.558		112		85-115			
			0											
Benzo (g,h,i) perylene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.07		107		85-115			
Chrysene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.489		98		85-115			
			0											
Dibenzo (a,h) anthracene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.05		105		85-115			
Fluoranthene	7K19014		1.0000	ug/kg wet	N/A	N/A	0.997		100		85-115			
Fluorene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.00		100		85-115			
Indeno (1,2,3-cd) pyrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.501		100		85-115			
			0											
1-Methylnaphthalene	7K19014		5.0000	ug/kg wet	N/A	N/A	4.86		97		85-115			
2-Methylnaphthalene	7K19014		5.0000	ug/kg wet	N/A	N/A	4.95		99		85-115			
Naphthalene	7K19014		5.0000	ug/kg wet	N/A	N/A	4.88		98		85-115			
Phenanthrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.508		102		85-115			
			0											

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CCV QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	Limit	Q
PNAs by SW8310														
Pyrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.492		98		85-115			
			0											
Surrogate: 2-Fluorobiphenyl	7K19014			ug/kg wet					96		85-115			
Acenaphthene	7K19014		5.0000	ug/kg wet	N/A	N/A	5.00		100		85-115			
Acenaphthylene	7K19014		10.000	ug/kg wet	N/A	N/A	10.1		101		85-115			
Anthracene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.520		104		85-115			
			0											
Benzo (a) anthracene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.461		92		85-115			
			0											
Benzo (b) fluoranthene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.06		106		85-115			
Benzo (k) fluoranthene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.514		103		85-115			
			0											
Benzo (a) pyrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.556		111		85-115			
			0											
Benzo (g,h,i) perylene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.10		110		85-115			
Chrysene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.504		101		85-115			
			0											
Dibenzo (a,h) anthracene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.07		107		85-115			
Fluoranthene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.01		101		85-115			
Fluorene	7K19014		1.0000	ug/kg wet	N/A	N/A	1.04		104		85-115			
Indeno (1,2,3-cd) pyrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.495		99		85-115			
			0											
1-Methylnaphthalene	7K19014		5.0000	ug/kg wet	N/A	N/A	4.91		98		85-115			
2-Methylnaphthalene	7K19014		5.0000	ug/kg wet	N/A	N/A	4.99		100		85-115			
Naphthalene	7K19014		5.0000	ug/kg wet	N/A	N/A	4.98		100		85-115			
Phenanthrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.511		102		85-115			
			0											
Pyrene	7K19014		0.5000	ug/kg wet	N/A	N/A	0.493		99		85-115			
			0											
Surrogate: 2-Fluorobiphenyl	7K19014			ug/kg wet					107		85-115			

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LABORATORY DUPLICATE QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	% REC	Dup %REC	% REC Limits	RPD RPD	RPD Limit	Q
General Chemistry Parameters													
QC Source Sample: WQK0358-03													
% Solids	7110400	89.5		%	N/A	N/A	89.3				0	20	
QC Source Sample: WQK0402-02													
% Solids	7110400	11.3		%	N/A	N/A	11.3				0	20	

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LCS/LCS DUPLICATE QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	RPD Limit	Q
VOCs by SW8260B														
Benzene	7110407		2500.0	ug/kg wet	N/A	N/A	2060		82		64-124			
Bromobenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2000		80		70-130			
Bromochloromethane	7110407		2500.0	ug/kg wet	N/A	N/A	2060		82		70-130			
Bromodichloromethane	7110407		2500.0	ug/kg wet	N/A	N/A	1970		79		70-130			
Bromoform	7110407		2500.0	ug/kg wet	N/A	N/A	1860		75		70-130			
Bromomethane	7110407		2500.0	ug/kg wet	N/A	N/A	2010		80		70-130			
n-Butylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2080		83		70-130			
sec-Butylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	1990		79		70-130			
tert-Butylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	1990		80		70-130			
Carbon Tetrachloride	7110407		2500.0	ug/kg wet	N/A	N/A	1880		75		70-130			
Chlorobenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2090		84		80-123			
Chlorodibromomethane	7110407		2500.0	ug/kg wet	N/A	N/A	1910		76		70-130			
Chloroethane	7110407		2500.0	ug/kg wet	N/A	N/A	1990		80		70-130			
Chloroform	7110407		2500.0	ug/kg wet	N/A	N/A	2000		80		70-130			
Chloromethane	7110407		2500.0	ug/kg wet	N/A	N/A	1940		77		70-130			
2-Chlorotoluene	7110407		2500.0	ug/kg wet	N/A	N/A	2010		80		70-130			
4-Chlorotoluene	7110407		2500.0	ug/kg wet	N/A	N/A	2050		82		70-130			
1,2-Dibromo-3-chloropropane	7110407		2500.0	ug/kg wet	N/A	N/A	2030		81		70-130			
1,2-Dibromoethane (EDB)	7110407		2500.0	ug/kg wet	N/A	N/A	2110		84		70-130			
Dibromomethane	7110407		2500.0	ug/kg wet	N/A	N/A	2140		86		70-130			
1,2-Dichlorobenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2120		85		70-130			
1,3-Dichlorobenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2120		85		70-130			
1,4-Dichlorobenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2130		85		70-130			
Dichlorodifluoromethane	7110407		2500.0	ug/kg wet	N/A	N/A	2050		82		70-130			
1,1-Dichloroethane	7110407		2500.0	ug/kg wet	N/A	N/A	2000		80		70-130			
1,2-Dichloroethane	7110407		2500.0	ug/kg wet	N/A	N/A	2110		85		70-130			
1,1-Dichloroethene	7110407		2500.0	ug/kg wet	N/A	N/A	1970		79		43-141			
cis-1,2-Dichloroethene	7110407		2500.0	ug/kg wet	N/A	N/A	2030		81		70-130			
trans-1,2-Dichloroethene	7110407		2500.0	ug/kg wet	N/A	N/A	1770		71		70-130			
1,2-Dichloropropane	7110407		2500.0	ug/kg wet	N/A	N/A	2010		81		70-130			
1,3-Dichloropropane	7110407		2500.0	ug/kg wet	N/A	N/A	2050		82		70-130			
2,2-Dichloropropane	7110407		2500.0	ug/kg wet	N/A	N/A	1980		79		70-130			
1,1-Dichloropropene	7110407		2500.0	ug/kg wet	N/A	N/A	1980		79		70-130			
cis-1,3-Dichloropropene	7110407		2500.0	ug/kg wet	N/A	N/A	2020		81		70-130			
trans-1,3-Dichloropropene	7110407		2500.0	ug/kg wet	N/A	N/A	2070		83		70-130			
Ethylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2050		82		79-122			
Hexachlorobutadiene	7110407		2500.0	ug/kg wet	N/A	N/A	2150		86		70-130			
Isopropylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2010		80		70-130			
p-Isopropyltoluene	7110407		2500.0	ug/kg wet	N/A	N/A	2060		82		70-130			
Methylene Chloride	7110407		2500.0	ug/kg wet	N/A	N/A	2040		82		70-130			
Methyl tert-Butyl Ether	7110407		2406.2	ug/kg wet	N/A	N/A	1800		75		55-137			
Naphthalene	7110407		2500.0	ug/kg wet	N/A	N/A	2310		92		70-130			
n-Propylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	1990		80		70-130			
Styrene	7110407		2500.0	ug/kg wet	N/A	N/A	2090		83		70-130			
1,1,1,2-Tetrachloroethane	7110407		2500.0	ug/kg wet	N/A	N/A	1970		79		70-130			

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Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	RPD Limit	Q
VOCs by SW8260B														
1,1,2,2-Tetrachloroethane	7110407		2500.0	ug/kg wet	N/A	N/A	2030		81		70-130			
Tetrachloroethene	7110407		2500.0	ug/kg wet	N/A	N/A	2070		83		70-130			
Toluene	7110407		2500.0	ug/kg wet	N/A	N/A	2000		80		78-120			
2,3-Trichlorobenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2420		97		70-130			
1,2,4-Trichlorobenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2390		96		70-130			
1,1,1-Trichloroethane	7110407		2500.0	ug/kg wet	N/A	N/A	1970		79		70-130			
1,1,2-Trichloroethane	7110407		2500.0	ug/kg wet	N/A	N/A	2080		83		70-130			
Trichloroethene	7110407		2500.0	ug/kg wet	N/A	N/A	2100		84		78-124			
Trichlorofluoromethane	7110407		2500.0	ug/kg wet	N/A	N/A	1990		80		70-130			
2,3-Trichloropropane	7110407		2500.0	ug/kg wet	N/A	N/A	2160		87		70-130			
2,4-Trimethylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2020		81		75-128			
3,5-Trimethylbenzene	7110407		2500.0	ug/kg wet	N/A	N/A	2020		81		76-127			
Vinyl chloride	7110407		2500.0	ug/kg wet	N/A	N/A	2050		82		70-130			
Xylenes, total	7110407		7500.0	ug/kg wet	N/A	N/A	6210		83		79-122			
Surrogate: Dibromofluoromethane	7110407			ug/kg wet					99		82-112			
Surrogate: Toluene-d8	7110407			ug/kg wet					98		91-106			
Surrogate: 4-Bromofluorobenzene	7110407			ug/kg wet					103		89-110			
PNAs by SW8310														
Acenaphthene	7110451		400.00	ug/kg wet	N/A	50	332		83		72-114			
Acenaphthylene	7110451		800.00	ug/kg wet	N/A	85	646		81		74-117			
Anthracene	7110451		40.000	ug/kg wet	N/A	5.0	33.2		83		67-124			
Benzo (a) anthracene	7110451		40.000	ug/kg wet	N/A	5.0	39.4		98		76-119			
Benzo (b) fluoranthene	7110451		80.000	ug/kg wet	N/A	5.0	88.1		110		87-132			
Benzo (k) fluoranthene	7110451		40.000	ug/kg wet	N/A	5.0	44.1		110		86-132			
Benzo (a) pyrene	7110451		40.000	ug/kg wet	N/A	5.0	36.9		92		62-125			
Benzo (g,h,i) perylene	7110451		80.000	ug/kg wet	N/A	5.0	79.1		99		80-128			
Chrysene	7110451		40.000	ug/kg wet	N/A	5.0	41.6		104		80-121			
Dibenzo (a,h) anthracene	7110451		80.000	ug/kg wet	N/A	7.5	84.3		105		87-128			
Fluoranthene	7110451		80.000	ug/kg wet	N/A	10	79.9		100		78-129			
Fluorene	7110451		80.000	ug/kg wet	N/A	10	73.0		91		64-122			
Indeno (1,2,3-cd) pyrene	7110451		40.000	ug/kg wet	N/A	5.0	37.1		93		80-125			
1-Methylnaphthalene	7110451		400.00	ug/kg wet	N/A	30	327		82		72-115			
2-Methylnaphthalene	7110451		400.00	ug/kg wet	N/A	25	309		77		59-114			
Naphthalene	7110451		400.00	ug/kg wet	N/A	30	324		81		72-111			
Phenanthrene	7110451		40.000	ug/kg wet	N/A	5.0	39.6		99		78-132			
Pyrene	7110451		40.000	ug/kg wet	N/A	5.0	41.0		103		75-122			
Surrogate: 2-Fluorobiphenyl	7110451			ug/kg wet					78		61-115			

ARCADIS - MILWAUKEE
126 N Jefferson Street Suite 400
Milwaukee, WI 53202
Mr. Jim Bannantine

Work Order: WQK0371
Project: Union Pacific Butler
Project Number: WI11451 UPRR Butler Yard

Received: 11/09/07
Reported: 11/20/07 12:37

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC DATA

Analyte	Seq/ Batch	Source Result	Spike Level	Units	MDL	MRL	Result	Dup Result	% REC	Dup %REC	% REC Limits	RPD RPD	Limit	Q
PNAs by SW8310														
QC Source Sample: WQK0328-01														
Acenaphthene	7110451	0.00	468.82	ug/kg dry	N/A	59	418	434	89	93	62-127	4	37	
Acenaphthylene	7110451	0.00	937.65	ug/kg dry	N/A	100	858	898	91	96	68-122	5	29	
Anthracene	7110451	0.958	46.882	ug/kg dry	N/A	5.9	39.7	40.5	83	84	50-138	2	26	
Benzo (a) anthracene	7110451	6.11	46.882	ug/kg dry	N/A	5.9	48.5	48.4	90	90	45-153	0	40	
Benzo (b) fluoranthene	7110451	2.94	93.765	ug/kg dry	N/A	5.9	103	102	106	106	69-149	1	23	
Benzo (k) fluoranthene	7110451	1.39	46.882	ug/kg dry	N/A	5.9	51.9	52.0	108	108	66-153	0	26	
Benzo (a) pyrene	7110451	3.00	46.882	ug/kg dry	N/A	5.9	44.1	43.9	88	87	39-147	0	36	
Benzo (g,h,i) perylene	7110451	0.00	93.765	ug/kg dry	N/A	5.9	95.0	95.8	101	102	63-152	1	27	
Chrysene	7110451	4.77	46.882	ug/kg dry	N/A	5.9	47.7	47.9	92	92	53-149	0	41	
Dibenzo (a,h) anthracene	7110451	0.00	93.765	ug/kg dry	N/A	8.8	98.0	98.3	105	105	81-134	0	20	
Fluoranthene	7110451	10.6	93.765	ug/kg dry	N/A	12	88.9	89.2	84	84	62-143	0	21	
Fluorene	7110451	0.00	93.765	ug/kg dry	N/A	12	68.4	84.6	73	90	51-133	21	38	
Indeno (1,2,3-cd) pyrene	7110451	0.00	46.882	ug/kg dry	N/A	5.9	44.6	43.8	95	94	55-151	2	30	
1-Methylnaphthalene	7110451	0.00	468.82	ug/kg dry	N/A	35	447	466	95	99	64-126	4	33	
2-Methylnaphthalene	7110451	0.00	468.82	ug/kg dry	N/A	29	447	436	95	93	44-131	2	42	
Naphthalene	7110451	0.00	468.82	ug/kg dry	N/A	35	398	404	85	86	60-125	1	30	
Phenanthrene	7110451	6.56	46.882	ug/kg dry	N/A	5.9	48.7	51.2	90	95	57-155	5	28	
Pyrene	7110451	10.1	46.882	ug/kg dry	N/A	5.9	47.1	47.2	79	79	47-147	0	38	
Surrogate: 2-Fluorobiphenyl	7110451			ug/kg dry					84	92	61-120			

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Received: 11/09/07
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CERTIFICATION SUMMARY

TestAmerica - Watertown, WI

Method	Matrix	Wisconsin
SW 5035	Solid/Soil	
SW 8260B	Solid/Soil	
SW 8310	Solid/Soil	

DATA QUALIFIERS AND DEFINITIONS

ADDITIONAL COMMENTS

Results are reported on a wet weight basis unless otherwise noted.

ARCADIS

Appendix D

Landfill Tonnage Report

Customer Summary Report

Criteria: 07/01/2008 12:00 AM to 05/13/2009 11:59 PM

Business Unit Name: Orchard Ridge RDF - S03953 (USA)

User: PSInd

Date: May 13 2009, 4:37:02 PM - Central Standard Time

Operation Type: All

Customer Name: UNIONPAC3011 (UNION PACIFIC RAIL

Ticket Type: All

Customer Type: All

Product Category: All

Ticket Date	Ticket ID	Cust Code	Customer	Generator	Manifest	Profile	Truck	Material	Tons
9/30/2008	680374	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30461	BIO102079WI	73	DIESEL	25.34
9/30/2008	680381	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30462	BIO102079WI	45	DIESEL	24
9/30/2008	680384	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30463	BIO102079WI	23	DIESEL	25.37
9/30/2008	680407	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30464	BIO102079WI	73	DIESEL	25.94
9/30/2008	680414	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30465	BIO102079WI	45	DIESEL	21.07
9/30/2008	680422	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30466	BIO102079WI	23	DIESEL	25.04
9/30/2008	680444	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30467	BIO102079WI	73	DIESEL	21.92
9/30/2008	680455	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30468	BIO102079WI	45	DIESEL	23.31
9/30/2008	680464	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30469	BIO102079WI	23	DIESEL	22.03
9/30/2008	680491	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30470	BIO102079WI	73	DIESEL	21.39
9/30/2008	680492	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30471	BIO102079WI	45	DIESEL	21.2
9/30/2008	680498	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30472	BIO102079WI	23	DIESEL	22.15
9/30/2008	680522	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30473	BIO102079WI	73	DIESEL	20.21
9/30/2008	680525	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30474	BIO102079WI	45	DIESEL	19.69
9/30/2008	680531	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30475	BIO102079WI	23	DIESEL	22.34
9/30/2008	680553	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30476	BIO102079WI	73	DIESEL	18.44
9/30/2008	680564	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30477	BIO102079WI	45	DIESEL	21.25
9/30/2008	680566	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30478	BIO102079WI	23	DIESEL	20.98
9/30/2008	680590	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30479	BIO102079WI	73	DIESEL	24.23
9/30/2008	680605	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30480	BIO102079WI	45	DIESEL	19.26
9/30/2008	680608	3011	UNION PACIFIC RAIL	136-UNIONPACRR	see	BIO102079WI	23	DIESEL	21.53
9/30/2008	680628	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30482	BIO102079WI	73	DIESEL	24.88
9/30/2008	680641	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30483	BIO102079WI	45	DIESEL	20.31
9/30/2008	680653	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30484	BIO102079WI	23	DIESEL	25.7
9/30/2008	680679	3011	UNION PACIFIC RAIL	136-UNIONPACRR	see	BIO102079WI	73	DIESEL	21.26
9/30/2008	680697	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30487	BIO102079WI	23	DIESEL	21.93
9/30/2008	680713	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30488	BIO102079WI	73	DIESEL	25.04
9/30/2008	680726	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30486	BIO102079WI	45	DIESEL	24.49
9/30/2008	680730	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30489	BIO102079WI	45	DIESEL	21.91
9/30/2008	680732	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30490	BIO102079WI	23	DIESEL	27.69
10/1/2008	680778	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30491	BIO102079WI	29	DIESEL	21.82
10/1/2008	680784	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30492	BIO102079WI	63	DIESEL	18.55
10/1/2008	680792	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30493	BIO102079WI	32	DIESEL	21.01
			UNION PACIFIC RAIL					DIESEL	

10-008	680797	3011	ROAD	136-UNIONPACRR	30494	BIO102079WI	121	CONTAMINATED	20.6
10/1/2008	680810	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30495	BIO102079WI	29	DIESEL	24.15
10-008	680828	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30496	BIO102079WI	63	DIESEL	27.29
10/1/2008	680834	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30497	BIO102079WI	32	DIESEL	21.63
10-008	680842	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30498	BIO102079WI	121	DIESEL	22.5
10/1/2008	680850	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30499	BIO102079WI	29	DIESEL	26.49
10-008	680878	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30500	BIO102079WI	63	DIESEL	26.02
10-008	680889	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30501	BIO102079WI	32	DIESEL	23.94
10/1/2008	680894	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30502	BIO102079WI	329	DIESEL	22.01
10-008	680910	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30503	BIO102079WI	63	DIESEL	25.73
10/1/2008	680920	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30504	BIO102079WI	32	DIESEL	19.84
10-008	680925	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30505	BIO102079WI	29	DIESEL	24.46
10/1/2008	680950	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30506	BIO102079WI	249	DIESEL	22.44
10-008	680956	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30507	BIO102079WI	63	DIESEL	22.32
10-008	680961	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30508	BIO102079WI	32	DIESEL	18.94
10/1/2008	680966	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30509	BIO102079WI	29	DIESEL	22.64
10-008	680982	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30510	BIO102079WI	249	DIESEL	21.32
10/1/2008	680992	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30511	BIO102079WI	63	DIESEL	23.27
10-008	681003	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30512	BIO102079WI	32	DIESEL	21.96
10/1/2008	681015	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30513	BIO102079WI	29	DIESEL	22.77
10-008	681026	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30514	BIO102079WI	249	DIESEL	20.81
10/1/2008	681039	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30515	BIO102079WI	63	DIESEL	22.76
10-008	681046	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30516	BIO102079WI	32	DIESEL	21.19
10-008	681056	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30517	BIO102079WI	29	DIESEL	24.57
10/1/2008	681062	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30518	BIO102079WI	249	DIESEL	20.46
10-008	681087	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30519	BIO102079WI	63	DIESEL	26.23
10/1/2008	681092	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30520	BIO102079WI	32	DIESEL	21.58
10-008	681100	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30521	BIO102079WI	29	DIESEL	19.83
10/1/2008	681118	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30522	BIO102079WI	121	DIESEL	22.89
10-008	681141	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30523	BIO102079WI	63	DIESEL	23.84
10-008	681144	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30524	BIO102079WI	32	DIESEL	22.42
10/1/2008	681148	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30525	BIO102079WI	29	DIESEL	21.71
10-008	681161	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30526	BIO102079WI	249	DIESEL	21.48
10/1/2008	681194	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30527	BIO102079WI	63	DIESEL	25.63
10-008	681203	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30528	BIO102079WI	29	DIESEL	23.29
10/1/2008	681209	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30529	BIO102079WI	32	DIESEL	21.58
10-008	681214	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30530	BIO102079WI	249	DIESEL	21.76
10/1/2008	681251	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30531	BIO102079WI	63	DIESEL	25.78
10-008	681263	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30533	BIO102079WI	249	DIESEL	22.52
10-008	681264	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30532	BIO102079WI	29	DIESEL	24.17
10/3/2008	681869	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30534	BIO102079WI	128	DIESEL	21.11
10-008	681872	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30535	BIO102079WI	29	DIESEL	21.19

			ROAD					CONTAMINATED	
10/3/2008	681878	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30536	BIO102079WI	69	DIESEL	17.07
10/3/2008	681879	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30537	BIO102079WI	63	DIESEL	25.56
10/3/2008	681895	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30538	BIO102079WI	128	DIESEL	22.22
10/3/2008	681902	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30539	BIO102079WI	29	DIESEL	22.3
10/3/2008	681911	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30540	BIO102079WI	69	DIESEL	23.1
10/3/2008	681918	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30541	BIO102079WI	63	DIESEL	23.51
10/3/2008	681940	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30542	BIO102079WI	128	DIESEL	21.13
10/3/2008	681949	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30543	BIO102079WI	29	DIESEL	21.23
10/3/2008	681956	3011	UNION PACIFIC RAIL	136-UNIONPACRR	see	BIO102079WI	69	DIESEL	26.18
10/3/2008	681966	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30545	BIO102079WI	63	DIESEL	26.41
10/3/2008	681978	3011	UNION PACIFIC RAIL	136-UNIONPACRR	SEE	BIO102079WI	128	DIESEL	26.21
10/3/2008	681987	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30547	BIO102079WI	29	DIESEL	27.5
10/3/2008	682003	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30548	BIO102079WI	69	DIESEL	27.05
10/3/2008	682009	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30549	BIO102079WI	63	DIESEL	26.86
10/3/2008	682032	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30550	BIO102079WI	128	DIESEL	23.75
10/3/2008	682036	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30551	BIO102079WI	29	DIESEL	26.33
10/3/2008	682044	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30552	BIO102079WI	69	DIESEL	27.19
10/3/2008	682049	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30553	BIO102079WI	63	DIESEL	26.85
10/3/2008	682073	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30554	BIO102079WI	128	DIESEL	23.99
10/3/2008	682079	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30555	BIO102079WI	29	DIESEL	28.38
10/3/2008	682092	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30556	BIO102079WI	69	DIESEL	26.53
10/3/2008	682105	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30557	BIO102079WI	63	DIESEL	26.01
10/3/2008	682121	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30558	BIO102079WI	128	DIESEL	25.07
10/3/2008	682126	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30559	BIO102079WI	29	DIESEL	23.54
10/3/2008	682131	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30560	BIO102079WI	69	DIESEL	22.41
10/3/2008	682141	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30561	BIO102079WI	63	DIESEL	23.68
10/3/2008	682154	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30562	BIO102079WI	128	DIESEL	20.98
10/3/2008	682158	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30563	BIO102079WI	29	DIESEL	22.5
10/3/2008	682167	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30564	BIO102079WI	69	DIESEL	23.56
10/3/2008	682193	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30565	BIO102079WI	63	DIESEL	21.17
10/3/2008	682200	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30566	BIO102079WI	128	DIESEL	20.67
10/3/2008	682206	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30567	BIO102079WI	29	DIESEL	21.5
10/3/2008	682217	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30568	BIO102079WI	69	DIESEL	20.67
10/3/2008	682234	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30569	BIO102079WI	63	DIESEL	24.35
10/3/2008	682241	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30570	BIO102079WI	128	DIESEL	26.04
10/3/2008	682255	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30571	BIO102079WI	29	DIESEL	23.8
10/3/2008	682263	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30572	BIO102079WI	69	DIESEL	24.76
10/3/2008	682291	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30573	BIO102079WI	63	DIESEL	24.24
10/3/2008	682297	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30574	BIO102079WI	128	DIESEL	23.28
10/3/2008	682308	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30575	BIO102079WI	29	DIESEL	24.11
10/3/2008	682321	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30576	BIO102079WI	69	DIESEL	21.63

			ROAD					CONTAMINATED	
10/3/2008	682341	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30577	BIO102079WI	63	DIESEL	26.65
10/3/2008	682346	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30578	BIO102079WI	128	DIESEL	25.66
10/3/2008	682349	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30579	BIO102079WI	29	DIESEL	24.86
10/3/2008	682395	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30618	BIO102079WI	128	DIESEL	23.91
10/4/2008	682399	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30619	BIO102079WI	69	DIESEL	23.89
10/4/2008	682413	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30620	BIO102079WI	128	DIESEL	22.97
10/4/2008	682417	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30621	BIO102079WI	69	DIESEL	22.55
1/6/2009	708619	3011	UNION PACIFIC RAIL	136-UNIONPACRR	30093	BIO102079WI	105	DIESEL	0.38
Material Total	124								2852.59
Customer Total	124								2852.59

Orchard Ridge RDF

SPECIAL WASTE MANIFEST DISPOSAL TICKET

30093

BILL TO: Union Pacific Railroad



A Waste Management Company

TRANSPORTER: Advanced Waste Services

Union Pacific Railroad

4823 North 119th Street

GENERATOR: On behalf of Union Pacific Railroad

Milwaukee, WI

GENERATORS SIGNATURE: *[Signature]* Date

WASTE DESCRIPTION: Diesel Contaminated Soil

WASTE DESCRIPTION: Diesel Contaminated Soil

BIC102079WI

PROFILE #

ACCEPTED BY: *[Signature]* Date

DRIVERS SIGNATURE: *[Signature]* Date

TRUCK NO. 105

2 soil drums

TONS/YARDS

WHITE & YELLOW - GENERATOR COPY / PINK - DISPOSAL SITE COPY / GOLD - TRANSPORTER COPY

DCE-009-8/95



The Industrial Waste Professionals™

Corporate Office
1126 South 70th Street, Suite N408B - West Allis, WI 53214
Phone: 800-842-9792 Fax: 414-475-4496

GENERATOR	NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone (800) 842-9792	4. Waste Tracking Number AWS 28122	
	5. Generator's Name and Mailing Address Union Pacific Railroad-Milwaukee 4823 N. 119th St. Milwaukee WI 53225				Generator's Site Address (if different than mailing address)		
	6. Transporter 1 Company Name Advanced Waste Carriers, Inc.				U.S. EPA ID Number WI 0000815381		
	7. Transporter 2 Company Name				U.S. EPA ID Number		
	8. Designated Facility Name and Site Address Orchard Ridge RDF W124 N9355 Boundary Road Menomonee Falls WI 53051 Facility's Phone: 414 2538620				U.S. EPA ID Number		
TRANSPORTER	9. Waste Shipping Name and Description			10. Containers		11. Total Quantity	12. Unit Wt./Vol.
				No.	Type		
	1. Non-Hazardous Solids, Non-Regulated Material			002	DM	1100	P
	2.						
	3.						
DESIGNATED FACILITY	4.						
	13. Special Handling Instructions and Additional Information a) BIO102079M Diesel Contaminated Soil LOAD 11:25 - 12:00						24 Hour Emergency Contact 800-842-9792 E. R. G. On-board www.advancedwasteser
	14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.						
	Generator's/Officer's Printed/Typed Name AGUSTA FOR GENERATOR SHAW LORRACUS (AWS)				Signature 		Month Day Year 12 03 08
	15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:						
DESIGNATED FACILITY	18. Transporter Acknowledgment of Receipt of Materials						
	Transporter 1 Printed/Typed Name SHAW LORRACUS				Signature 		Month Day Year 12 03 08
	Transporter 2 Printed/Typed Name				Signature		Month Day Year
	17. Discrepancy						
	17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection						
DESIGNATED FACILITY	Manifest Reference Number:						
	17b. Alternate Facility (or Generator)						U.S. EPA ID Number
	Facility's Phone:						
	17c. Signature of Alternate Facility (or Generator)						Month Day Year
	18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a						
Printed/Typed Name Angelika Kolmann				Signature 		Month Day Year 11 06 08	

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Appendix E

Photographs



PHOTOGRAPH 1: View of the Area 1 excavation looking northeast. Concrete structure from former roundhouse shown.



PHOTOGRAPH 2: View of Area 1 looking west. Concrete from former roundhouse shown.



PHOTOGRAPH 3: View of Area 2 excavation being backfilled (looking north).



PHOTOGRAPH 4: View of Area 3 excavation looking east.



PHOTOGRAPH 5: View of Area 4 excavation looking north.



PHOTOGRAPH 6: View of Area 4 excavation being dewatered and backfilled (looking north).



PHOTOGRAPH 7: View of area 4 excavation being backfilled.



PHOTOGRAPH 8: View looking south at north south trending concrete wall extending to depth greater than 4 feet below land surface at Area 5 excavation.



PHOTOGRAPH 9: View of Area 5 excavation looking north.



PHOTOGRAPH 10: View of Area 5 excavation in progress looking north.
Concrete from former roundhouse shown.



PHOTOGRAPH 11: View of Area 5 excavation being backfilled (looking south). Concrete from former roundhouse shown.



PHOTOGRAPH 12: View of Areas 1, 2, and 4 being backfilled.



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Appendix F

Midwest Engineering
Services, Inc. Geotechnical
Report

**midwest engineering services, inc.**

geotechnical • environmental • materials engineers

821 Corporate Court
Suite 102
Waukesha, WI 53189-5010
262-521-2125
FAX 262-521-2471
www.midwesteng.com

Report of Fill Density Testing

Client: Arcadis US
126 N. Jefferson St., Ste. 400
Milwaukee, WI 53202

Project: Union Pacific Butler Fueling Facility
Milwaukee, WI

Date: 9-30-08

Project No.: 7-85083-FDT1

Field Rep.: Mike Rehfeldt

Testing Freq.: (X) Spot Check () Full-Time

Field Observations:

Weather: Partly cloudy, 60's

General contractor: Hulcher **Grading Contractor:** Hulcher

Fill location: Excavation area 3

Fill material type: 1 1/4" T.B.

Fill material source: Imported - Halquist

Fill grade free of topsoil, debris, water and frost: (X) Yes () No

Fill grade observed firm and stable (X) Yes () No

Fill lift thickness: 12± inches

Fill compacted with: Vibratory drum roller

Field Test Data:

Test No.	Test Elev.*	Soil I.D.	Lab Data		Field Data		Percent Comp.	Remarks	Test Location
			Mc	Dd	Mc	Dd			
1	-3'	P1	7.5	141.0	5.2	136.4	97	A	Middle Area 3
2	-2'	P1	7.5	141.0	5.9	136.9	97	A	North side Area 3
3	-1'	P1	7.5	141.0	4.5	136.1	97	A	Middle west side Area 3

Test Method: (X) Nuclear () Sandcone

Proctor Method: (X) Standard () Modified

Specified Compaction: 95%

Remarks: (A) Complies (B) Non Compliance (R) Retest

***Elev.:** depth below subgrade

Fill tested complies with project compaction specification (X) Yes () No

Remarks/Non-Conformance/Corrective Actions

Contractor notified of test results (X) Yes () No

**midwest engineering services, inc.**

geotechnical • environmental • materials engineers

821 Corporate Court
Suite 102
Waukesha, WI 53189-5010
262-521-2125
FAX 262-521-2471
www.midwesteng.com

Report of Fill Density Testing

Client: Arcadis US
126 N. Jefferson St., Ste. 400
Milwaukee, WI 53202

Project: Union Pacific Butler Fueling Facility
Milwaukee, WI

Date: 10-01-08

Project No.: 7-85083-FDT2

Field Rep.: Mike Rehfeldt

Testing Freq.: (X) Spot Check () Full-Time

Field Observations:

Weather: Partly cloudy, 50's to 60's
General contractor: Hulcher Grading Contractor: Hulcher
Fill location: Excavation areas 2 and 4
Fill material type: 1 1/4" T.B.
Fill material source: Imported - Halquist
Fill grade free of topsoil, debris, water and frost: (X) Yes () No
Fill grade observed firm and stable: (X) Yes () No
Fill lift thickness: 12± inches
Fill compacted with: Vibratory drum roller

Field Test Data:

Test No.	Test Elev. *	Soil I.D.	Lab Data		Field Data		Percent Comp.	Remarks	Test Location
			Mc	Dd	Mc	Dd			
1	-3'	P1	7.5	141.0	5.0	133.4	95	A	Area 4 middle
2	-2'	P1	7.5	141.0	3.5	135.6	96	A	Area 4 middle north
3	-2'	P1	7.5	141.0	5.6	134.7	96	A	Area 2 middle
4	-1'	P1	7.5	141.0	4.0	134.0	95	A	Area 4 middle south
5	-1'	P1	7.5	141.0	5.5	134.3	95	A	Area 2 middle

Test Method: (X) Nuclear () Sandcone

Proctor Method: (X) Standard () Modified

Specified Compaction: 95%

Remarks: (A) Complies (B) Non Compliance (R) Retest

*Elev.: depth below subgrade

Fill tested complies with project compaction specification (X) Yes () No

Remarks/Non-Conformance/Corrective Actions

Contractor notified of test results (X) Yes () No

**midwest engineering services, inc.**

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821 Corporate Court
Suite 102
Waukesha, WI 53189-5010
262-521-2125
FAX 262-521-2471
www.midwesteng.com**Report of Fill Density Testing****Client:** Arcadis US
126 N. Jefferson St., Ste. 400
Milwaukee, WI 53202**Project:** Union Pacific Butler Fueling Facility
Milwaukee, WI**Date:** 10-02-08**Project No.:** 7-85083-FDT3**Field Rep.:** Mike Rehfeldt**Testing Freq.:** (X) Spot Check () Full-Time**Field Observations:**

Weather: Partly cloudy, 50's to 60's
General contractor: Hulcher **Grading Contractor:** Hulcher
Fill location: Excavation areas 1 and 5
Fill material type: 1 1/4" T.B.
Fill material source: Imported - Halquist
Fill grade free of topsoil, debris, water and frost: (X) Yes () No
Fill grade observed firm and stable: (X) Yes () No
Fill lift thickness: 12± inches
Fill compacted with: Vibratory drum roller and walk behind vibratory plate

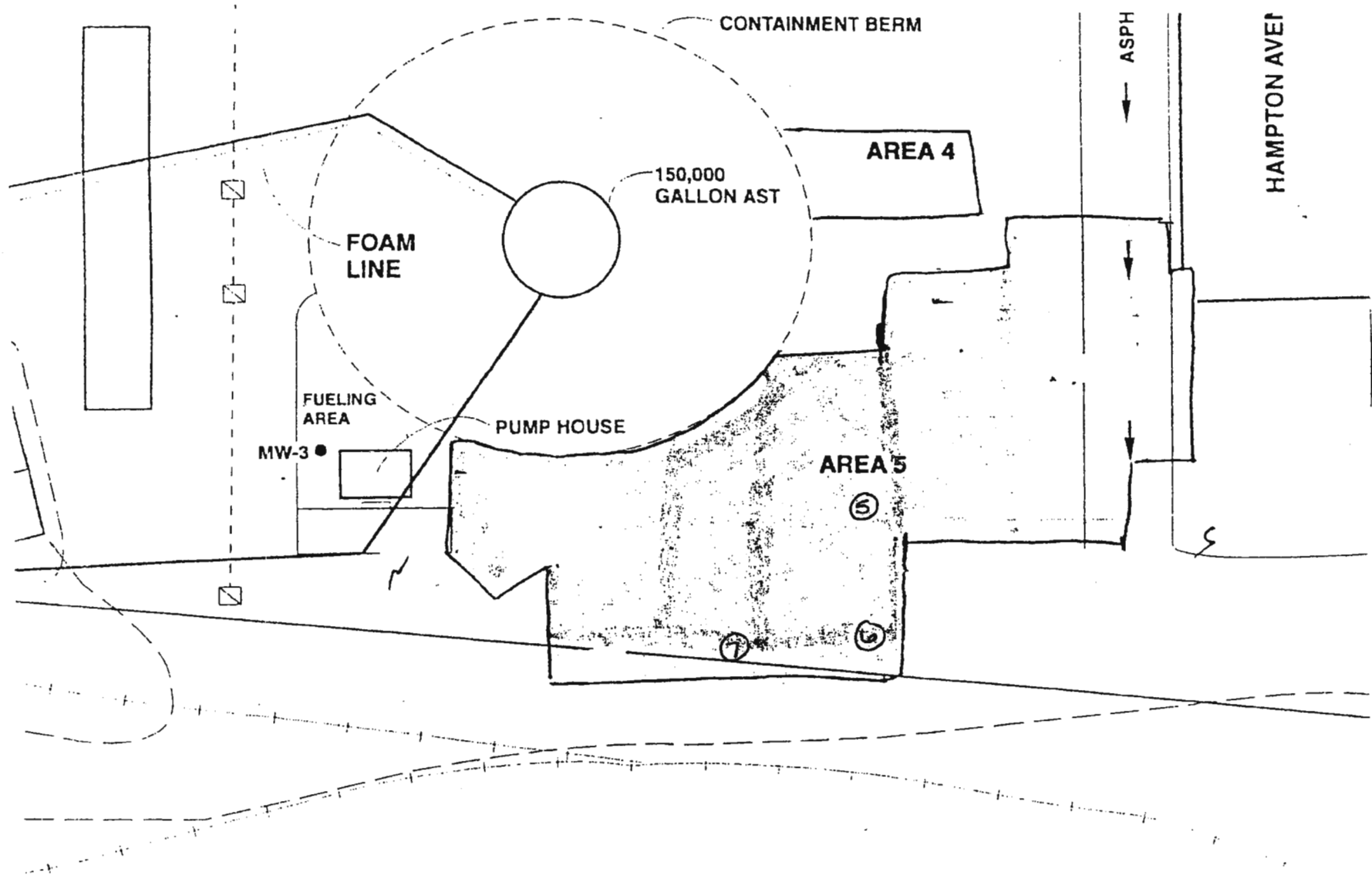
Field Test Data:

Test No.	Test Elev.*	Soil I.D.	Lab Data		Field Data		Percent Comp.	Remarks	Test Location
			Mc	Dd	Mc	Dd			
1	-4'	P1	7.5	141.0	6.4	132.9	95	A	Area 1 middle
2	-3'	P1	7.5	141.0	6.2	137.0	97	A	Area 1 middle west
3	-2'	P1	7.5	141.0	5.9	133.5	95	A	Area 1 middle east
4	-1'	P1	7.5	141.0	6.3	134.9	96	A	Area 1 middle
5	-3'	P1	7.5	141.0	6.2	134.8	96	A	See diagram
6	-3'	P1	7.5	141.0	5.9	133.0	95	A	See diagram
7	-3'	P1	7.5	141.0	3.8	134.4	95	A	See diagram

Test Method: (X) Nuclear () Sandcone**Proctor Method:** (X) Standard () Modified**Specified Compaction:** 95%**Remarks:** (A) Complies (B) Non Compliance (R) Retest

*Elev.: depth below subgrade

Fill tested complies with project compaction specification (X) Yes () No**Remarks/Non-Conformance/Corrective Actions****Contractor notified of test results** (X) Yes () No



MES
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Test Location Diagram

Union Pacific Butler Fueling Facility
Milwaukee, WI

Scale: NOT TO SCALE

Project Number: 7-86083

Date: 10-2-08

Drawn By: -

FIGURE 1

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Waukesha, WI 53189-5010
262-521-2125
FAX 262-521-2471
www.midwesteng.com

Report of Fill Density Testing

Client: Arcadis US
126 N. Jefferson St., Ste. 400
Milwaukee, WI 53202

Project: Union Pacific Butler Fueling Facility
Milwaukee, WI

Date: 10-03-08

Project No.: 7-85083-FDT4

Field Rep.: Mike Rehfeldt

Testing Freq.: (X) Spot Check () Full-Time

Field Observations:

Weather: Clear, sunny, light wind, 40's to 50's
General contractor: Hulcher **Grading Contractor:** Hulcher
Fill location: Area 5 between buried foundation footings
Fill material type: 1 1/4" T.B.
Fill material source: Imported - Halquist
Fill grade free of topsoil, debris, water and frost: (X) Yes () No
Fill grade observed firm and stable: (X) Yes () No
Fill lift thickness: 12± inches
Fill compacted with: Vibratory drum roller and walk behind vibratory plate

Field Test Data:

Test No.	Test Elev.*	Soil I.D.	Lab Data		Field Data		Percent Comp.	Remarks	Test Location
			Mc	Dd	Mc	Dd			
1	-3'	P1**	8.0	139.4	7.4	132.6	95	A	See diagram
2	-2'	P1**	8.0	139.4	6.2	132.0	95	A	
3	-2'	P1	7.5	141.0	4.8	142.7	100+	A	
4	-2'	P1**	8.0	139.4	4.5	132.6	95	A	
5	-2'	P1	7.5	141.0	4.3	142.3	100+	A	

Test Method: (X) Nuclear () Sandcone

Proctor Method: (X) Standard () Modified

Specified Compaction: 95%

Remarks: (A) Complies (B) Non Compliance (R) Retest

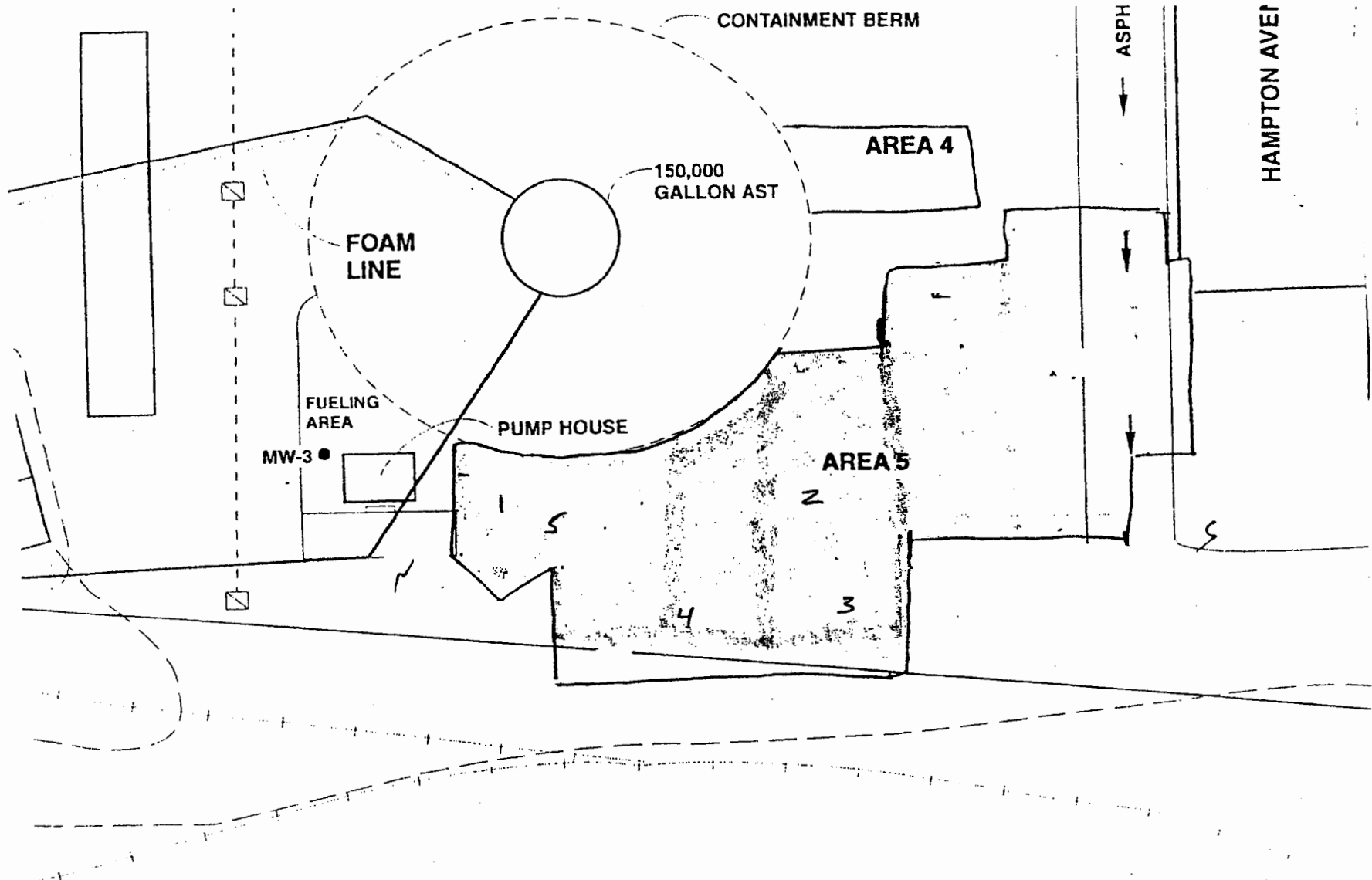
*Elev.: depth below subgrade

**uncorrected proctor value

Fill tested complies with project compaction specification (X) Yes () No

Remarks/Non-Conformance/Corrective Actions

Contractor notified of test results (X) Yes () No



MES
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Test Location Diagram
Union Pacific Butler Fueling Facility
Milwaukee, WI

Scale: NOT TO SCALE
Project Number: 7-86083
Date: 10-3-08
Drawn By: —

FIGURE 1



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FAX 262-521-2471
www.midwesteng.com

Report of Fill Density Testing

Client: Arcadis US
126 N. Jefferson St., Ste. 400
Milwaukee, WI 53202

Project: Union Pacific Butler Fueling Facility
Milwaukee, WI

Date: 10-04-08

Project No.: 7-85083-FDT5

Field Rep.: Dan Anderson

Testing Freq.: () Spot Check (X) Full-Time

Field Observations:

Weather:

General contractor: Hulcher **Grading Contractor:** Hulcher

Fill location: Excavation Area 5

Fill material type: 1 1/4" T.B.

Fill material source: Imported - Halquist

Fill grade free of topsoil, debris, water and frost: (X) Yes () No

Fill grade observed firm and stable (X) Yes () No

Fill lift thickness: 12± inches

Fill compacted with: Vibratory smooth drum roller

Field Test Data:

Test No.	Test Elev.*	Soil I.D.	Lab Data		Field Data		Percent Comp.	Remarks	Test Location
			Mc	Dd	Mc	Dd			
1	-1'	P1	7.5	141.0	3.5	130.6	93	B	See diagram
2	-1'	P1	7.5	141.0	3.1	132.5	94	B	
3	-1'	P1	7.5	141.0	3.5	129.0	91	B	
4	-2'	P1	7.5	141.0	3.6	124.9	88	B	
5	-2'	P1	7.5	141.0	3.4	128.1	91	B	
6	-3'	P1	7.5	141.0	4.5	126.7	90	B	
7	-3'	P1	7.5	141.0	6.1	133.5	95	A	
8	-2'	P1	7.5	141.0	6.4	134.7	96	A, R4 & 5	
9	-1'	P1	7.5	141.0	4.9	134.4	95	A	
10	-2'	P1	7.5	141.0	6.6	138.4	98	A	
11	-3'	P1	7.5	141.0	6.1	133.2	95	A	
12	-1'	P1	7.5	141.0	7.0	140.0	99	A, R1	
13	-0'	P1	7.5	141.0	5.1	134.9	96	A	
14	-3'	P1	7.5	141.0	6.2	140.1	99	A, R6	
15	-3'	P1	7.5	141.0	5.4	136.6	97	A	
16	-2'	P1	7.5	141.0	5.6	137.9	98	A	
17	-2'	P1	7.5	141.0	5.5	137.5	97	A	

Test Method: (X) Nuclear () Sandcone

Specified Compaction: 95%

*Elev.: depth below subgrade

Proctor Method: (X) Standard () Modified

Remarks: (A) Complies (B) Non Compliance (R) Retest

Fill tested complies with project compaction specification (X) Yes () No

MES Project No. 7-85083-FDT5
Union Pacific Butler Fueling Facility
Milwaukee, WI
Page 2

Remarks/Non-Conformance/Corrective Actions

--

Contractor notified of test results (X) Yes () No

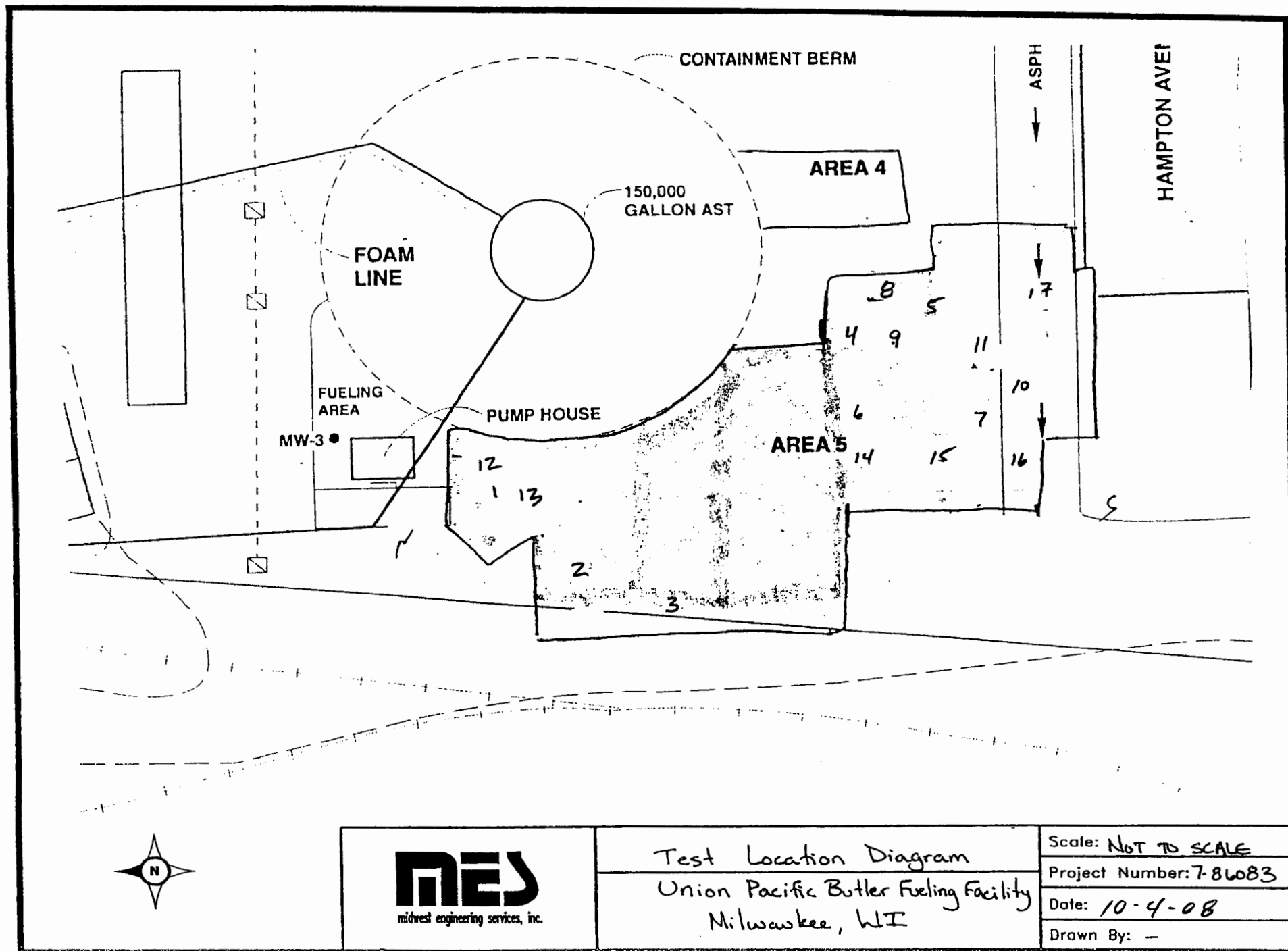


FIGURE 1

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Suite 102
Waukesha, WI 53189-5010
262-521-2125
FAX 262-521-2471
www.midwesteng.com**Report of Fill Density Testing****Client:** Arcadis US
126 N. Jefferson St., Ste. 400
Milwaukee, WI 53202**Project:** Union Pacific Butler Fueling Facility
Milwaukee, WI**Date:** 10-06-08**Project No.:** 7-85083-FDT6**Field Rep.:** Mike Rehfeldt**Testing Freq.:** (X) Spot Check () Full-Time**Field Observations:****Weather:** Overcast, 50's - 60's**General contractor:** Hulcher**Grading Contractor:** Hulcher**Fill location:** Excavation Area 5**Fill material type:** 1 1/4" T.B.**Fill material source:** Imported - Halquist**Fill grade free of topsoil, debris, water and frost:** (X) Yes () No**Fill grade observed firm and stable** (X) Yes () No**Fill lift thickness:** 12± inches**Fill compacted with:** Vibratory plate and vibratory drum roller**Field Test Data:**

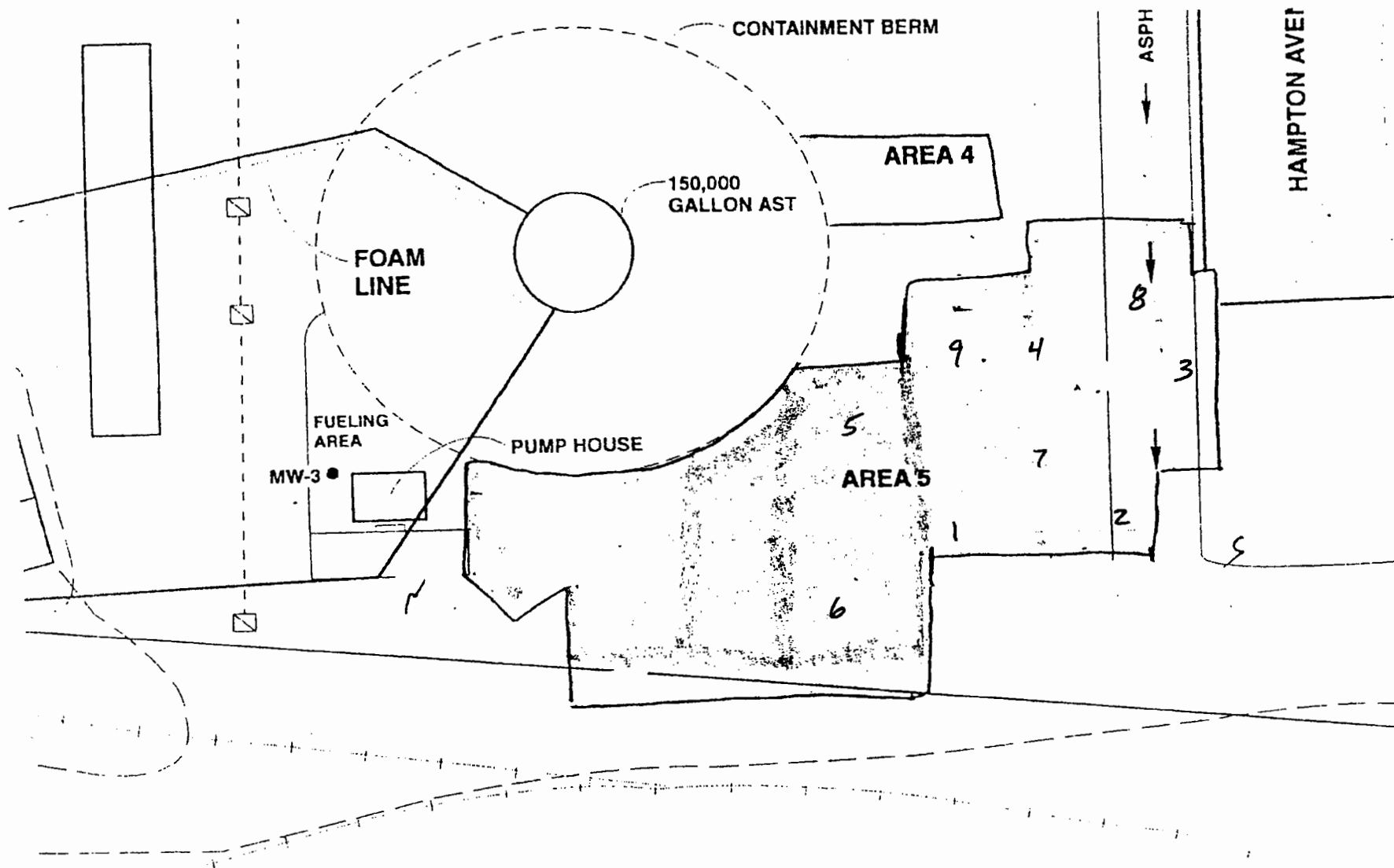
Test No.	Test Elev.*	Soil I.D.	Lab Data		Field Data		Percent Comp.	Remarks	Test Location
			Mc	Dd	Mc	Dd			
1	-1'	P1	7.5	141.0	6.3	135.6	96	A	See diagram
2	-1'	P1	7.5	141.0	6.5	143.5	100+	A	
3	-1'	P1	7.5	141.0	6.1	134.4	95	A	
4	-1'	P1	7.5	141.0	5.9	143.4	100+	A	
5	-1'	P1	7.5	141.0	8.3	135.6	96	A	
6	-1'	P1	7.5	141.0	6.1	140.2	99	A, R	Retest Nos. 2 & 3 on 10-04-08
7	-0'	P1**	8.0	139.5	6.0	132.9	95	A	
8	-0'	P1	7.5	141.0	5.3	142.1	100+	A	
9	-0'	P1	7.5	141.0	5.9	134.6	95	A	

Test Method: (X) Nuclear () Sandcone**Proctor Method:** (X) Standard () Modified**Specified Compaction:** 95%**Remarks:** (A) Complies (B) Non Compliance (R) Retest

*Elev.: depth below subgrade

**uncorrected proctor value

Fill tested complies with project compaction specification (X) Yes () No**Remarks/Non-Conformance/Corrective Actions****Contractor notified of test results** (X) Yes () No



mes
midwest engineering services, inc.

Test Location Diagram
Union Pacific Butler Fueling Facility
Milwaukee, WI

Scale: NOT TO SCALE
Project Number: 7-86083
Date: 10-6-08
Drawn By: —

FIGURE 1



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821 Corporate Court
Suite 102
Waukesha, WI 53189-5010
262-521-2125
FAX 262-521-2471
www.midwesteng.com

Report of Moisture-Density Test

Client: Arcadis US
126 N. Jefferson Street, Suite 400
Milwaukee, WI 53202

Project: Union Pacific Butler Fueling Facility
Milwaukee, WI

Date: 9/24/08

Project No.: 7-85083-P1

Sample ID: P1 (M08202)
Material Description: 1 1/4" Crushed limestone with little fines (1 1/4" T.B.)
Sample Source: Import from Halquist Quarry-Sussex, WI
Reference Standards: ASTM D4718, D2217, D422, D4318, C136/117

Material Properties

Natural Moisture:	n/a	% > 3/4" sieve:	6
Liquid Limit:	n/a	% > 3/8" sieve:	34
Plasticity Index:	n/a	% > #4 sieve:	57
Specific Gravity:	2.80 (estimated)	% < #200 sieve:	9

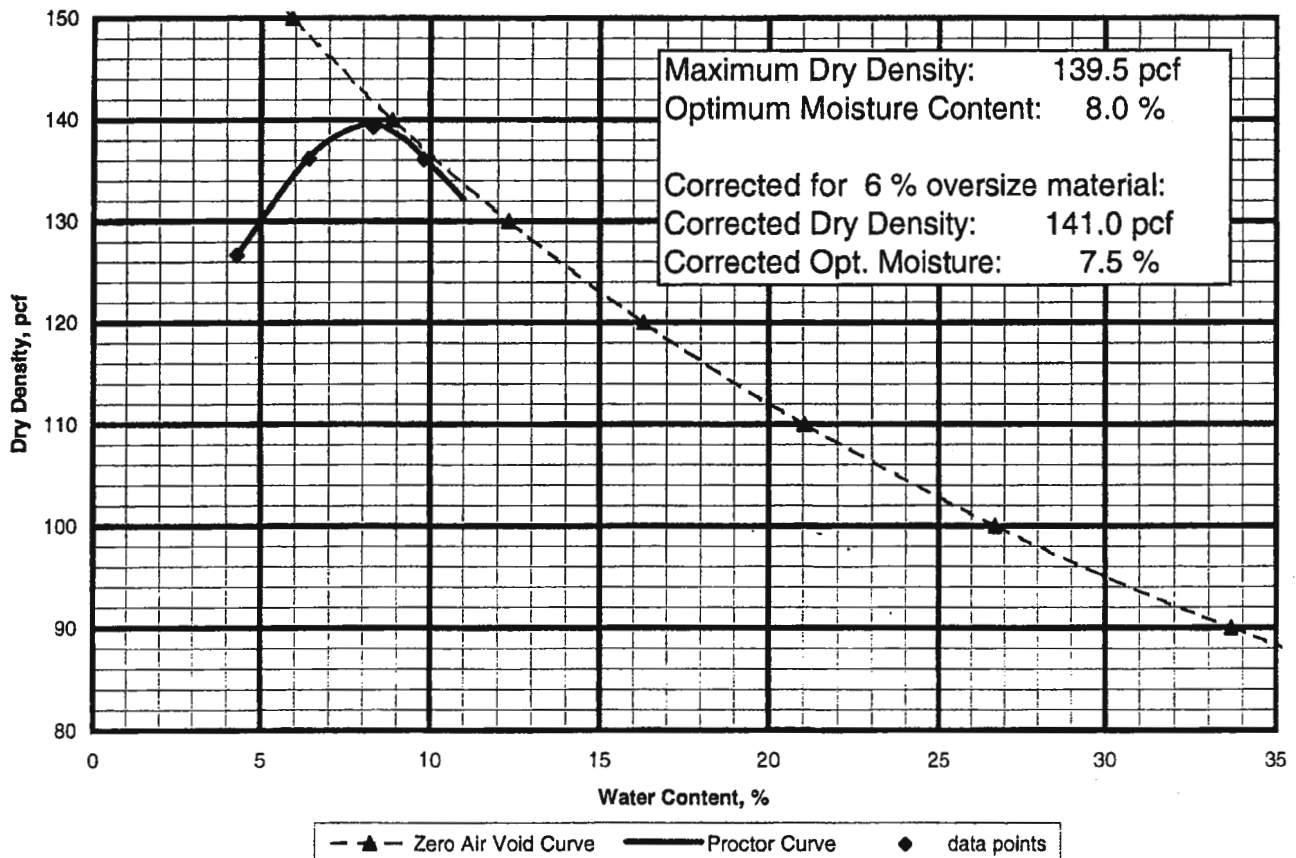
QA / QC

Sample Date	9/22/2008
Test Date:	9/23/2008
Tested By:	C. Kitson/J. Misik
Reviewed By:	Joseph Misik
Title:	Laboratory Manager Waukesha, WI

ASTM D698, Method-C

Prep Method: Moist

Hammer Type: Mechanical





Binyoti Amungwafor
Wisconsin Department of Natural Resources
Southern Region
2300 North Dr. MLK Jr Drive
Milwaukee, WI 53212

Subject:

Request for Final Case Closure, Union Pacific Railroad, Butler Fueling Yard Facility,
Milwaukee, Wisconsin BRRS No. 02-41-257209, 02-41-000967, 02-41-000260,
FID No. 21401860

Dear Mr. Amungwafor:

Attached is the *Monitoring Well Abandonment and VELR System Decommissioning Summary Report*. The conditions set forth in the Wisconsin Department of Natural Resource's Conditional Closure letter dated September 28, 2009 have been satisfied with the submittal of this summary report, which documents monitoring well and recovery trench abandonment and VELR system decommissioning. ARCADIS respectfully requests final case closure with submittal of this report.

We appreciate your assistance with this project. Should you have any questions regarding the project, please feel free to contact us at your convenience.

Sincerely,

ARCADIS

Toni L. Schoen
Hydrogeologist

ARCADIS
126 N. Jefferson Street
Suite 400
Milwaukee
Wisconsin 53202
Tel 414.276.7742
Fax 414.276.7603
www.arcadis-us.com

ENVIRONMENT

Date:
April 27, 2010

Contacts:
Toni Schoen

Phone:
414.276.7742

Email:
toni.schoen@arcadis-us.com

ARCADIS

**WISCONSIN DEPARTMENT OF NATURAL RESOURCES (WDNR) PROJECT MEETING
Union Pacific Railroad (UPRR), South Butler Yard 2, Wisconsin**

Date/Time: Wednesday, August 12, 2009 at 10:00a.m.

Location: WDNR Southeast District Office

Participants: Binyoti Amungwafor, WDNR
Geoff Reeder, Union Pacific Railroad
Martina Schlauch-Jones, ARCADIS
Ben Verburg, ARCADIS
Toni Schoen, ARCADIS

Purpose: To review and discuss the off-site exemption request for UPRR South Butler Yard.

Objectives: Address WDNR comments or questions regarding the off-site exemption request.

- I. Introductions
- II. Involved Parties
- III. Purpose of Off-Site Exemption Request
 - A. Historically, off-site sources of chlorinated volatile organic compounds (VOCs) have migrated onto the UPRR property.
- IV. Union Pacific Railroad
 - A. Switching yard with no historical releases reported, repairs or cleaning operations are not conducted on this portion of the Butler Yard.
- V. Eaton Corporation Investigation
 - A. Solvent degreasers used by Eaton at northeast corner of building.
 - B. Groundwater flow direction is to the east-southeast.
 - C. Soil isoconcentration maps from 0 to 10 feet, 10 to 15 feet, and >15 feet illustrate elevated total VOC concentrations.
 - D. DNAPL at MW-3 (1-foot thick).
 - E. Groundwater isoconcentration maps illustrate elevated total VOC concentrations over 35 feet below grade. Silty sand unit identified around 30 to 35 feet on the Eaton, UPRR, and Harley-Davidson properties.
- VI. Dames & Moore Investigations on UPRR Property
 - A. Installed MW-7/PZ-4 and MW-8.

ARCADIS

- B. Dense Nonaqueous Phase Liquids (DNAPL) at PZ-4 (2-feet thick) with dissolved phase concentrations of 1,1,1-Trichloroethane (1,1,1-TCA) and trichloroethene (TCE). TCE concentrations also detected at MW-7. MW-8 had no detections.

VII. ARCADIS Investigation on UPRR Property

- A. 10 temporary wells installed for collection of soil and groundwater samples.
- B. TW-1 installed to replace PZ-4 (PZ-4 could not be located in 2008).
 - No DNAPL observed.
 - No 1,1,1-TCA or TCE concentrations were detected in the surface soil sample collected indicating there was no release at this location.
 - TCE was identified in the soil sample collected from 30 to 32.5 feet, where silty sand unit observed.
- C. TW-2 installed directing west of TW-1 at the property line shared with Alsco.
 - There is a drainage ditch located west of the main line and is approximately 3 to 4 feet lower the main line. Ground elevation increases from the drainage ditch to the western property line, where UPRR and Alsco facility property lines meet. Alsco is a uniform cleaning facility.
 - TCE was identified in the surface soil sample (280 micrograms per kilogram [$\mu\text{g/kg}$]), indicating a release by Alsco.
 - 1,1,1-TCA and TCE were identified in the 7.5 to 10 feet soil sample at 300,000 $\mu\text{g/kg}$. The higher concentration of 1,1,1-TCA and TCE from 7.5 to 10 feet may also be attributed to a release from the Alsco facility, since UPRR.

VIII. Harley-Davidson Investigation

- A. Chlorinated VOCs were identified at MW-8, PZ-1, PZ-6, MW-7R, and MW-5R associated with the Former Test Track area.
- B. Soil-bentonite cutoff wall was installed to 45 feet in 2004.
- C. Post installation cutoff wall VOC concentrations increased as impacted groundwater moved along and around the cutoff wall. i.e. PZ-6 concentrations increased from below detection limits to 180 micrograms per liter ($\mu\text{g/L}$) and MW-8 concentrations increased from 0.43 $\mu\text{g/L}$ to 2 $\mu\text{g/L}$. The dissolved phase plume also has become elongated since the cutoff wall was installed.

IX. Summary and Conclusion

- A. The area of potential impacts at the UPRR Butler Yard serves as the switching yard, where no historical releases were reported, nor is equipment repaired or cleaned in the portion of the Yard.
- B. A release on the Eaton property has migrated onto the UPRR property. DNAPL was observed at MW-3 and 1,1,1-TCA and TCE impacts have migrated to depths greater than 35.
- C. A laterally extensive silty sand unit was identified beneath the Eaton, UPRR, and Harley-Davidson sites between 30 to 35 feet.
- D. Groundwater flow is to the east-southeast towards UPRR and Harley-Davidson.

ARCADIS

- E. Impacted groundwater has migrated from the AlSCO facility towards the UPRR property. Soil analytical at the UPRR and AlSCO property line contained concentrations of 1,1,1-TCA or TCE. The surface soil sample from TW-1 on the UPRR property did not chlorinated VOCs.
- F. In conclusion, the impacts on the UPRR property are from upgradient off-site sources.

X. Action Items

UNION PACIFIC RAILROAD COMPANY
Environmental Management Group

Donald R. York
Manager Environmental Site Remediation
(630) 876-2795
dryork@up.com

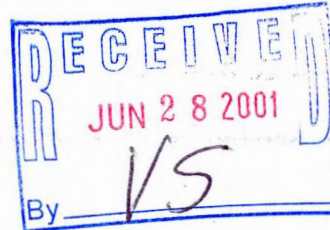


Mailing Address:
327 Spencer Street
West Chicago, Illinois 60185
FAX (630) 876-4644

241012860
Three open ERP
Activities

March 23, 2001

Pam Mylotta
Hydrologist-ERP
Dept of Natural Resources
P. O. Box 12436
Milwaukee, WI 53212



RE: Union Pacific Site Remediation project -Milwaukee, Butler Yard

Dear Ms. Mylotta:

Effective April 1, 2001, I will no longer be involved as a project manager for Union Pacific site remediation project. Any future correspondence with Union Pacific concerning the above mentioned site should be addressed to the following:

Jeff McDermott
Mgr Environmental Site Remediation
Union Pacific Railroad
1416 Dodge Street, Room 930
Omaha, NE 68179

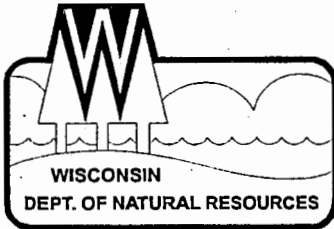
If you have any questions concerning this please feel free to contact Jeff at 402-271-3675.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. R. York".

D. R. York
Mgr Environmental Site Remediation

Cc: Jeff McDermott



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott McCallum Governor
Darrell Bazzell, Secretary
Gloria L. McCutcheon, Regional Director

Southeast Regional Headquarters
2300 N. Dr. ML King Drive, PO Box 12436
Milwaukee, Wisconsin 53212-0436
Telephone 414-263-8500
FAX 414-263-8606
TDD 414-263-8713

FID#: 241012860
BRRS#: 02-41-257209
BRRS#: 02-41-000967

April 19, 2001

Mr. Don York
Union Pacific Railroad
301 West Lake Street
Northlake, IL 60164

SUBJECT: Additional Site Investigation - Union Pacific Butler Yard Facility
4823 North 119th Street, Milwaukee, Wisconsin.

Dear Mr. York:

This letter is in response to the ARCADIS Geraghty & Miller submittal, *Additional Site Investigation and Recommended Remedial Action for the Union Pacific Butler Yard*, dated May 23, 2000.

The Wisconsin Department of Natural Resources (Department) concurs with the recommended remedial strategy for site closure as proposed in the ARCADIS submittal. Please send the Department quarterly updates and/or sampling results report upon completion.

PECFA Bidding Process

It is my understanding that if the total cost to remediate a site (i.e. the cost to complete a site investigation, remedial action plan and remedial action) for an occurrence exceeds \$60,000, the Department of Commerce implements a competitive bidding. Your submittal indicated that the Union Pacific Railroad (UPRR) is not eligible to request progress payments under PECFA, but will submit **one** PECFA reimbursement claim for environmental activities conducted from discovery of the release to site closure approval. You may want to contact the Department of Commerce to verify that UPRR has a waiver of the PECFA bidding process for the subject site.

Thank you for the actions you are taking to remediate the property. If you have any questions regarding this letter, you may contact me at 414-263-8639.

Sincerely,

Eric Amadi
Eric Amadi

Hydrogeologist
Remediation & Redevelopment Program/SER

C: Daniel Briller - ARCADIS Geraghty & Miller, Inc.
SER Case File #: 02-41-257209; 02-41-000967

UNION PACIFIC RAILROAD COMPANY

Environmental Management Group

Donald R. York
Manager Environmental Site Remediation
(630) 876-2795
dryork@notes.up.com



Mailing Address:
327 Spencer Street
West Chicago, Illinois 60185
FAX (630) 876-4644

June 24, 1999

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860
Union Pacific Railroad Company, 4823 North 119 Street, Butler

Dear Ms. Mylotta:

This is a project update for the above environmental case. Normally I have sent this report out on a quarterly basis. The last report sent to you was in September 1998. I apologize for failing to submit additional updates until now. Since the last update, the project manager for Geraghty and Miller left the firm and this project has not received a new project manager until early this year. Since the last project update, Geraghty & Miller has continued to implement those items, which you felt were necessary to reach an endpoint for this facility.

The installation of the geoprobes to more fully delineate contaminated areas has been completed. These were delayed due to the construction of the new fueling area. The excavated soils from the old fueling area have been removed. With the appointment of a new project manager I expect that this project will begin to move along, hopefully to a point where closure may be possible.

If you have any questions, please call me at 630-876-2795.

Sincerely,

Donald R. York
Manager of Environmental Site Remediation

241 012 860
02-41-000260
PC

ARCADIS GERAGHTY & MILLER



Don York
Union Pacific Railroad
301 West Lake Street
Northlake, Illinois 60164

99

ARCADIS Geraghty & Miller, Inc.
126 North Jefferson Street
Suite 400
Milwaukee
Wisconsin 53202
Tel 414 276 7742
Fax 414 276 7603

Subject:
Well Abandonment of GMMW-7, Union Pacific Butler Yard Facility, 4823 North
119th Street, Milwaukee, Wisconsin.
ARCADIS Geraghty & Miller Project No. WI000556.0003

ENVIRONMENTAL

Dear Mr. York:

At the request of Union Pacific Railroad, ARCADIS Geraghty & Miller, Inc. has completed the well abandonment of GMMW-7 at the Union Pacific Butler Yard Facility located in the City of Milwaukee, Wisconsin. The well abandonment activities were completed on April 23, 1999 to accommodate the expansion of the construction office near the location of GMMW-7. The well was abandoned in accordance with Chapter NR 141 of the Wisconsin Administrative Code. A copy of the Wisconsin Department of Natural Resources (WDNR) well abandonment form is attached with this letter.

Milwaukee:
30 April 1999

Contact:
James Drought

Extension:
414 277 6204

Thank you for the opportunity to be of continued service to Union Pacific Railroad on this project. Should you have any further questions regarding the abandonment of GMMW-7, please feel free to call at your convenience.

Sincerely,

ARCADIS Geraghty & Miller, Inc.

James F. Drought
Principal Scientist/Hydrogeologist

Enclosure

Copies:

Ms. Pam Mylotta - WDNR

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 1 Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/drillhole/Borehole Location	County MILWAUKEE	Original Well Owner (If Known) UNION PACIFIC RAILROAD CO.	
1/4 of SW 1/4 Sec. 31 ; T. 8 N; R. 21 ☒ E ☐ W		Present Well Owner UNION PACIFIC RAILROAD CO.	
(If applicable) Gov't Lot _____ Grid Number _____		Street or Route 1416 DODGE STREET	
Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.		City, State, Zip Code OMAHA, NE 68179	
Civil Town Name MILWAUKEE		Facility Well No. and/or Name (If Applicable) WI Unique Well No GMMW-7 _____	
Street Address of Well 119TH AND HAMPTON AVE.		Reason For Abandonment EXPANSION OF ADJACENT BUILDING	
City, Village MILWAUKEE		Date of Abandonment 04/23/99	

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) 12/11/96		(4) Depth to Water (Feet) 7.4	
☒ Monitoring Well ☐ Water Well ☐ Drillhole ☐ Borehole		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 _____	
Construction Report Available? ☒ Yes ☐ No		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	
Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) _____		(5) Required Method of Placing Sealing Material	
Formation Type: ☒ Unconsolidated Formation ☐ Bedrock		☒ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped ☐ Dump Bailer ☐ Other (Explain) _____	
Total Well Depth (ft.) 15.0 Casing Diameter (ins.) 2.0 (From ground surface) Casing Depth (ft.) _____		(6) Sealing Materials For monitoring wells and monitoring well boreholes only	
Lower Drillhole Diameter (in.) 15.0		☐ Neat Cement Grout ☐ Sand-Cement (Concrete) Grout ☐ Concrete ☐ Bentonite Pellets ☐ Clay-Sand Slurry ☐ Granular Bentonite ☐ Bentonite-Sand Slurry ☐ Bentonite-Cement Grout ☒ Chipped Bentonite	
Was Well Annular Space Grouted? ☒ Yes ☐ No ☐ Unknown If Yes, To What Depth? 1.5 TO 3 Feet			

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
BENTONITE CHIPS	Surface	15.0	3/4 BAG	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work ARCADIS GERAGHTY & MILLER, INC.		(10) FOR DNR OR COUNTY USE ONLY	
Signature of Person Doing Work <i>James J. Dougherty (for DH)</i>	Date Signed 4-23-99	Date Received/Inspected	District/County
Street or Route 126 N. JEFFERSON ST.	Telephone Number (414)-276-7742	Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
City, State, Zip Code MILWAUKEE, WISCONSIN 53202		Follow-up Necessary	



UNION PACIFIC RAILROAD
ENVIRONMENTAL MANAGEMENT GROUP
D. R. YORK, SENIOR MANAGER ENVIRONMENTAL SITE REMEDIATION
327 SPENCER
WEST CHICAGO, ILLINOIS 60185
PHONE # 630-876-2795 FAX # 630-876-4644



May 11, 1998

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860
Union Pacific Railroad Company, 4823 North 119 Street, Butler

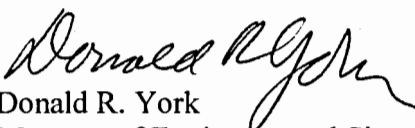
Dear Ms. Mylotta:

This is a ninety-day project update for the above environmental case. Since the last project update, Geraghty & Miller has continued to implement those items which you felt were necessary to reach an endpoint for this facility. Hopefully this additional work will confirm the conclusion that contamination has been defined on and off the site and that petroleum constituents are not present in the groundwater at the site at concentrations exceeding the standards set forth in Chapter NR 140 of the WAC.

In conjunction with an installation of a new fueling facility at the site, excavation of approximately 1500 cubic yards of soil at the fueling station location, has been conducted. While we realize this will not be PECFA eligible, we decided to undertake an additional removal while the field operations people were doing the construction of the new facility. We believe this will help shorten the time frame for our remediation activities. We are currently exploring options for treatment and disposal of the soil which is currently stockpiled at the site.

If you have any questions, please call me at 630-876-2795.

Sincerely,


Donald R. York
Manager of Environmental Site
Remediation



UNION PACIFIC RAILROAD
ENVIRONMENTAL MANAGEMENT GROUP
D. R. YORK, SENIOR MANAGER ENVIRONMENTAL SITE REMEDIATION
327 SPENCER
WEST CHICAGO, ILLINOIS 60185
PHONE # 630-876-2795 FAX # 630-876-4644



February 17, 1998

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860
Union Pacific Railroad Company, 4823 North 119 Street, Butler

Dear Ms. Mylotta:

This is a ninety-day project update for the above environmental case. Since the last project update, Geraghty & Miller has continued to implement those items which you felt were necessary to reach an endpoint for this facility. Hopefully this additional work will confirm the conclusion that contamination has been defined on and off the site and that petroleum constituents are not present in the groundwater at the site at concentrations exceeding the standards set forth in Chapter NR 140 of the WAC.

In January Geraghty & Miller provided a Remedial Alternatives Analysis to the Department of Commerce with a recommendation that the remediation for this site consist of passive bioremediation within the vadose zone soils and removal of separate phase product. We are now awaiting the approval from WDOC. If you have any questions, please call me at 630-876-2795.

Sincerely,

Donald R. York
Manager of Environmental Site
Remediation



UNION PACIFIC RAILROAD

ENVIRONMENTAL MANAGEMENT GROUP

D. R. YORK, MANAGER ENVIRONMENTAL FIELD OPERATIONS

301 W. LAKE STREET, SUITE 203

NORTHLAKE, ILLINOIS 60164

PHONE # 708-649-5321

FAX # 708-649-5410



May 5, 1997

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: **File Ref: FID# 241012860**
Union Pacific Railroad Company, 4823 North 119 Street, Butler

Dear Ms. Mylotta:

This is a ninety-day project update for the above environmental case. Since the last project update, Joel Strafelda has been reassigned to another region for site remediation activities. I am now the Project Manager for this site. The continued focus during the first quarter, was the assessment of fuel impacts to off site locations. Geraghty & Miller is now preparing the site investigation report.

During the first quarter of 1997, the extent of soil and groundwater has been defined on and off the Union Pacific site by the investigation activities. Collection of the separate-phase petroleum in MW-1 and MW-2 was initiated in April. Garaghty & Miller has received authority to conduct a feasibility study as part of our analysis of remedial action options. The results (Remedial Action Options Report) will be presented with the site investigation results in one report. If you have any questions, please call me at 708-649-5321.

Sincerely,

Donald R. York
Sr Manager of Environmental Site
Remediation

UNION PACIFIC RAILROAD COMPANY

K. R. (KEN) WELCH
Assistant Vice President
Environmental Management

Mailing Address:
Room 930
1416 Dodge Street
Omaha, Nebraska 68179
Fax No. (402) 271-4461



G. (GLENN) THOMAS
Director-Environmental Operations-South
S. W. (STEVE) BERKI
Director-Environmental Operations-Central
L. A. (LANNY) SCHMID
Director-Environmental Operations-West
B. A. (BROCK) NELSON
Director-Environmental Operations-East
R. L. (RICK) EADES
Director-Environmental Site Remediation

January 16, 1997

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860 ERP
Union Pacific Railroad Company, 4823 North 119 Street, Butler

Dear Ms. Mylotta:

This is a ninety-day project update for the above environmental case. Over the past quarter, Geraghty & Miller has continued the site investigation. Our focus during this period, was the assessment of fuel impacts to off site locations. This work was completed in December. Geraghty & Miller is now preparing the site investigation report.

During the first quarter of 1997, we will conduct a feasibility study as part of our analysis of remedial action options. The results (Remedial Action Options Report) will be presented with the site investigation results in one report. If you have any questions, please call me at 402-271-6572.

Sincerely,

Joel R. Strafelda
Manager of Environmental Site Remediation

UNION PACIFIC RAILROAD COMPANY

K. R. (KEN) WELCH
Assistant Vice President
Environmental Management

Mailing Address:
Room 930
1416 Dodge Street
Omaha, Nebraska 68179
Fax No. (402) 271-4461



G. (GLENN) THOMAS
Director-Environmental Operations-
Central
S. W. (STEVE) BERKI
Director-Environmental Operations-
Western
L. A. (LANNY) SCHMID
Director-Environmental Operations-
Southern
R. L. (RICK) EADES
Director-Environmental Site Remediation

December 23, 1996

Pamela Mylotta
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

Re: File Ref: FID# 241012860 *ERP*
Union Pacific Railroad, Butler fueling area

Dear Ms. Mylotta,

Union Pacific Railroad assigned a new manager to the above project. After January 1, 1997, please send all future correspondence regarding this project to:

Mr. Don York
Sr. Manager - Environmental Site Remediation
Union Pacific Railroad Company
301 West Lake Street, Room 203
Northlake, IL 60164-0000

Phone: (708) 649-5321
Fax: (708) 649-5410

Your cooperation in changing your records will be appreciated.

UNION PACIFIC RAILROAD COMPANY

K. R. (KEN) WELCH
Assistant Vice President
Environmental Management

Mailing Address:
Room 930
1416 Dodge Street
Omaha, Nebraska 68179
Fax No. (402) 271-4461



G. (GLENN) THOMAS
Director-Environmental Operations-
Central
S. W. (STEVE) BERKI
Director-Environmental Operations-
Western
L. A. (LANNY) SCHMID
Director-Environmental Operations-
Southern
R. L. (RICK) EADES
Director-Environmental Site Remediation

July 23, 1996

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860 ERR/ERP
Union Pacific Railroad Company, 4823 North 119 Street, Butler

Dear Ms. Mylotta:

Please refer to your file # 241012860, concerning the environmental repair case of Union Pacific Railroad Company at 4823 North 119 Street, in Butler. This letter provides a 90-day update of the project status.

In May and June, Geraghty & Miller, Inc. completed most of the soil and ground water sampling required for the site investigation. In July the analytical work was done. The analytical data was then used to establish locations for additional monitoring wells and soil borings needed to meet the objectives of the site investigation. Which bring us to the current project status.

The site investigation will continue into August with the next phase of soil and ground water sampling. I will have Geraghty & Miller, Inc. notify you of our exact schedule once it has been worked out. If you have any questions, please call me at 402-271-6572.

Sincerely,

Joel R. Strafelda
Manager of Environmental Site Remediation

May 29, 1996

Pamela A. Mylotta
Hydrogeologist, Environmental Repair Program
Wisconsin Department of Natural Resources
4041 North Richards Street
Post Office Box 12436
Milwaukee, Wisconsin 53212

Subject: Site Investigation Activities, Union Pacific Butler Yard Fueling Area, 4823 North
119th Street, Milwaukee, Wisconsin.

Dear Ms. Mylotta:

As discussed during our telephone conversation on Tuesday, May 28, 1996, during current site investigation activities at the Union Pacific Butler Yard Fueling Area relatively impermeable subsurface materials (i.e. clay) are being encountered; therefore, representative groundwater samples from Geoprobe™ borings cannot be collected. To resolve this problem, Geraghty & Miller intends to install five temporary groundwater monitoring wells to evaluate groundwater quality at the Union Pacific Butler Fueling Area site. Each ¾ inch polyvinyl chloride (PVC) well and well screen will be installed within a 2 inch borehole and backfilled with a clean, graded, filter pack sand followed by granular bentonite. A concrete surface seal will be placed above the granular bentonite and a water-tight expandable locking cap and flush mount protective casing will be used to secure each well. Groundwater samples will be collected from each temporary well and submitted to National Environmental Testing, Inc. (NET) [WDNR Certification No. 128053530] for volatile organic compounds (VOC), diesel range organics (DRO), and polynuclear aromatic hydrocarbons (PAH) analyses.

Geraghty & Miller will continue to inform the Wisconsin Department of Natural Resources (WDNR) of all pertinent site activities and provide the WDNR opportunities for site visit(s) during the site investigation activities. Thank you very much for your time and attention to this matter.



Ms. Pamela A. Mylotta

May 29, 1996

Page 2

If you have questions or comments regarding the project status or the site activities, please contact me at (414) 276-7742.

Sincerely,

GERAGHTY & MILLER, INC.



Keith A. Marquardt
Staff Scientist

c: Mr. Joel Strafelda, Union Pacific Railroad

upacrr\wi0556\butler\corr\siteact.doc/S



UNION PACIFIC RAILROAD COMPANY

K. R. (KEN) WELCH
Assistant Vice President
Environmental Management

Mailing Address:
Room 930
1416 Dodge Street
Omaha, Nebraska 68179
Fax No. (402) 271-4461
March 26, 1996



G. (GLENN) THOMAS
Director-Environmental Operations-
Central
S. W. (STEVE) BERKI
Director-Environmental Operations-
Western
L. A. (LANNY) SCHMID
Director-Environmental Operations-
Southern
R. L. (RICK) EADES
Director-Environmental Site Remediation

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860
Chicago & North Western Railway Company
4823 North 119 Street, ~~Butler~~

MILW

Dear Ms. Mylotta:

This letter provides a 90-day status report for work conducted for the above case. As last reported, Union Pacific Railroad Company hired Geraghty & Miller, of Milwaukee, as our environmental consultant.

Over the past 90-days, we worked with Geraghty & Miller to execute a consulting agreement. Since this is our first time working with this consultant, the process took a few more weeks than usual. However, Geraghty & Miller is now on board now and ready to begin the remedial investigation.

Over the next 90-days the investigation will be conducted. The investigation report should be available in about 90-days. We will notify you of the field investigation dates. If you have any questions, please call me at 402-271-6572.

Sincerely,

Joel R. Strafeldt
Manager of Environmental Site Remediation

UNION PACIFIC RAILROAD COMPANY

K. R. (KEN) WELCH
Assistant Vice President
Environmental Management

G. (GLENN) THOMAS
Director-Environmental Operations-
Central
S. W. (STEVE) BERKI
Director-Environmental Operations-
Western
L. A. (LANNY) SCHMID
Director-Environmental Operations-
Southern
R. L. (RICK) EADES
Director-Environmental Site Remediation

Mailing Address:
Room 930
1416 Dodge Street
Omaha, Nebraska 68179
Fax No. (402) 271-4461



January 4, 1996

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860
Chicago & North Western Railway Company
4823 North 119 Street, Butler

Dear Ms. Mylotta:

This letter provides a 90-day status report for work conducted to progress the above case. As last reported, Union Pacific Railroad Company was soliciting proposals from consultants for completing the remedial investigation.

Proposals were opened on December 20, 1995. Geraghty & Miller, of Milwaukee, was selected as the environmental consultant for this project. Union Pacific is in the process of executing an agreement with Geraghty & Miller.

Over the next 90-days we expect to commence and complete the field work portions of the investigation. Preliminary results and a draft of the remedial investigation report should be available. We will notify you of the field investigation dates. If you have any questions, please call me at 402-271-6572.

Sincerely,

Joel R. Strafelda
Manager of Environmental Site Remediation

UNION PACIFIC RAILROAD COMPANY

K. R. (KEN) WELCH
Assistant Vice President
Environmental Management

Mailing Address:
Room 930
1416 Dodge Street
Omaha, Nebraska 68179
Fax No. (402) 271-4461



G. (GLENN) THOMAS
Director-Environmental Operations-
Central
S. W. (STEVE) BERKI
Director-Environmental Operations-
Western
L. A. (LANNY) SCHMID
Director-Environmental Operations-
Southern
R. L. (RICK) EADES
Director-Environmental Site Remediation

October 10, 1995

Pamela A. Mylotta
Hydrologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

RE: File Ref: FID# 241012860 ERR/ERP
Chicago & North Western Railway Company - Butler Yard, Butler

Dear Ms. Mylotta:

This letter provides a status update for your file concerning the Chicago & North Western Railway Company (C&NW) fuel oil release site located at 4823 North 119 Street, Butler, Wisconsin. The Union Pacific Railroad currently has this project open for bid. The bid specifications call for completing the investigation, including preparation of a remedial investigation report with considerations given to corrective action options.

I have included below an excerpt from the bid specifications to inform you of the commitment we are requiring on the part of our consultant . . .

"This is a high priority site. The successful bidder will be required to have the test drilling and well installation portions of the investigation completed within 30 calendar days of contract. Preliminary results of soil and groundwater quality must be available within 60 calendar days of contract. A final remedial investigation report is due within 90 calendar days of contract.."

I will notify you of planned field investigation dates, so you can elect to be present. If you have any questions, please call me at 402-271-6572.

Sincerely,

Joel R. Strafelda
Manager of Environmental Site Remediation

Chicago and NorthWestern
Railway Company



August 14, 1995

Pamela A. Mylotta
Hydrogeologist - Environmental Repair Program
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, WI 53212

Safety and Materials
165 N. Canal St.
Chicago, Illinois 60606

RE: File Ref: FID# 241012860 **ERR/LEAP**
Chicago & North Western Railway Company - Butler Yard, Butler

Dear Mrs. Mylotta:

This letter serves to update you on the status of the above listed project. Since the last update of March 16, 1995, the Chicago & North Western Railway Company (C&NW) was purchased by the Union Pacific Railroad, under whom we are now operated.

Union Pacific is currently in the process of competitively selecting a consultant to continue the work on this project. The consultant services will include conducting the remedial investigation as described in the December 6, 1994-work plan and January 26, 1995 approval letter, preparing the remedial investigation report and providing corrective design considerations.

I will now be the Union Pacific contact for this project. Until August 31, I will be at the St. Paul office and can be reached at 612-450-4647. Beginning September 1, I will be located in Omaha. Please send all correspondence to the following Omaha address:

Joel R. Strafelda
Manager of Environmental Site Remediation
Union Pacific Railroad
1416 Dodge Street, Room 930
Omaha, NE 68179

Sincerely,

A handwritten signature in green ink, appearing to read "Joel R. Strafelda", written over a light blue horizontal line.

Joel R. Strafelda
Sr. Manager of Environmental Operations

JRS

Chicago and NorthWestern
Railway Company



March 16, 1995

Ms. Pamela Mylotta
Wisconsin DNR
P.O. Box 12436
4041 N. Richards St.
Milwaukee, WI 53212

Safety and Materials
165 N. Canal St.
Chicago, Illinois 60606

Dear Pamela:

RE: C&NW Railway Company's Butler Yard, Milwaukee, WI. FID#241012860. **EAR/ERP**

This letter serves as an update for the above mentioned project. The C&NW submitted a "Site Investigation Workplan" to the WDNR on December 6, 1994. The WDNR responded to the workplan in a letter to the C&NW dated January 26, 1995, conditionally approving the workplan, with inclusions.

Since the workplan approval has been received by the C&NW, the C&NW has sent out RFP's for soil test boring and monitoring well installation. Drilling proposals should be received in the near future and a contractor will be hired to perform the drilling services portion of the investigation which is scheduled for May of 1995. The C&NW intends to adhere to the submitted workplan and will take under advisement the inclusions outlined by the WDNR.

If you need additional information, please feel free to contact me at anytime.

Sincerely,

A handwritten signature in blue ink, appearing to read "Craig Denny".

Craig Denny
Mgr. Environmental Operations

C&NW RAILWAY COMPANY

206 EATON ST.
ST. PAUL, MN
(612) 450-4648
FAX: (612) 450-4649

Craig Denny
Manager-Environmental Operations
C&NW Railway Company
206 Eaton St.
St. Paul, MN 55107
(612) 450-4648

Joel Strafelda
Sr. Manager-Environmental Operations
C&NW Railway Company
206 Eaton Street
St. Paul, MN 55107
(612) 450-4647

February 8, 1995

Ms. Pamela Mylotta
Wisconsin DNR
4041 N. Richards Street
Milwaukee, WI 52212

Dear Pamela:

FID #241012860 **ERR/ERP**

This letter is to inform you and your staff that Joel and myself, formerly of Dahl & Associates, Inc., have accepted positions with the C&NW Railway Company as members of their environmental staff. Please make note of our new address and phone numbers as presented at the top of the page.

We look forward to working with you from our new location.

Sincerely,



Craig Denny
Manager-Environmental Operations

CD

Mr. Don York
Chicago & North Western Railway Company

January 26, 1995
Page 2

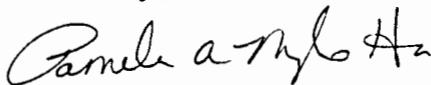
Contaminated Lands Recycling Program Information:

Please note that this approval does not constitute Department "certification" under s. 144.765(2)(a)3, Stats., as created by 1993 Wisconsin Act 453 (May 12, 1994). Persons who meet the definition of "purchaser" in s. 144.765(1)(c), Stats. must receive Department pre-approval prior to conducting a site investigation in order to be eligible for the liability exemption under s. 144.765, Stats.

If you are interested in obtaining the protection of limited liability under s. 144.765, Stats., please contact Mark Giesfeldt at (608) 267-7562 or Darsi Foss at (608) 267-6713, in the Department of Natural Resources' Madison office for more information. The liability exemption under s. 144.765, Stats., is available to persons who meet the definition of "purchaser" in s. 144.765(1)(c) and receive Department approval for the response actions taken at the property undergoing cleanup. The Department will determine eligibility for this program on a case-by-case basis, prior to the "purchaser" developing a scope of work for conducting a Ch. NR 716 site investigation at the property.

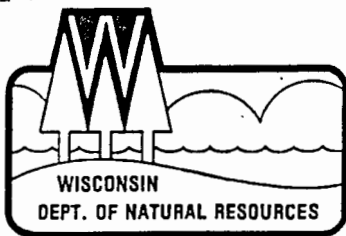
If you have any questions regarding this letter, please contact me at the above address or at (414) 961-2726.

Sincerely,



Pamela A. Mylotta
Hydrogeologist, Environmental Repair Program

c: Craig Denny - Dahl & Associates
SED Case File



George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Southeast District - Annex Building

Post Office Box 12436

4041 N. Richards St.

Milwaukee, Wisconsin 53212

TELEPHONE: 414-961-2727

TELEFAX #: 414-961-2770

January 26, 1995

File Ref: FID# 241012860

ERR/ERP

Milwaukee Co.

Mr. Don York
Chicago & North Western Railway Company
One North Western Center
Chicago, IL 60606

SUBJECT: Site Investigation Work Plan
Butler Yard Facility
Milwaukee, Wisconsin

The Wisconsin Department of Natural Resources (WDNR) has completed its review of the scope of work for the continuation of a subsurface investigation for the above referenced site, submitted on your behalf by Dahl & Associates, and dated December 6, 1994. The WDNR conditionally approves this plan as proposed, pending inclusion of the following:

1. Two soil samples shall be collected from each sampling interval. One sample shall be immediately placed in a laboratory approved container and cooled for possible transport for laboratory analysis. The second sample shall be used for field screening purposes, and managed as investigative waste.
2. For the first two rounds of groundwater sampling, at a minimum, groundwater samples shall be analyzed for full volatile organic compounds (VOC's), rather than Petroleum VOC's as proposed. This is in addition to the proposed analysis for Diesel Range Organics (DRO) and Polynuclear Aromatic Hydrocarbons (PAH's).
3. Chicago NorthWestern shall use a laboratory that has Wisconsin certification for the analytes being tested.
4. Reports submitted to document this proposed work shall include a site diagram which clearly establishes the location of the area of investigation with respect to other property features and identifiable local features, such as roads and property boundaries.
5. Within 60 days following completion of the subsurface investigation, Chicago & NorthWestern shall submit a Remedial Options Analysis and Remedial Action Plan to address soil and groundwater contamination.

The WDNR reserves the right to require additional work if results of this site investigation prove insufficient to define the extent and character of contamination at the site, or develop an adequate remedial action plan.

DAHL & ASSOCIATES, INC.
Environmental Consultants, Contractors and Engineers

4390 McMenemy Road
St. Paul, Minnesota 55127-6004

SITE INVESTIGATION
WORK PLAN
for
Chicago & NorthWestern Railway
at
Butler Yard
Milwaukee, Wisconsin

State FID# 241012860 ERR/ERP
December 6, 1994

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Figures

Figure 1 - Inferred Area of Contamination Map

Figure 2 - Inferred Area of Impacts

Figure 3 - Proposed Test Boring Locations Map

1.0 INTRODUCTION

1.1 Site and Contacts

The following is a work plan to conduct a petroleum release site investigation at the Chicago & North Western Railway Company (C&NW) site in Milwaukee county, Milwaukee, Wisconsin. The C&NW site is located at 4823 North 119th Street. The legal description of the property is the SW 1/4 of the SW 1/4 of Section 1, Township 8 North, Range 21 East.

C&NW 's contact for this project is:

Mr. Don York
Assistant Vice President of Environmental Control
Chicago & North Western Railway Company
One North Western Center
Chicago, Illinois 60606
(312)-559-6127

C&NW hired Dahl & Associates, Inc. (Dahl) as the consultant representing them on this project. The Dahl project contact assigned to this project is:

Mr. Craig Denny
Sr. Project Manager, Geologist
Dahl & Associates, Inc.
4390 McMenemy Road
St. Paul, Minnesota 55127
(612)-490-2905

The site is an active locomotive fueling and maintenance area and freight yard. The C&NW, in the spring of 1994, initiated a proactive program designed to define areas of soil and ground water impacts at active and former fueling areas and lease sites across their system. During the preliminary assessment, oil impacted soils were defined at the Butler facility.

The detection of petroleum hydrocarbons in the soil, was reported to the Wisconsin Department of Natural Resources (WDNR) on May 12, 1994. The WDNR responded to the reported release in a May 25, 1994 letter which outlined the C&NW's legal responsibilities, assigned a high priority review status to the project and a facility identification number of 241012860. The WDNR project manager for this project will be Ms. Pamela Mylotta.

A work plan was submitted to the WDNR on April 5, 1994, titled *Work Plan Multiple*

Site Plan Site Investigations, Wisconsin Properties. The initial site assessment work was performed under this work plan. A report titled *Environmental Site Assessment* was submitted to the WDNR dated July 9, 1994. The report contained the results of the preliminary site assessment performed on May 11 and 12, 1994 at the Butler Yard. The WDNR has not yet responded to the site assessment report.

1.2 Scope of Work

The results of the environmental site assessment found up to 900 ppm DRO in soil samples collected from test borings performed at the site. The test borings performed at the site were located around three distinct source areas. The test borings indicated the presence of oil impacted soils. In addition, three test borings were completed as monitoring wells at three defined source areas. All three monitoring wells contained measurable thicknesses of free product. Thicknesses ranged from 0.04' to 0.20'. Based on the results of the site assessment and the three defined free product source areas, it is anticipated that the soil impacts at this site are expansive. Please refer to the *Environmental Site Assessment* report for site specific geologic, hydrogeologic, topographic and native soil information not included in this workplan.

This work plan also contains a plan to conduct a ground-water assessment and human health risk assessment. The site investigation will be complete in collecting enough data to determine the best corrective action option.

2.0 WORK PLAN

2.1 Test Borings/Soil Assessment

Test borings are proposed to be performed around the perimeter of the test borings which were performed during the site assessment indicated the presence of petroleum hydrocarbons. Figure 1 illustrates completed test boring locations, Figure 3 illustrates eighteen proposed test boring locations.

Soil borings will be advanced and cased using a truck mounted drill rig equipped with 4.25 inch, inside diameter, hollow stem, continuous flight augers. All drill tools will be decontaminated prior to the assessment using high pressure hot water.

For each boring, standard penetration soil sampling will be conducted in accordance with methods of ASTM designation D-1586, using 2 inch by 24 inch split barrel soil samplers. The soil will be sampled continuously from the land surface to the end of boring. Test borings will be advanced to: the water table of the uppermost unconfined ground water, or the bottom of a water saturated soil contaminated zone, or ten feet beneath an unsaturated soil contaminated zone.

Soil samplers will be decontaminated between uses in a tri-sodium phosphate bath. Soil samples will be classified and recorded on drill logs by a geologist in accordance with standards of ASTM designation D-2487 (Unified Soil Classification System).

As the test borings are advanced, soil samples will be collected from every two foot interval of depth or at changes in soil type. The soil samples appearance will be examined for petroleum contamination (hue, value and sheen). The sample will be screened for petroleum hydrocarbons using a flame ionization detector (FID) calibrated to yield total organic vapors in parts per million (ppm) as benzene. Since the ground water table is typically less than ten feet below grade at this site, one soil sample will be collected for laboratory analysis. The sample collected for lab analysis is the sample which exhibits the highest concentration of petroleum hydrocarbons using field instrumentation. Soil sample analysis parameters will be PVOC's, PAH and DRO. Each soil sample prepared for laboratory analysis will be packaged in containers which are required by the laboratory. The sample jars will be labeled, and recorded on a chain of custody form. The samples will be kept in a cooler with blue ice, until delivery to the testing laboratory.

For head space analysis, an 8 ounce glass jar will be half filled with the soil sample. The jar will be covered with two layers of foil septum, and sealed with a screwed on lid containing a teflon septum. The jars will be agitated for thirty seconds and allowed to rest for at least ten minutes. The sample environment will be controlled to 70 degrees Fahrenheit. After the resting time, the sample jar head space will be tested for organic vapors using the FID. The tip of the FID probe will be inserted through the foil septums, and the maximum stable FID response will be recorded.

The test boring advancement will be directed by the geologist using the FID results, which will provide indication to contamination presence and distribution based on relative volatile organic vapor readings. Test boring advancement will continue in depth until contamination is no longer detectable, or to the mechanical limits of the equipment.

Test borings will be systematically located around the known contaminated areas at a distance of approximately 75 feet. If any soil sample from the borings registers an FID level greater than 10 ppm, then discretion will be used in advancing additional borings beyond the perimeter of the known contaminated areas. This method will continue until the drilling locations reasonably define the area of contamination. If the lateral extent of contamination can not be defined by on-property test drilling, then off-property right of entry will be pursued. Figure 3 shows the potential test boring locations.

Test borings will be sealed in accordance with the rules of the State of Wisconsin. Soil cuttings and waste water generated during the drilling phase will be containerized on site in Department of Transportation approved barrels.

Test boring locations will be surveyed to the nearest 0.50 foot to identify land location, and the nearest 0.01 foot to identify ground surface elevation.

2.2 Ground Water Assessment

A ground-water investigation will be conducted to determine if the ground water has been contaminated with petroleum hydrocarbons in either a soluble or free product form. To facilitate the ground-water investigation, piezometers and/or monitoring wells will be used.

In areas where concentrations of product in the soil indicate the likely presence of free product, temporary piezometers will be installed. Piezometers will be constructed from 2 inch diameter well casing, with a 5 foot section of screen. The piezometers will be installed so that the screen intersects the water table. After the ground water is stabilized in the piezometer, the piezometer will be inspected for free product using a paste that chemically detects the presence of liquid petroleum, and confirmed by retrieving a sample of the ground water for inspection. If free product is detected: the product type will be identified, the product thickness will be measured, and free product presence will be reported to the WDNR. The piezometers will be removed within 48 hours of installation.

Ground-water monitoring wells will be installed in place of the piezometers if detectable accumulations of free product are encountered, as well as on the perimeter of the ground water contaminant plume to monitor ground water quality as well as aquifer dynamics. Figure 3 illustrates the proposed locations of 11 monitoring wells in addition to the three existing source wells. Eleven perimeter wells are proposed to be installed in test borings triangulating the three source areas, with at least one down-gradient and one up-gradient well location for each source area.

The wells will be installed in accordance with WDNR NR141 code, and will be assembled with two inch diameter, schedule 40, flush-tread PVC casing and 10 foot screen. The wells will be installed so that the water table intersects the well screen, and the expected high water mark will not rise above the well screen. The top casing of monitoring wells will be surveyed to a common reference (mean sea level datum if available).

The water level at each well will be measured from the surveyed datum, using an electronic water level indicator or water finding paste. This data will later be used to

interpret ground-water flow direction and gradient.

Two consecutive monthly rounds of ground-water samples will be collected. Ground-water samples will be collected from each monitoring well not containing free product. Prior to sampling, the well will be developed by hand bailing using a disposable teflon bailer. The well will be considered sufficiently developed when fines are no longer purged from the well. Prior to sampling, the water in the well will be purged by hand bailing using a disposable teflon bailer. The water will be considered sufficiently purged when the ground-water hydrogen ion content (expressed as pH), specific conductance (temperature corrected) and temperature has been stabilized to a tolerance per well fluid volume no greater than: pH +/- 0.1; specific conductance five percent; and temperature +/- 0.5 degrees celsius.

Water samples will be collected using a clean, disposable teflon bailer. The samples will be placed directly into sample jars provided by the laboratory. The jar will be completely filled. The jar will be labeled, recorded on a chain of custody, and kept in a cooler with blue ice, until delivery to the laboratory.

The ground-water samples will be laboratory analyzed for PVOCs, PAHs, and DRO. For quality control, a trip blank will be included with the ground-water samples.

The hydraulic conductivity of the water saturated soil formation will be determined by conducting a ground-water recovery rate test. The test procedure involves establishing the static water elevation of the test well, purging a known volume of water from the well, and recording the rate at which the water level in the well recharges to that of static conditions, using a Hermit Datalogger. The test data will be reduced and analyzed following the Bouwer-Rice method for determining hydraulic conductivity (K).

2.3 Risk Assessment

A risk survey assessment will be conducted to determine:

- 1) Is free phase liquid product detected in:
 - the soil at a thickness greater than 0.1 feet,
 - the ground water at a thickness greater than 0.02 feet,
 - contact with underground structures, utilities or utility trenches,
 - contact with surface water at a concentration detectable by a product sheen.
- 2) Are combustible vapors detected in structures, utility conduits, sewer tiles or confined spaces at a concentration greater than 10 percent lower explosive

limit (LEL).

- 3) Are benzene vapors detected within an occupied structure at a level greater than or likely to be 10 ppm for more than 8 hours per day.
- 4) Does soil contain a concentration of petroleum hydrocarbons greater than 100 ppm:
 - in contact with PVC drinking water lines,
 - in utility trenches,
 - within 2,000 feet of a public or private drinking water source, or livestock well,
 - in contact with the seasonal high water table of a drinking water aquifer.
- 5) Is a drinking water supply or water resource having the potential to serve as a drinking water supply, likely to become contaminated to the extent that a maximum contaminant level as defined by the state exceeded.
- 6) Ground water containing a concentration of petroleum hydrocarbons greater than 5 ppb benzene, 700 ppb ethyl benzene, 2420 ppb toluene, 12,000 ppb total xylene, and 10,000 ppb total volatile hydrocarbons is:
 - within 150 feet of structures or conduits allowing migration of contaminants to a drinking water supply aquifer,
 - within 2,000 feet of a public or private drinking water source, or livestock well.

A vapor survey will be conducted of all underground structures located within the vicinity of the soil contamination plume. The vapor survey will utilize the FID or oxygen meter and explosimeter.

Using available well records, and information available from the local water utility, a well search will be conducted to identify any water wells located within a one mile area of the site. When available, the well use, depth, construction, point of water appropriation, and log, will all be noted.

2.4 Interim Response Contingency

Free product has been detected at this site during the preliminary investigation, it was decided with the involvement of C&NW that passive bailers be installed into those monitoring wells containing free product.

If any situation is detected that presents a substantial and significant risk of harm to human life, health, or the environment, then C&NW and the WDNR will be immediately notified, and emergency measures will be discussed and then taken to abate or mitigate the risk to the public and/or environment.

2.5 Schedule

During 1994, C&NW voluntarily investigated several of their properties for the presence of environmental impacts. As with this site, at least twelve other sites in Wisconsin were found to be impacted to a degree that will require a site investigation similar to the one described herein. As with this work plan, C&NW has submitted, and are awaiting WDNR's authorization of, work plans for these other twelve sites.

Since all thirteen sites are similar in nature and require the same basic services, it is the intention of C&NW to proceed with the site investigations as prescribed by the work plans, at all thirteen sites under the management of a single multiple site assessment program. The purpose for structuring the work in this manner is to realize the cost saving advantages of conducting thirteen projects under a single contract, and to allow the greatest level of ease and efficiency in executing and managing the work requirements.

In conducting this program C&NW prefers to first await for authorization to proceed on all of the thirteen work plans. The C&NW then prefers to schedule all thirteen sites together to be consecutively investigated. When the schedule for the execution of this work plan has been prepared in light of the other projects, a copy of the schedule specific to this site will be sent to the WDNR's project manger.

This report is submitted by:

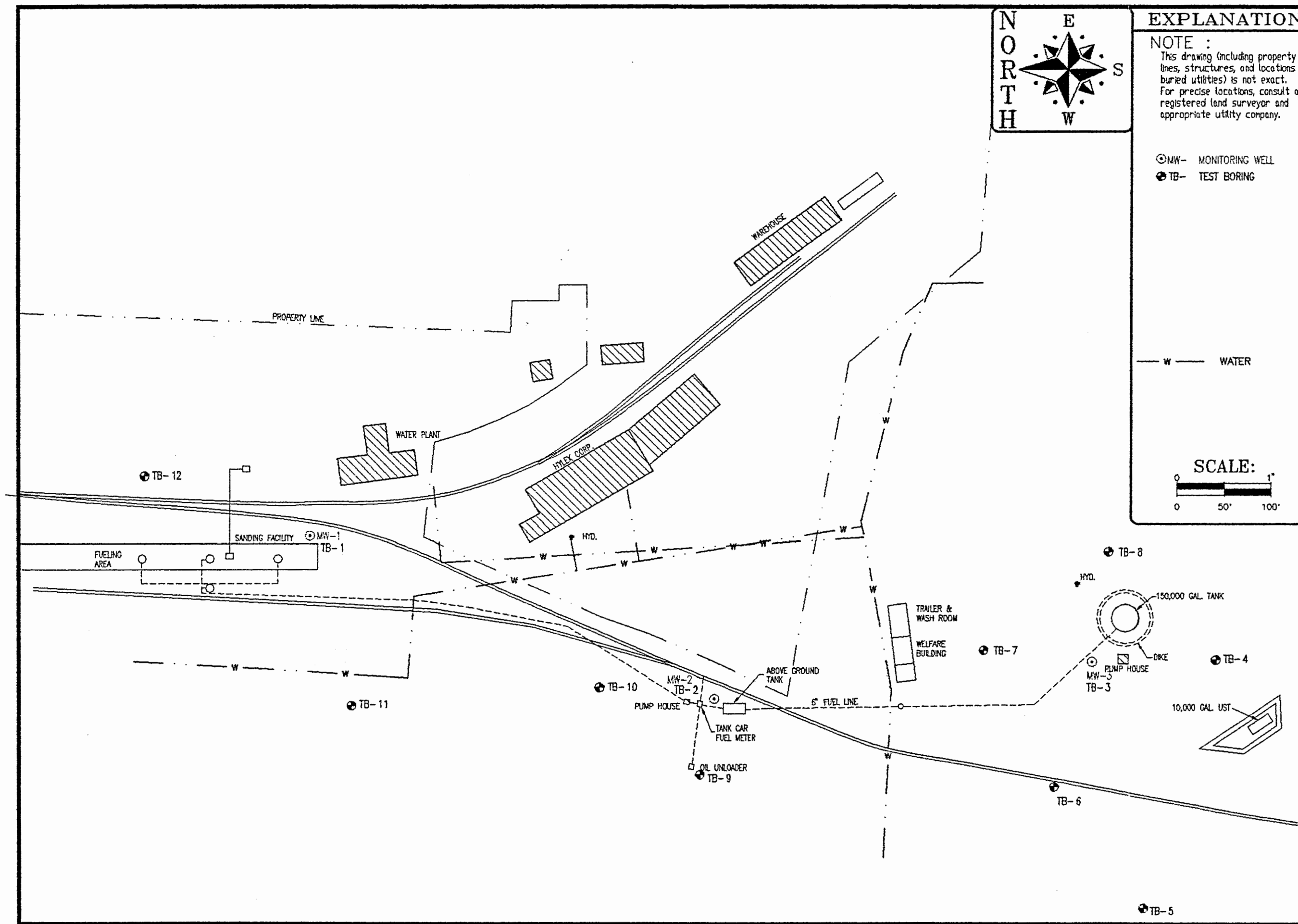
DAHL & ASSOCIATES, INC.

A handwritten signature in blue ink, appearing to read 'C Denny'.

Craig Denny
Senior Project Manager

12/6/94

Date



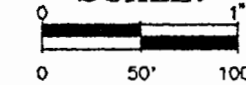
EXPLANATION

NOTE :
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

- ⊙ MW- MONITORING WELL
- ⊕ TB- TEST BORING

— W — WATER

SCALE:



4380 McMenamy Road
Saint Paul, MN. 55127
Phone (612)490-2905
FAX (612)490-3777

DAHL

& ASSOCIATES, INC.
Environmental Consultants, Contractors & Engineers

DAHL STD NO:

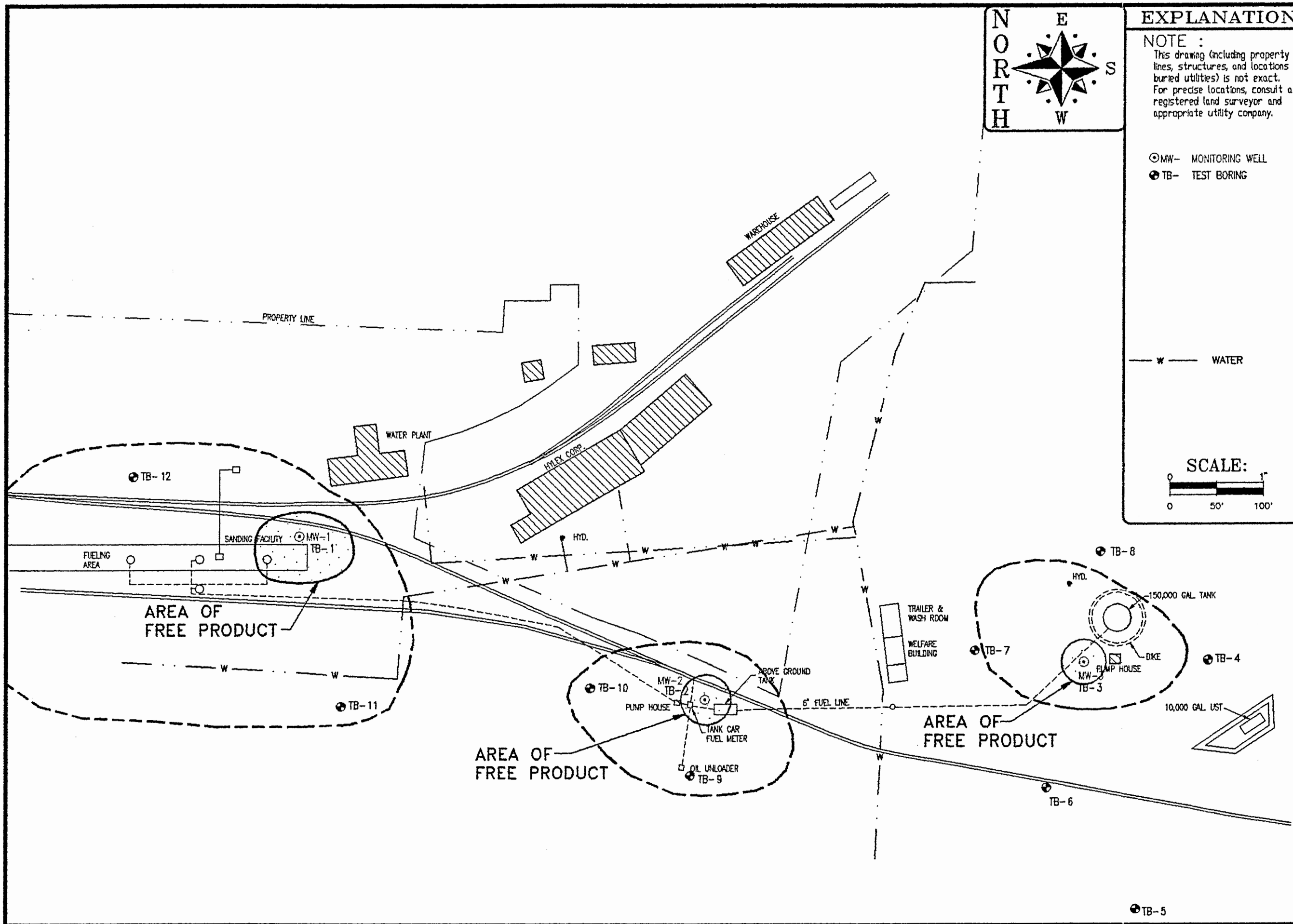
TEST BORING LOCATIONS & NW PRELIMINARY SITE ASSESSMENT BUTLER YARD ACTIVE FUELING AREA MILWAUKEE, WISCONSIN

PLOT SCALE 1" = 100'

AutoCAD FILE NAME 3533-05A

PLOT DATE 05/13/94

DATE DRAWN	05/13/94
DRAWN BY	Kelly P.
APPROVED BY	
DRAWING NUMBER	B-05A-A
PROJECT NUMBER	5094-3533
FIGURE NUMBER	1

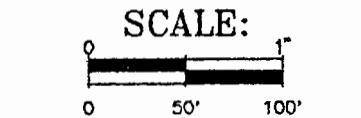


EXPLANATION

NOTE :
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

- ⊙ MW- MONITORING WELL
- ⊕ TB- TEST BORING

— W — WATER



4390 McMenamy Road
Saint Paul, MN. 55127
Phone (612)490-2905
FAX (612)490-3777

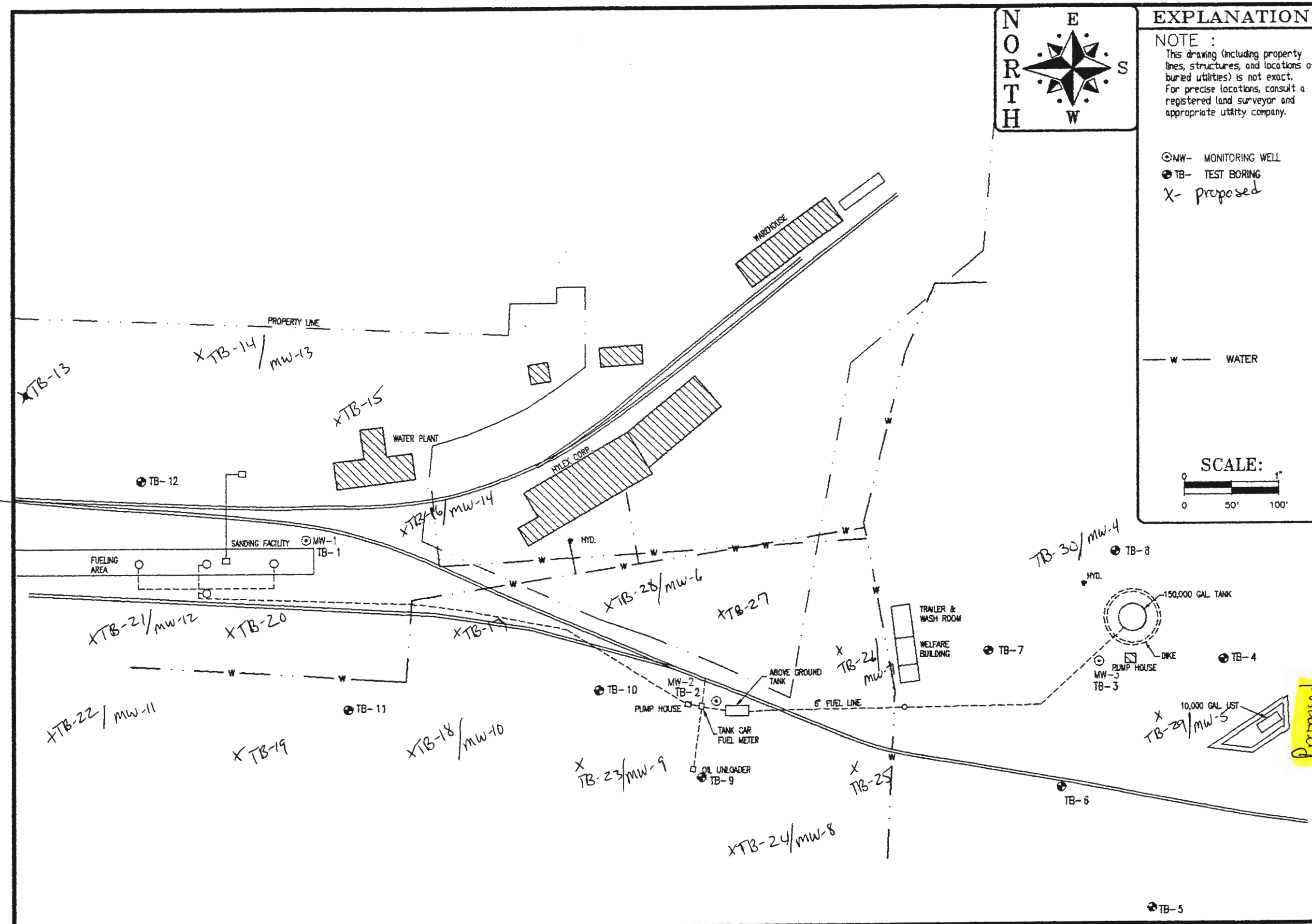
DAHL
& ASSOCIATES, INC.
Environmental Consultants, Contractors & Engineers

DAHL STD NO:

INFERRED AREA OF IMPACT
C & NW SITE ASSESSMENT
BUTLER YARD
ACTIVE FUELING AREA
MILWAUKEE, WISCONSIN

PLOT DATE 06/20/94
AutoCAD FILE NAME 3533-08A
PLOT SCALE 1" = 100'

DATE DRAWN	06/20/94
DRAWN BY	Kelly P.
APPROVED BY	
DRAWING NUMBER	B- 08 -A
PROJECT NUMBER	5094-3533
FIGURE NUMBER	2

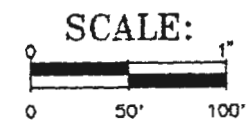


EXPLANATION

NOTE :
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

- ⊙ MW- MONITORING WELL
- TB- TEST BORING
- X- Proposed

— W — WATER



4390 McMenamy Road
Saint Paul, MN. 55127
Phone (612)490-2805
FAX (612)490-3777

DAHL
& ASSOCIATES, INC.
Environmental Consultants, Contractors & Engineers

TEST BORING LOCATIONS & NW PRELIMINARY SITE ASSESSMENT BUTLER YARD ACTIVE FUELING AREA MILWAUKEE, WISCONSIN

DATE DRAWN	05/13/94
DRAWN BY	Kelly P.
APPROVED BY	
DRAWING NUMBER	B-05A-A
PROJECT NUMBER	5094-3533
FIGURE NUMBER	3

PLOT DATE 05/13/94
AutoCAD FILE NAME 3533-05A
PLOT SCALE 1" = 100'
DAHL STD NO:

Proposed

FID 241012860
ERR/ERP
MILW CO.

DAHL
& ASSOCIATES, INC.
Environmental Compliance Management Systems

July 27, 1994

Ms. Pamela Mylotta
c/o ERR/ERP
WDNR
P.O. Box 12436
Milwaukee, WI 53212

Dear Pamela:

RE: Chicago & North Western Transportation Company's Reported Release, Butler
Yard, Milwaukee, Wisconsin. WDNR FID# 241012860.

Enclosed is the *Environmental Site Assessment* for the Chicago & North Western
Transportation Company's Butler yard site in Milwaukee, WI. The report presents
the results of the test borings performed and soil samples collected during the
assessment.

If you have any questions, or require any additional information, please feel free to
contact me at anytime.

Sincerely,



Craig Denny

Enclosure



DAHL & ASSOCIATES, INC.
Environmental Consultants, Contractors & Engineers
4390 McMENEMY STREET
VADNAIS HEIGHTS, MINNESOTA 55127

ENVIRONMENTAL
SITE ASSESSMENT
for
Chicago & North Western
Transportation Company
at
Butler Yard, Milwaukee, WI

Site FID# 241012860
July 9, 1994

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FIGURES

- Figure 1: Site Location Map
- Figure 2: Test Boring Location Map
- Figure 3: Inferred Area of Impacts Map

APPENDICES

- Appendix A: Methodologies
- Appendix B: Soil Boring Logs
- Appendix C: Laboratory Reports
- Appendix D: WGSB Water Well Records, MW "as-builts"

1.0 INTRODUCTION

On May 11, 1994, the Chicago & North Western Transportation Company (CNW) while conducting a site assessment of their Butler yard in Milwaukee, Wisconsin, found soil containing residual levels of #2 fuel oil. The Wisconsin Department of Natural Resources (IDNR) was notified, and assigned to this site, identification number #241012860.

The property owner of the site where residual oil was found is CNW. CNW's contact for this project is:

Mr. Don York
Assistant Vice President of Environmental Control
Chicago & North Western Transportation Company
One North Western Center
Chicago, Illinois 60606
(312)-559-6127

CNW retained the environmental services of Dahl & Associates, Inc. (Dahl) to conduct site inspections at a list of properties in the CNW system which have a potential to have been impacted with residual oils. The services provided for the site inspections included: soil borings and soil sampling, preliminary groundwater impact assessment, and risk assessment. The Dahl project contact assigned to this project is:

Mr. Craig Denny
Dahl & Associates, Inc.
4390 McMenemy Road
St. Paul, Minnesota 55127
(612)-490-2905

This report presents the site assessment results

2.0 BACKGROUND

2.1 Site Description

C&NW's Butler yard is located at 4823 North 119th Street in Milwaukee, Wisconsin. The site legal description is the SW 1/4, of the SW 1/4 of section 1, township 8 north, range 21 east, Milwaukee county. Latitude north 43° 06' 25", longitude west 88° 03' 48". See the *Site Location Map* appended as Figure 1.

The CNW area of property under investigation is approximately 1,800 feet long (N to S) by 1,000 feet wide. The property was developed by CNW for use as a freight

switching yard with a diesel locomotive maintenance and fueling facility. Structures in the area where oil impacted soils were found include the diesel shop and associated appurtenances, two fueling system pump houses, above ground storage tank (AST) and yard tracks.

The oil impacted soil was detected around the locomotive fueling system adjacent to the diesel house, around the pump house next to the secondary fueling area and around the second (southern) pump house and AST. Three source areas were identified during the site assessment at the site. The property has an unsealed land surface, and underlies property roadways and yard tracks that are still in use. Figure 2, illustrates the location of the existing structures which include the diesel shop, pump houses, existing tracks and the fueling system (which is described in Section 2.2).

The CNW property is relatively level with less than a 1% surface grade to the south. The property is located within an industrial area. The western edge of the property is bordered by CNW main line. The nearest occupied structure to the impacted area is the CNW office building located 300 feet east of the AST.

2.2 Product Storage & Use History

#2 fuel oil is used at this facility as fuel for diesel locomotives. The #2 fuel oil is stored in a 150,000 gallons capacity, steel, aboveground tank located as shown on figure 2.

Product is loaded in the tank through the pump house located northwest of the pump house. Product is pumped through approximately 40 feet of underground pipe from the pump house to the tank. For locomotive fueling, product is gravity pressured from the tank to the northern pump house through a 475 foot long underground pipe, and then pumped to the fueling cranes adjacent to the pump house. In addition, the fuel oil is pumped over by the diesel maintenance shop to supply the fueling cranes in that area. The fueling facility layout is illustrated in Figure 2.

2.3 First Detection of Site Impacts

CNW recently identified the properties in their system where petroleum products were stored and handled, including active and dormant locomotive fueling areas, and leased properties. CNW then initiated a proactive and voluntary program of environmental investigations at these properties to determine if these sites have residual petroleum impacts to the soil or groundwater. The scope of the environmental investigation was presented in a work plan titled *Work Plan Multiple Site Plan Site Investigations, Wisconsin*

Sites submitted to the WDNR prior to commencement of this program.

CNW's recognized the Butler facility as a potential site of residual petroleum impacts since they fuel locomotives there. On May 11 and 12, 1994, CNW had Dahl conducted a site assessment of the Butler yard. The first three soil borings were located in the three suspected source areas. TB-1 was completed in the first fueling area located adjacent to the diesel shop, TB-2 was completed at the second location in the area of the pump house and fueling area adjacent to the small above ground tank, TB-3 was completed in the area of the southern pump house and large above ground storage tank.

One test boring was completed in each of the suspected source areas to preliminarily define the areas of potential highest impacts. It was visually apparent that soil samples retrieved from TB's 1, 2 & 3 were impacted with residual oil. Using a flame ionization detector (FID), the soil samples were found to contain levels of volatile organic vapors up to 180 parts per million (ppm). A soil sample was collected from each test boring performed from the 12 to 14 foot interval for laboratory analysis for PVOC, PAH and DRO. The results indicated the presence of DRO concentrations to be 700, 200 and 760 ppm in TB's 1, 2 & 3, respectively. Further discussion on these laboratory results is presented in section 3.1.

Once a test boring was completed in each of the suspected source areas and was found to exhibit a petroleum hydrocarbon presence, a layout of locations for additional TB's in each location was performed. Additional test borings were then performed in each of the three source areas. Further discussion of the test boring locations and results is presented in Section 3.1.

The volume of oil released and the time during which the release might have occurred remains unknown. Dahl notified the IDNR that residual oil was found in the soil. The WDNR assigned to the site identification number #241012860.

2.4 Chronology of Events

After detection of the residual oil in the soil, Dahl continued to conduct a soil assessment in an attempt to determine the magnitude and potential extent of petroleum impacts to the soil. The assessment included a study to determine if free phased product existed, and if the ground water had been impacted. A risk assessment was conducted to determine potential and actual impacts to human health and to identify areas of potential further environmental degradation.

This report presents the results of this work. The only previous report in reference to this site was the site assessment work plan mentioned in above section.

3.0 ASSESSMENT RESULTS

3.1 Soil Assessment

Soil borings were used to characterize the subsurface soil environment and to assess the extent and magnitude of oil impacts in the soil. The methodologies used for test drilling are presented in Appendix B.

On May 11 & 12, 1994, twelve test borings (TB's) were drilled by Barott Drilling Services, under the direct supervision of Dahl. All of the test borings were drilled to a depth terminating below the water table of the uppermost unconfined groundwater unit. Figure 3, *Test Boring Location Map*, illustrates test boring locations. A geologist logged each test boring as it was advanced. The test boring logs are submitted in Appendix B.

Soil samples were retrieved from each test boring location. The methodology used for soil sampling is presented in Appendix A. The soil type and classification of each sample was determined by the geologist and recorded on the test boring log. Methodologies used for soil classification are presented in Appendix A.

The surface of the site is unsealed with a gravel road base. The uppermost soil unit consisted of gray or organic black silt and with a small percent of clay, extending to depths of about 8. The overlying unit grade to a more granular sediment as the uppermost water saturated zone is encountered. Because of the nature and age of the facility, areally extensive sedimentary units are not present. The disturbed nature of the upper 8 feet of soil guarantees different soil types in each test boring performed.

The soils were moist, becoming water saturated at depths between 5 and 11 feet during drilling. The soils formation was moderately tight and slower to release water, however, groundwater did stabilize in all borings, representing a continuous uppermost unconfined groundwater unit.

Additional information on the soils and geology of the area was gathered from well records filed at the WGSB. Copies of the Water Well Records obtained are submitted in Appendix D.

Initially, each sample retrieved from the soil borings was visually examined for apparent

signs of residual oil, and observations were recorded on the test boring logs. Soil samples retrieved from each test boring were analyzed for the presence of petroleum hydrocarbons using a flame ionization detector (FID) in accordance with guidelines for jar headspace analytical screening procedures, see Appendix A. Results of the FID head space analyses are included on the test boring logs.

A soil sample collect from each test boring performed was submitted for laboratory analysis of PVOC, PAH and DRO. The laboratory reports of these analyses are submitted in Appendix C.

TB's 1 through 3 were located within the three independent source areas. Soil samples collected from TB-1, TB-2 and TB-3 exhibited residual levels fuel oil at depths from the surface to depths to 18 feet, as in TB-1. The head space level of organic vapor monitored with the FID ranged between 30 and 180 ppm. DRO lab analysis of soil samples collected from the soil/water interface in TB's 1, 2 and 3 indicated DRO concentrations of 700, 200 and 760 ppm, respectively.

TB's 11 and 12 were located around TB-1 to better define the area of soil impacts in that source area. FID readings from TB-1 indicated 10 ppm at the soil/water interface. FID readings from TB-12 indicated 45 ppm at the soil/water interface. Lab analysis of soil samples collected from the soil/water interface at TB's 11 & 12 indicated 4.1 and 150 ppm DRO, respectively.

TB's 9 and 10 were located around TB-2 to better define the area of soil impacts in that source area. FID readings from TB-9 indicated 25 ppm at the soil/water interface. FID readings from TB-10 indicated 20 ppm at the soil/water interface. Lab analysis of soil samples collected from the soil/water interface at TB's 9 & 10 indicated 900 and 23 ppm DRO, respectively.

TB's 4 through 8 were located around TB-3 to better define the area of soil impacts in that source area. FID readings from TB's 4, 5, 6 and 8 indicated non-detectable concentrations of petroleum hydrocarbons in soil samples collected at the soil/water interface. Lab analysis of soil samples collected from the soil/water interface at TB's 4, 5, 6 and 8 indicated non-detectable concentrations for DRO. FID readings from TB-7 indicated 20 ppm at the soil/water interface. Lab analysis of the soil sample collected from the soil/water interface at TB-7 indicated 16 ppm DRO.

The results of the DRO laboratory analysis and FID head space analysis were plotted on the site map to illustrate the magnitude and known extent of residual oil found in the

soil. Figure 3 illustrates the area in which residual oil was found.

3.2 Groundwater Assessment

During test drilling, water saturated soils were encountered at depths between 6 and 11 feet. The source of the water was likely direct surface infiltration and water shed drainage through the shallow soils.

Three groundwater wells were installed, one each at TB's 1, 2 and 3. The wells were installed at these locations to represent the "worst case" magnitude of groundwater impacts as well as to monitor for the presence of free product. The well locations are illustrated on Figure 3, the *Test Boring Location* map. The wells were installed with a 10 foot long screened section with flush thread joints. Methodologies for monitoring well installation procedures are presented in Appendix A. Monitoring well construction "as-builts" are included in Appendix D.

Water table elevation data was collected from the monitoring wells on two occasions - May 11 and 12, 1994. To determine the water table elevation, the depth to the water level was measured from the surveyed reference point located at the top of the well casing, using an electronic water level indicator. The measurement was then converted to an elevation as a function of that well's surveyed reference point.

The ground water elevations of each well are: MW-1, 93.89; MW-2, 93.56; and MW-3, 93.50. The direction of groundwater flow direction was determined to be to the southwest.

The hydraulic conductivity of the water saturated formation was not tested. In addition, ground water gradient was not determined because of the presence of free product in all three MW's

Samples of the groundwater at the monitoring wells were not collected because of the presence of free product.

3.3 Free Product Assessment

During the test drilling each soil sample was visually inspected for the presence free product. No free product was apparent or detected on the soil samples collected.

A monitoring well was placed in TB's 1, 2, and 3 and inspected prior to leaving the site. During the inspection, free product was detected in all three monitoring wells. The thickness in the MW's is as follows: MW-1, 0.24'; MW-2, 0.32', and; MW-3, 0.03'. Figure 4 illustrates the three inferred areas of free product.

3.4 Vapor Risk Survey

Fuel oil is nonvolatile and seldom results in a vapor receptor problem. At this site the only potential receptors of vapors identified are water lines, as illustrated on Figure 2. Typically water lines are not affected by vapors since they are under positive pressure.

No basements or subsurface structures were found in the area of impacted soils.

3.5 Receptor Survey

The risk assessment conducted, examined the following areas:

- 1) Evaluation of actual or potential impacts to aquifers serving as or having the potential to be use as a drinking water source, or other beneficial use for humans.
- 2) Identification of surface waters which are or could be impacted by contact with oil impacted soil.
- 3) Evaluation of potential vapor receptors.

To evaluate risks to the drinking water resources, Dahl identified registered water wells within a one mile radius of the site,

To identify area water wells, WGSB Water Well Records were obtained. The information collected indicates that there are numerous wells in the one mile radius. Well records indicate that wells in the area take their water from a confined limestone aquifer typically encountered at a depth in excess of 100 feet.

Based on data collected from the WGSB Water Well Records, the presently defined zone of impacted soils poses no immediate threat to private or public water supply. Residences and businesses in the area are on city water.

Review of the state geologic records indicate that there are no karst features at or near the surface in the region of the site, which could provide a conduit of contamination transfer horizontally or vertically to a drinking water supply.

No manmade conduits were found that could lead contaminants from the impacted soils to a water supply. The only conduit passing through the impacted soil was a water line

There is no surface water located in the area of this site having a potential to be impacted from the presence of the residual oil.

4.0 DISCUSSION

Residual fuel oil #2, was found in soils at the Butler facility. The fuel oil appears to have been lost in three different locations as discussed above. In the area of the northern fueling area, at TB-1, the highest level of impacts were found; 700 ppm TPH in the soils between the depths of 8 and 10 feet. The impacts extended to the deepest point, 18 feet, in this area. This is often indicative of the release source area, where at one time the product may have had sufficient force to displace the ground water deeper, allowing the greatest vertical extent of oil impacts.

The test drilling was unable to fully define the lateral extent of residual oil.

The area of greatest impacts, that is where residual soil levels likely exceed 100 ppm, has an estimated soil volume of 4,000 cubic yards has been impacted.

Soil surrounding the 100 ppm area between depths of 4 and 8 feet have a high potential to contain residual oil at levels greater than 10 ppm. In addition to the source area, this area is estimated to contain an additional 2,500 cubic yards of impacted soil

Since test drilling was unable to fully define the lateral oil impact extent, the above estimates were inferred based on characteristics of product movement during plume development in homogeneous fine soils. Assuming no catastrophic product release occurred, oil released to the soil environment found at this site would likely develop a large soil plume extending radially equal distances in all directions from the source.

The structures existing over the impacted area is the diesel shop and associated fueling area, two pump houses and an AST. None of the structures has been found to be impacted by the presence of the residual oil. The nearest occupied structure to the oil plume is the yard office located approximately 300 feet from soils containing greater than 100 ppm. There are no occupied residences located near the residual oil plume and no areas where the public would be expected to have exposure to the impacted soils.

There were areas found that were impacted by petroleum vapors from this plume. There is almost no potential for these soils given the existing state (temperature, composition, pressure) to emit levels of vapors that would pose a health threat .

CNW has no plans on developing this area of the site for any other uses at this time. Any future development plans should consider the presence of the residual oil, and include as part of planning treatment options for the soils in this area.

The water table of the uppermost groundwater underlying the site was detected at a depth of approximately 7 feet. Fuel oil is immiscible in water, and most of it's compounds are water insoluble. Typically there is very little solubility of hydrocarbons associated with oil releases. Free product was detected in all three monitoring wells installed. Up to 0.32 feet was detected in MW-2.

No uses of the water from the uppermost aquifer were found in the area of the site.

5.0 CONCLUSIONS

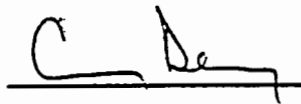
The site assessment conducted at this facility found the soil to be impacted with residual fuel oil #2. At least 6,500 cubic yards of soil are believed to contain levels of hydrocarbons in excess of 10 ppm. Free product was detected in all three monitoring wells constructed.

There exists a potential for further groundwater impacts. This was evident by the relatively high concentrations of hydrocarbons found in the soil, and the presence of free product in all three suspected source areas.

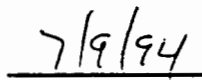
No human health risks were found associated with the residual oil or free product presence. No drinking water aquifer or other sources of public or private water supply were found to be impacted by this release.

The recommendations and methodologies contained in this report represent Dahl's professional opinions and are based on accepted analytical practices and documented industry standards. Services performed on this project have been conducted in a manner consistent with standards of care practiced by members of this profession in this area, under similar time and budget restraints. Beyond this, no warranty is expressed or implied.

This report was prepared by:



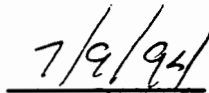
Craig Denny
Sr. Project Manager
Dahl & Associates, Inc.



DATE

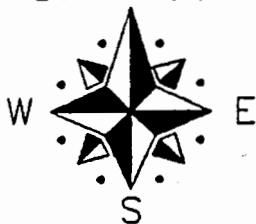


Joel R. Strafelda
Sr. Consultant I
Dahl & Associates, Inc.



DATE

NORTH



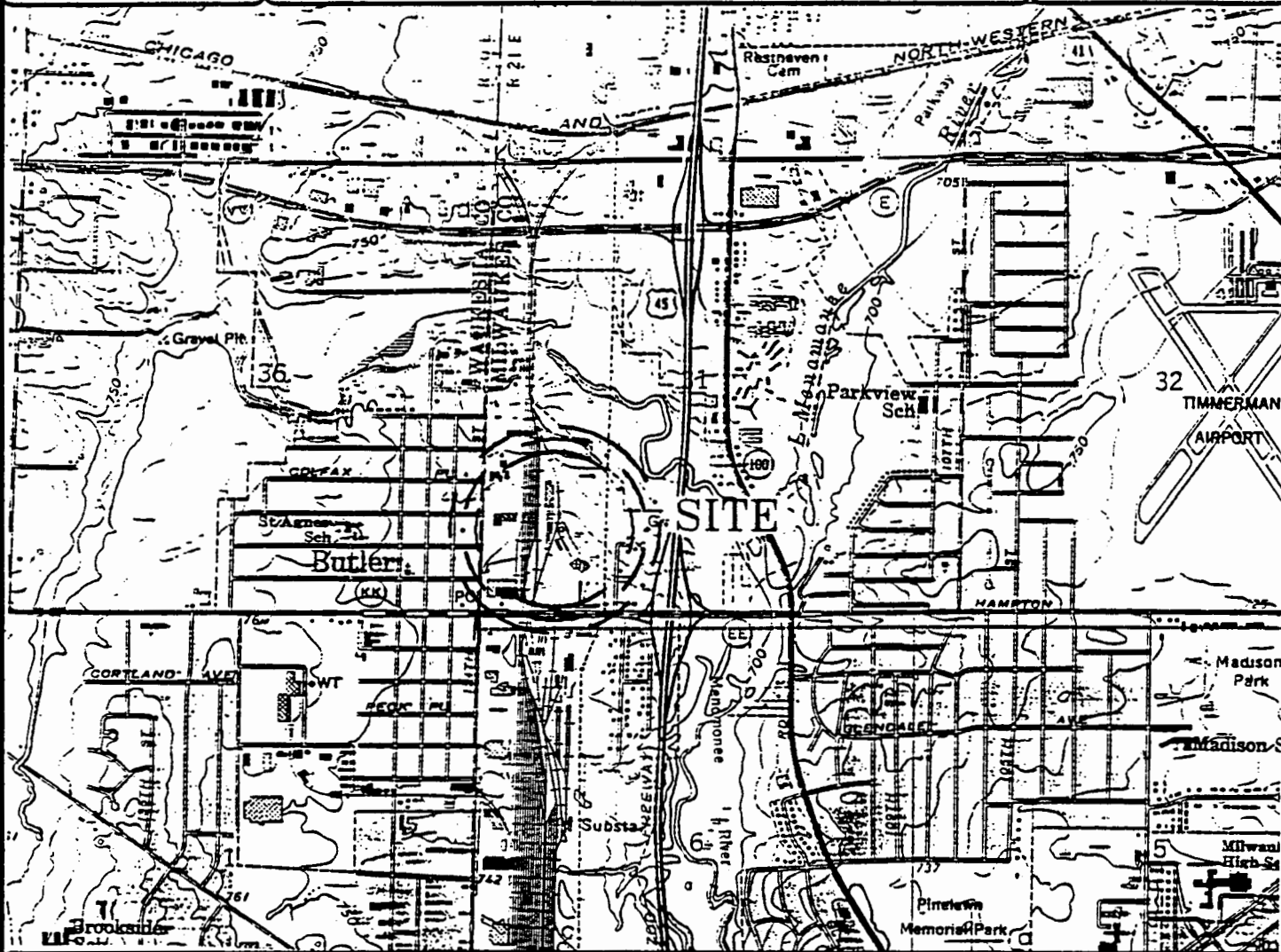
PROJECT SITE LOCATION

 LAT. N. 43° 06' 25"
 LONG. W. 88° 03' 48"

 T. 8-N
 R. 21-E
 SEC. 1

 U.S.G.S. STANDARD NAME
 WAUWATOSA, WISCONSIN


QUADRANGLE LOCATION



SCALE 1:24000

1000 0 1000 2000 3000 4000 5000 6000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

Heavy duty ——— Light duty ———

Medium duty ——— Unimproved dirt = = = =

Interstate Route
 U.S. Route
 State Route

BASED ON U.S.G.S. 7.5 MINUTE SERIES (TOPOGRAPHIC) MAP

 4390 McMenemy Road
 Saint Paul, MN. 55127
 Phone (612)490-2905
 FAX (612)490-3777

DAHL
 & ASSOCIATES, INC.

Environmental Consultants, Contractors & Engineers

LOCATION MAP

 C & NW SITE ASSESMENT
 BUTLER YARD
 MILWAUKEE, WISCONSIN

PLOT DATE 07/01/94

AutoCAD FILE NAME

3533-01A

PLOT SCALE

1' = 2000'

DATE DRAWN

07/01/94

DRAWN BY

JACOB S

APPR. BY

PROJECT NUMBER

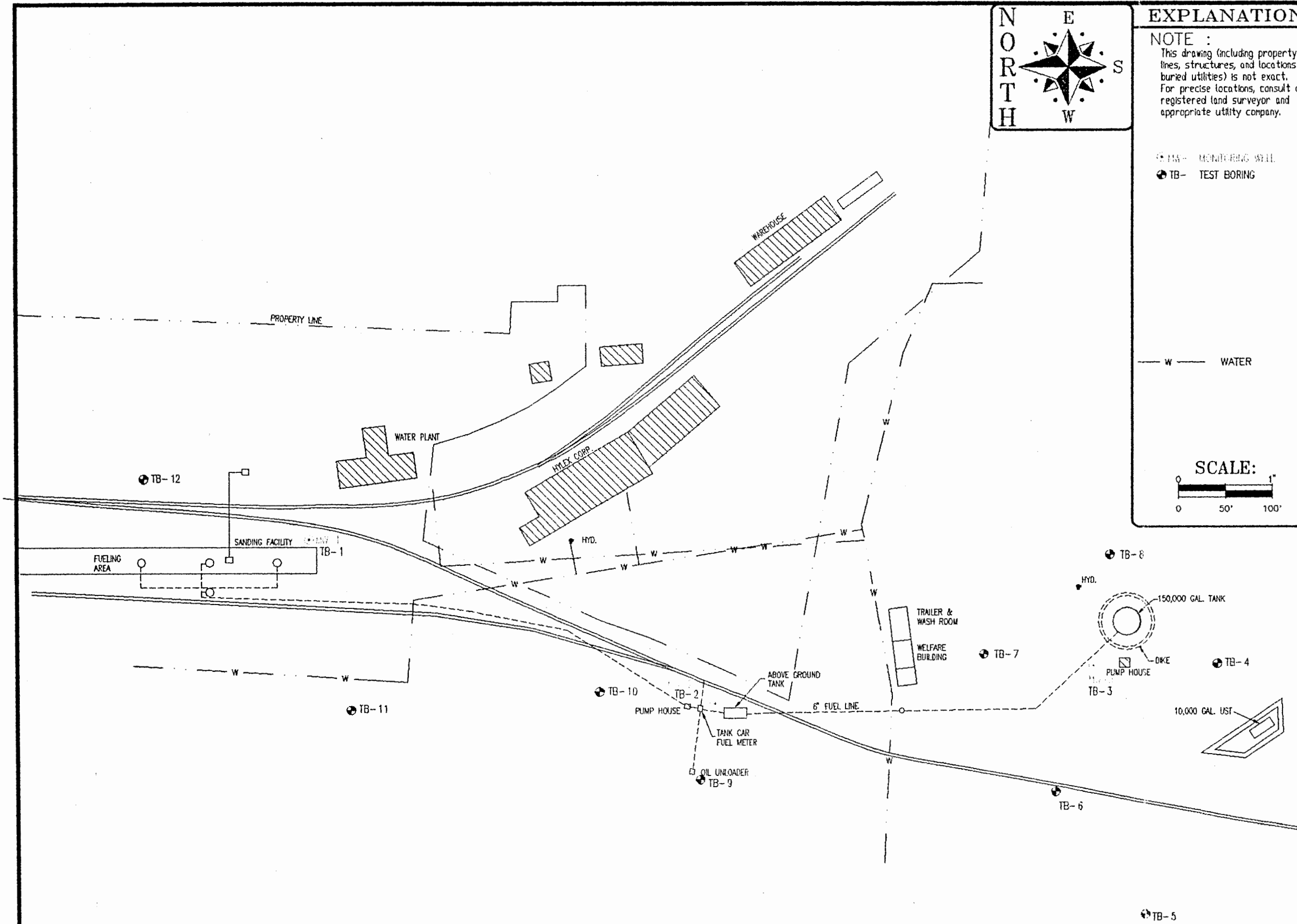
50943533

DRAWING NUMBER

A- 01 -A

FIGURE NUMBER

1

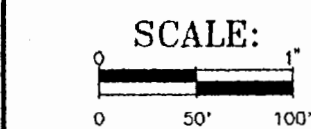


EXPLANATION

NOTE :
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

- TB- MONITORING WELL
- TB- TEST BORING

W WATER



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DAHL

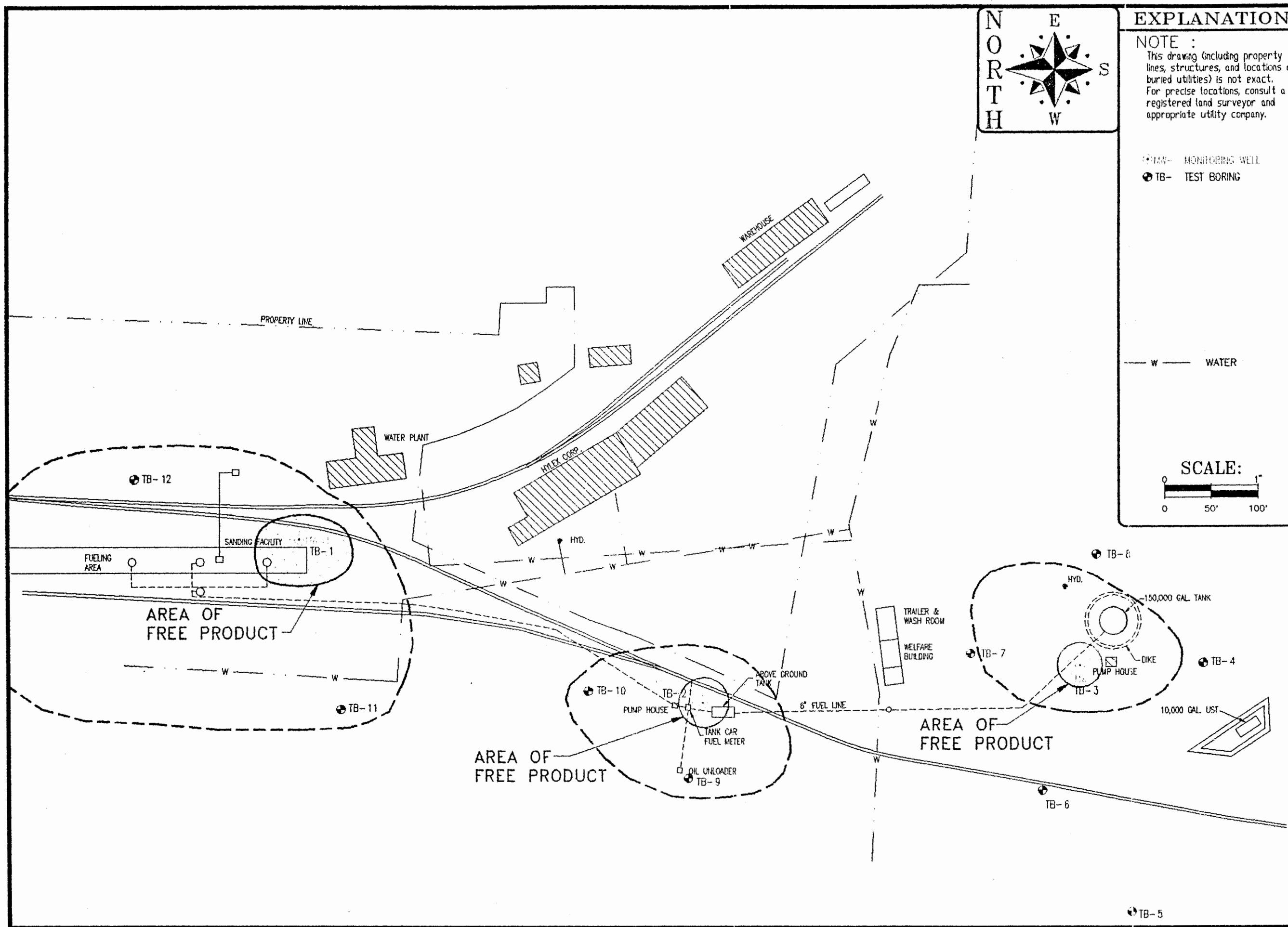
& ASSOCIATES, INC.
Environmental Consultants, Contractors & Engineers

TEST BORING LOCATIONS & NW PRELIMINARY SITE ASSESSMENT BUTLER YARD ACTIVE FUELING AREA MILWAUKEE, WISCONSIN

DATE DRAWN	05/13/94
DRAWN BY	Kelly P.
APPROVED BY	
DRAWING NUMBER	B-05A-A
PROJECT NUMBER	5094-3533
FIGURE NUMBER	2

PLOT DATE 05/13/94
AutoCAD FILE NAME 3533-05A
PLOT SCALE 1" = 100'

DAHL STD NO:



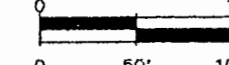
EXPLANATION

NOTE :
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

- MW — MONITORING WELL
- TB — TEST BORING

W WATER

SCALE:



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DAHL
& ASSOCIATES, INC.
Environmental Consultants, Contractors & Engineers

INFERRED AREA OF IMPACT
C & NW SITE ASSESSMENT
BUTLER YARD
ACTIVE FUELING AREA
MILWAUKEE, WISCONSIN

DATE DRAWN	06/20/94
DRAWN BY	Kelly P.
APPROVED BY	
DRAWING NUMBER	B- 08 -A
PROJECT NUMBER	5094-3533
FIGURE NUMBER	3

DAHL STD NO:

PLOT SCALE 1" = 100'

AutoCAD FILE NAME 3533-08A

PLOT DATE 06/20/94

Method of Soil Assessment:

Soil borings were advanced and cased using a truck mounted, model B-57, Mobile Drill equipped with 3.25 inch, inside diameter, hollow stem, continuous flight augers. All drill tools were decontaminated prior to the assessment using high pressure hot water.

At the geologists discretion, two methods soil sample retrieval were used. Soil samples were retrieved using standard penetration soil sampling in accordance with methods of ASTM designation D-1586, using three inch, outside diameter by 60 inch split barrel soil sampler. Soil samples were also retrieved as auger samples in accordance with methodology similar to ASTM D-1452 standards.

Soil sampling intervals were directed by the project geologist, and project leader. Soil samplers were decontaminated in a tri-sodium phosphate bath prior to each use. Soil borings were advanced to a depth of: an impermeable layer, the water table of the uppermost unconfined aquifer, or to the bottom of a water saturated zone of contaminated soil.

When each sample column is retrieved, soil samples were cataloged on drill logs by a geologist and classified in accordance with standards of ASTM designation D-2487 (Unified Soil Classification System). The soil sample appearance was examined for petroleum contamination (hue, value and sheen). The sample column was initially screened for petroleum hydrocarbons using a flame ionization detector (FID), calibrated to yield total organic vapors in parts per million (ppm) as benzene. Soil samples from each interval sampled, were retained for: jar head space analysis, laboratory analysis, or further classification and property analysis.

For head space analysis, 8 ounce glass jars were half filled with the soil sample. The jars were covered with a screwed on lid containing a teflon septum. The jars were agitated for thirty seconds and allowed to rest for at least ten minutes. The sample environment was controlled to assure it was at least above 32 degrees Fahrenheit. After the resting time, the sample jar head space was tested for organic vapors using the FID. The tip of the FID probe was inserted into the head space of the jar, and the maximum stable FID response was recorded.

The FID results were used to provide indication to contamination presence and distribution based on relative organic volatile vapor readings. To quantify the concentration of contaminants, selected soil samples were submitted for laboratory analysis. At least one sample from every test boring was submitted to a laboratory for analysis. Discretion was used in submitting additional samples, that may aid in profiling the contaminants distribution vertically and horizontally.

Each soil sample completely filled a 4 ounce glass jar, with a teflon septum and screw on lid. The sample jars was labeled, and recorded on a chain of custody form. The samples were kept in a cooler with ice, until delivery to the testing laboratory. Soil

samples were analyzed for TPH using OA-2 methodology.

For the purpose of determining test boring placement, soil contaminated with petroleum hydrocarbons was defined as detection of any indication of petroleum hydrocarbons in the soil using field techniques. If soil or ground-water contamination was detected, verbal notification of the detected contamination was given to the State's environmental agency. Any hazardous conditions detected were reported to the State's environmental agency immediately following detection.

If no contamination was detected in the test borings placed around the fueling system, no further drilling was conducted. If soil was found, a series of additional borings were advanced. The borings were systematically located around the known contaminated areas at a distance of at least fifty feet, or at the geologists discretion based on boring results. If any soil sample from the borings registered a FID level greater than 0 ppm, then additional borings were advanced beyond the perimeter of the known contaminated areas. This method was continued until the drilling locations define the area of contamination to a perimeter level not exceeding 0 ppm FID, at which point the subsurface soil investigation was considered complete.

If the area of contamination could not be reasonably defined by this method of assessment due to property boundaries, or other impedances, it was left to the discretion of the project director to end the soil assessment.

Unified Soil Classification

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVEL, LITTLE OR NO FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON No. 4 SIEVE MESH	GRAVEL WITH FINES, APPRECIABLE AMOUNT OF FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS, LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING No. 4 SIEVE MESH	SANDS WITH FINES, APPRECIABLE AMOUNTS OF FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND SANDY SILTS OF SLIGHT PLASTICITY
			CL	INORGANIC SILTS, CLAYEY SILTS, SANDY CLAYS OR SILTY CLAYS OF LOW TO MEDIUM PLASTICITY
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC SILTY CLAYS AND AND CLAYS OF HIGH PLASTICITY
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
FILL			FILL	DESCRIPTION OF MATERIAL MADE FROM VISUAL INSPECTION
DUAL SYMBOLS RE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS			SW-SP	TYPICAL SPLIT CLASSIFICATION

DRILL LOG AND SAMPLING SYMBOLS

TB - TEST BORING
 OD - OUTSIDE CASING DIAMETER
 AS - AUGER SAMPLE
 AD - AFTER DRILLING
 CS - CONTINUOUS SAMPLER
 EOB - END OF BORING
 HSA - HOLLOW STEM AUGER
 ▽ - WATER LEVEL

ID - INSIDE CASING DIAMETER
 SP - SOIL PROBE
 WD - WHILE DRILLING
 ST - SHELBY TUBE SAMPLE
 BCR - BEFORE CASING REMOVED
 SG7 - SOIL GAS PROBE
 PPB - PARTS PER BILLION

TP - TEST PIT
 WS - WHILE SAMPLING
 SS - SPLIT SPOON SAMPLE
 ACR - AFTER CASING REMOVED
 W - WASH SAMPLE
 PPM - PARTS PER MILLION
 SA - SOLID STEM AUGER

Method of Ground Water Assessment:

If ground water was encountered, a ground water investigation was conducted to determine if the ground water had been contaminated with petroleum hydrocarbons in either a soluble or free product form. To facilitate the ground water investigation, piezometers and monitoring wells were used.

In areas where high concentrations of fuel oil was detected in the soil, temporary piezometers were installed. Piezometers were constructed from 2 inch diameter well casing, with a 5 or 10 foot long sections of screen. The piezometers were installed into test borings so that the screen intersects the water table. After the ground water was stabilized in the piezometer, the piezometer was inspected for free product using a paste that chemically detects the presence of liquid petroleum, and confirmed by retrieving a sample of the ground water for inspection. If free product was detected: the product type was identified, the product thickness was measured, and free product presence was reported to the State's environmental agency.

If no free product was detected, discretion was used in collecting a ground-water sample for laboratory analysis or installing a monitoring well for later development and sampling. If free product was detected, a monitoring well was installed.

The piezometers were surveyed and the depth to the water table measured. This data was used in interpreting ground-water flow direction and gradient.

After the ground-water data was collected, the piezometers was removed and the soil borings were sealed in accordance with state code. All soil boring locations were surveyed to the nearest 0.50 feet of land location.

Ground water monitoring wells were installed if free product was encountered, or at the discretion of the geologist. The well network included up to one source well, and three perimeter wells. The source well was placed in a location where the greatest soil contamination was encountered. The perimeter wells were placed within 20 feet of the contaminated area, triangulating the plume, with at least one down gradient and one up gradient well location.

Monitoring wells were installed in accordance with the State's well code. Ten foot screen lengths were used. The wells were installed so that the water table intersected the well screen, and so the expected high water mark would not rise above the well screen. The top casing of monitoring wells were surveyed to a common reference (mean sea level datum if available).

The water level at each well was measured from the surveyed datum, using an electronic water level indicator. This data was later used to interpret ground water flow direction and gradient.

Ground water samples were collected from each monitoring well not containing free product. Prior to sampling, the well was developed by hand bailing using a disposable, teflon bailer. The well was considered sufficiently developed when fines were no longer purged from the well. Prior to sampling, the water in the well was purged by hand bailing using a disposable teflon bailer. The water was considered sufficiently purged when the ground water hydrogen ion content (expressed as pH), specific conductance (temperature corrected) and temperature has been stabilized to a tolerance per well fluid volume no greater than: pH +/- 0.1; specific conductance five percent; and temperature +/- 0.5 degrees celsius.

Water samples were collected using clean, disposable teflon bailer. The samples were placed directly into jars provided by the laboratory. The jars were completely filled. The jars were labeled, recorded on a chain of custody, and kept in a cooler with blue ice, until delivery to the laboratory. The sample were analyzed for TPH and BTEX components using methodology accepted by the State environmental agency. For quality control, a trip blank was included with the ground water samples.

When required, the hydraulic conductivity of the water saturated soil formation was determined by conducting a ground water recovery rate test. The test procedure involved establishing the static water elevation of the test well, purging a known volume of water from the well, and recording the rate at which the water level in the well recharges to that of static conditions, using a Hermit Datalogger. The test data was reduced and analyzed following the Bouwer-Rice method for determining hydraulic conductivity (K).

Method of Risk Assessment:

A risk survey will be conducted that addresses the following potential or actual concerns:

- 1) Is free phase liquid product detected in:
 - the soil at a thickness greater than 0.1 feet,
 - the ground water at a thickness greater than 0.02 feet,
 - contact with underground structures, utilities or utility trenches at a concentrated thickness greater than 0.01 feet,
 - contact with surface water at a concentration detectable by a product sheen.
- 2) Are combustible vapors detected in structures, utility conduits, sewer tiles or confined spaces at a concentration greater than 10 percent lower explosive limit (LEL).
- 3) Are benzene vapors detected within an occupied structure at a level greater than or likely to be 10 ppm for more than 8 hours per day.

- 4) Does soil contain a concentration of petroleum hydrocarbons greater than 100 ppm:
 - in contact with PVC drinking water lines,
 - in utility trenches,
 - within 2,000 feet of a public or private drinking water source, or livestock well,
 - in contact with the seasonal high water table of a drinking water aquifer.
- 5) Is a drinking water supply or water resource having the potential to serve as a drinking water supply, likely to become contaminated to the extent that a maximum contaminant level as defined by the State exceeded.
- 6) Ground water containing a concentration of petroleum hydrocarbons greater than 5 ppb benzene, 700 ppb ethyl benzene, 2420 ppb toluene, 12,000 ppb total xylene, and 10,000 ppb total volatile hydrocarbons is:
 - within 150 feet of structures or conduits allowing migration of contaminants to a drinking water supply aquifer,
 - within 2,000 feet of a public or private drinking water source, or livestock well.

A vapor survey will be conducted of all underground structures located within the vicinity of the soil contamination plume. The vapor survey will utilize the FID or oxygen meter and explosimeter.

Using state well records, and information available from the local water utility, a well search will be conducted to identify any water wells located within a one mile area of the site. When available, the well use, depth, construction, point of water appropriation, and log, will all be noted. Any wells located in the immediate vicinity of the plume or directly down gradient of the plume, will be sampled for petroleum hydrocarbons.

PETROLEUM VAPOR RISK ASSESSMENT AND SURVEY
Fact Sheet #22
Minnesota Pollution Control Agency
LUST Cleanup Program
April 1993

Petroleum can migrate through the ground and create explosive conditions in structures and utilities. Backfilled utility trenches are often avenues for product and vapor movement. This fact sheet provides information on how to assess the risks of petroleum vapors and how to conduct a vapor survey. A vapor risk assessment determines whether a vapor survey is necessary, and a vapor survey aids in determining the extent of contamination, necessary to protect public health and safety. Include vapor risk assessment and vapor survey results in the Remedial Investigation/Corrective Action Design (RI/CAD) report.

VAPOR RISK ASSESSMENT

Conduct a vapor risk assessment for all petroleum release sites where an RI is necessary, to determine the potential for vapor impacts to utilities or basements. The vapor risk assessment uses the results of the RI and other site information to assess conditions indicating high risk of vapor impacts, including: soil types, product type, location of underground utility lines, the location and depth of storm and sanitary sewers and location of nearby basements. Check release detection records to determine if there has been a sudden loss of product. Presence of free product or high concentrations of dissolved product increase the risk of vapor impacts.

Use the site specific information to assess the risk of vapor impacts to basements or utilities. Summarize the conclusions of the vapor risk assessment in the RI/CAD report. If there is a risk of vapor impacts to basements or utilities, conduct a vapor survey.

VAPOR SURVEY

- If vapor concentrations above 10 percent of the lower explosive limits (LEL) are detected at any time, do not enter buildings or continue sewer survey.

Contact Immediately:

Local Fire Department (911) and
State Duty Officer (24 hours)
612/649-5451, 612/296-3100 or 1-800-422-0798
TDD users call 612/297-5353 or Greater Minnesota TDD 1-800-627-3529

- Only a person with proper training, experience and equipment (e.g., triple gas meter, oxygen meter, etc.) should conduct the survey, due to the potential hazards of working with sewers (i.e., sewage, vapors, traffic) and confined spaces.

When conducting a utility vapor survey:

- Contact the city utility department. They can provide sewer maps to determine the direction of sewer flow, assist in locating and opening manholes.

- Contact the local police department if traffic control is needed.
- Use traffic cones, parked vehicles, or other barriers for safety.
- Use both an explosimeter and photoionization detector (PID) to take vapor readings. Start at the manhole closest to the site. Work upstream and downstream to determine where product or vapors are entering, and the extent of the impacted area. "Crack" each cover first and take readings of oxygen, explosimeter, and PID. Repeat measurements at mid-depth and at the wastewater level.
- Check the air flow direction from the manhole to determine if dilution is occurring.
- Collect a water or sewage sample. Look for rainbows and check for odors. If there is odor but no product, use a PID to conduct a jar headspace analysis on the water or sewer sample.
- Check all the incoming branches in the sewer, if possible. If odors are detected, continue upstream and downstream even if no product is present. Vapors may travel "upstream" from the source (especially in winter) and therefore may be misleading.
- Check lift stations near the site.

When conducting a basement vapor survey:

- Interview the building owner and/or occupant to determine the frequency and occurrence of petroleum odors.
- Check basements which the vapor risk assessment indicates may be impacted, including site basement, using both an explosimeter and PID to take vapor readings. Record names, addresses, and telephone numbers of building owners/occupants.
- Take vapor readings to assess ambient air quality in the basement.
- Check for vapors near basement sewer drains, and near any cracks in the foundation. Carefully check for vapor pockets at covered sumps, building corners, crawl spaces, or in any area of poor air circulation.

Summarize the conclusions of the vapor survey in the RI/CAD report. Provide a narrative on the vapor survey findings and a vapor survey map (including bar scale and north arrow) denoting the following information:

- site layout, including buildings, property lines, and adjacent properties with actual/potential vapor impacts;
- utility locations, flow direction and volumes;
- sewer vapor readings;

Petroleum Vapor Risk Assessment and Survey

Page 3

April 1993

- wastewater observations and headspace readings; and
- location and identity of nearby building, with impacted buildings designated.

Upon request, this document can be made available in other formats, including Braille, large print and audio tape. TDD Users, call the Minnesota State Relay Service, 612/297-5353 or Greater Minnesota TDD 1-800-627-3529.

Printed on recycled paper containing at least 10 percent fibers from paper recycled by consumers.

GROUND WATER RECEPTOR SURVEY
Fact Sheet #23
Minnesota Pollution Control Agency
LUST Cleanup Program
April 1993

Conduct a ground water receptor survey for every petroleum release site where ground water impacts have occurred or are suspected. Include the ground water receptor survey results in the Remedial Investigation/Corrective Action Design (RI/CAD) report. Data presented in the ground water receptor survey aid the Minnesota Pollution Control Agency (MPCA) staff in determining site specific action levels and cleanup goals. A ground water receptor survey includes the following activities:

1. Document the present or potential availability of municipal water in the area up to one mile downgradient of the site.
2. Obtain all logs of wells within a one-mile radius of the site on file with the Minnesota Geological Survey. If more than 50 well logs are available for the search area, contact the MPCA project staff to determine which well logs to include in the report. If the impacted unit is a quaternary aquifer and no well logs are available within a one mile search radius of the site, obtain well logs within a two mile search radius. Provide drilling logs of any wells using quaternary aquifers within a two mile search radius, along with the locations, constructions, depths and uses.
3. Contact appropriate local authorities and local well drillers to determine whether there may be unregistered wells located within one mile of the site. The location, construction, depth and use of any identified wells should be reported if the information is available.
4. Contact the site owner and adjacent property owners to determine whether existing or abandoned wells are present. If available, report the location, construction, depth and use of any identified wells.
5. In a table, summarize the data on all identified wells, including the following information: Minnesota unique well number or other identifier; ground surface elevation; elevation of the base of the well; elevation of the base of the casing; water level elevation; aquifer; use. Produce a map corresponding to the table, showing the locations of all wells.
6. If no wells using the impacted unit are located downgradient of the site, contact appropriate local authorities and property owners to determine whether ground water development is scheduled in the area up to one mile downgradient of the site.
7. Document all contacts made for the ground water receptor survey including the name and telephone number of each contact, the date of contact, and a brief summary of the information provided.
8. Provide legible copies of all well logs obtained. Make sure the Minnesota unique well number (or other identifier) corresponds to the table discussed in item 5 above.

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-1 / MW-1

DATE: 5-11-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material			PID/FID (ppm)	Blow Counts	H2O
	#	type	General		USCS			
0								
2-4'	S1	AS	Grey silty sand, moist			150		
5								
6-8'	S2	AS	Grey silty sand, moist			150		
10								
12-14'	S3	AS	Grey silty sand, wet			180		
15								
16-18'	S4	AS	Same soil as above			100		
			EOB @ 18'					
			Set MW-1					
20								
25								

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid

Make: FID

Surveyed:

Time Start: 10:30A

Model: OVA 108

Surface Elevation:

Time Complete: 11:30A

Unit ID:

WATER LEVEL: 11'

Total Time:

ppm Span Gas:

Water level indicated on log: *

Drilling Rate:

Time of Calibration:

Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-2 / MW-2

DATE: 5-11-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

	Depth (feet)	Sample		Description of Material		USCS	PID/FID (ppm)	Blow Counts	H2O
		#	type	General					
0									
	2-4'	S1	AS	Black silty clay/minor gravel, moist			50		
5									
	6-8'	S2	AS	Brown clay w/trace silt, moist			30		
10									
	12-14'	S3	AS	Med. brown silty sand, wet			100		
				EOB @ 14'					
15									
20									
25									

DRILLING SUMMARY

Drill/Method: Solid
Time Start: 12:05P
Time Complete: 1:15P
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:
WATER LEVEL: 11'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-3 / MW-3

DATE: 5-11-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material		PID/FID (ppm)	Blow Counts	H2O
	#	type	General	USCS			
0							
2-4'	S1	AS	Black coarse sand, moist		80		
5							
6-8'	S2	AS	Brown/grey coarse sand, wet		50		
10							
12-14'	S3	AS	Grey/brown silty sand & clay, moist		100		
15			EOB @ 14' Set MW-3				
20							
25							

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 1:31P
Time Complete: 2:30P
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 6'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-4

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material		USCS	PID/FID (ppm)	Blow Counts	H2O
	#	Type	General					
0								
2-4'	S1	AS	Med. brown silty clay, moist			ND		
5								
6-8'	S2	AS	Med. brown silty clay, moist			ND		
10								
12-14'	S3	AS	Med. brown silty sand, wet			ND		
15			EOB @ 14'					
20								
25								

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 8:30A
Time Complete: 8:55A
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 9'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-5

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

	Depth (feet)	Sample		Description of Material		PID/FID (ppm)	Blow Counts	H2O
		#	type	General	USCS			
0								
2-4'	S1	AS	Black sand / gravel, moist			ND		
5								
6-8'	S2	AS	Med. brown silty sand / gravel, moist			ND		
10								
12-14'	S3	AS	Med. brown gravel w/trace silty sand, wet			ND		
15				EOB @ 14'				
20								
25								

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 8:58A
Time Complete: 9:20A
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 9'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-6

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material		USCS	PID/FID (ppm)	Blow Counts	H2O
	#	Type	General					
0								
2-4'	S1	AS	Black sand / gravel, dry			NA		
5								
6-8'	S2	AS	Med. brown gravel / coarse sand, wet			ND		
			EOB @ 8'					
10								
15								
20								
25								

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid

Make: FID
Model: OVA 108

Surveyed:

Time Start: 9:25A

Model:

Surface Elevation:

Time Complete: 9:40A

Unit ID:

WATER LEVEL: 8'

Total Time:

ppm Span Gas:

Water level indicated on log: *

Drilling Rate:

Time of Calibration:

Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-7

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

	Depth (feet)	Sample		Description of Material		USCS	PID/FID (ppm)	Blow Counts	H2O
		#	type	General					
0									
	2-4'	S1	AS	Med. brown silty clay, moist			ND		
5									
	6-8'	S2	AS	Med. brown silty sand, wet			20		
				EOB @ 8'					
10									
15									
20									
25									

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 9:55A
Time Complete: 10:12A
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 8'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-8

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material		PID/FID (ppm)	Blow Counts	H2O
	#	type	General	USCS			
0							
2-4'	S1	AS	Med. brown coarse sand / gravel, wet		ND		
5							
6-8'	S2	AS	Med. brown silty clay / coarse sand		1		
			EOB @ 8'				
10							
15							
20							
25							

DRILLING SUMMARY

Drill/Method: Solid
Time Start: 10:30A
Time Complete: 11:05A
Total Time:
Drilling Rate:

PID/FID INFORMATION

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

ELEVATION DATA

Surveyed:
Surface Elevation:
WATER LEVEL: 5'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-9

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material		PID/FID (ppm)	Blow Counts	H2O
	#	type	General	USCS			
0							
2-4'	S1	AS	Black silty clay / coarse sand, moist		20		
5							
6-8'	S2	AS	Med. brown silty sand, wet		25		
			EOB @ 8'				
10							
15							
20							
25							

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 11:10A
Time Complete: 11:20A
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 8'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-10

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material		USCS	PID/FID (ppm)	Blow Counts	H2O
	#	type	General					
0								
2-4'	S1	AS	Black/brown clay w/trace silt & sand, moist			1		
5								
6-8'	S2	AS	Med. brown/grey silty sand, wet			20		
			EOB @ 8'					
10								
15								
20								
25								

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 11:35A
Time Complete: 12:01P
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 7'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-11

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

Depth (feet)	Sample		Description of Material		PID/FID (ppm)	Blow Counts	H2O
	#	type	General	USCS			
0							
2-4'	S1	AS	Black silty clay w/trace coarse sand		2		
5							
6-8'	S2	AS	Med. brown silty clay, wet		10		
10							
			EOB @ 11'				
15							
20							
25							

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 12:05P
Time Complete: 12:30P
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 8'
Water level indicated on log: *
Depth of oxidation on log: ox

DAHL & ASSOCIATES, INC.**Geologic Report: SOIL BORING LOG**

Page 1 of 1

Project Name: CNW - BUTLER

HOLE ID: TB-12

DATE: 5-12-94

Job Number: 50943533

Geologist: SS

Driller/Co.: BAROTT

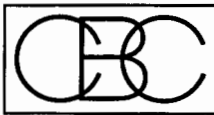
	Depth (feet)	Sample		Description of Material		USCS	PID/FID (ppm)	Blow Counts	H2O
		#	type	General					
0									
	2-4'	S1	AS	Black silty sand / minor coarse sand, very moist			40		
5									
	6-8'	S2	AS	Black silty sand, wet			45		
				EOB @ 8'					
10									
15									
20									
25									

DRILLING SUMMARY**PID/FID INFORMATION****ELEVATION DATA**

Drill/Method: Solid
Time Start: 12:55P
Time Complete: 1:15P
Total Time:
Drilling Rate:

Make: FID
Model: OVA 108
Unit ID:
ppm Span Gas:
Time of Calibration:

Surveyed:
Surface Elevation:
WATER LEVEL: 8'
Water level indicated on log: *
Depth of oxidation on log: ox



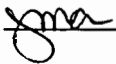
**ENVIRONMENTAL
LABORATORIES INC.**

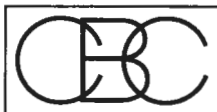
Date of Report: 06/17/94
Project Number: 9405241
Lab ID: 94-0000515
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number:
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-1 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	22	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	260	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	150	mg/kg	.001	SW 8020	05/25/94
Benzene	0.10	mg/kg	.005	SW 8020	05/25/94
Ethylbenzene	1.4	mg/kg	.005	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	2.4	mg/kg	.005	SW 8020	05/25/94
P,M-Xylenes	1.4	mg/kg	.005	SW 8020	05/25/94
Toluene	0.14	mg/kg	.005	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	43	mg/kg	4.8	SW 8310	05/25/94
Dibenzo (a,h) anthracene	<.28	mg/kg	.28	SW 8310	05/27/94
2-Methylnaphthalene	82	mg/kg	4.8	SW 8310	05/27/94
Acenaphthene	<5	mg/kg	5	SW 8310	05/27/94
Acenaphthylene	<9	mg/kg	9	SW 8310	05/27/94
Anthracene	<6.5	mg/kg	6.5	SW 8310	05/27/94
Benzo (a) anthracene	<.24	mg/kg	.24	SW 8310	05/27/94
Benzo (a) pyrene	<.28	mg/kg	.28	SW 8310	05/27/94
Benzo (b) fluoranthene	<.2	mg/kg	.2	SW 8310	05/27/94
Benzo (g,h,i) perylene	<.65	mg/kg	.65	SW 8310	05/27/94
Benzo (k) fluoranthene	<.17	mg/kg	.17	SW 8310	05/27/94
Chrysene	<.32	mg/kg	.32	SW 8310	05/27/94
Fluoranthene	<.6	mg/kg	.6	SW 8310	05/27/94
Fluorene	8.8	mg/kg	1.25	SW 8310	05/27/94

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/17/94
Project Number: 9405241
Lab ID: 94-0000515
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number:
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-1 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	<.12	mg/kg	.12	SW 8310	05/27/94
Naphthalene	15	mg/kg	4.8	SW 8310	05/27/94
Phenanthrene	<.55	mg/kg	.55	SW 8310	05/27/94
Pyrene	10	mg/kg	.32	SW 8310	05/27/94
LUST					
Diesel Range Organics	700	mg/kg	4	WIMODDRO	05/19/94

Please contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit.

J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

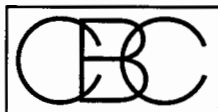
+ = Due to extract volume.

Reviewed and Approved by:

Reviewed and Approved

Wes Saferite

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/17/94
Project Number: 9405241
Lab ID: 94-0000515
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number:
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-1 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Diesel concentration 650 mg/kg.

Please contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

✓T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit.

J = Estimated below the Quantitation Limit.

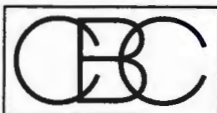
Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000516
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

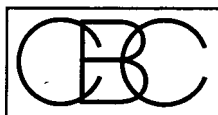
Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-2 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	16	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	180	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	130	mg/kg	.001	SW 8020	05/25/94
Benzene	<.005	mg/kg	.005	SW 8020	05/25/94
Ethylbenzene	0.88	mg/kg	.005	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	2.5	mg/kg	.005	SW 8020	05/25/94
P,M-Xylenes	0.33	mg/kg	.005	SW 8020	05/25/94
Toluene	0.16	mg/kg	.005	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	15	mg/kg	.96	SW 8310	05/27/94
Dibenzo (a, h) anthracene	<.056	mg/kg	.056	SW 8310	05/27/94
2-Methylnaphthalene	28	mg/kg	.96	SW 8310	05/27/94
Acenaphthene	<1	mg/kg	1	SW 8310	05/27/94
Acenaphthylene	<1.8	mg/kg	1.8	SW 8310	05/27/94
Anthracene	<1.3	mg/kg	1.3	SW 8310	05/27/94
Benzo (a) anthracene	<.048	mg/kg	.048	SW 8310	05/27/94
Benzo (a) pyrene	<.056	mg/kg	.056	SW 8310	05/27/94
Benzo (b) fluoranthene	<.04	mg/kg	.04	SW 8310	05/27/94
Benzo (g, h, i) perylene	<.13	mg/kg	.13	SW 8310	05/27/94
Benzo (k) fluoranthene	<.034	mg/kg	.034	SW 8310	05/27/94
Chrysene	<.064	mg/kg	.064	SW 8310	05/27/94
Fluoranthene	<.12	mg/kg	.12	SW 8310	05/27/94
Fluorene	2.1	mg/kg	.25	SW 8310	05/27/94

jma

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000516
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-2 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	<.024	mg/kg	.024	SW 8310	05/27/94
Naphthalene	4.8	mg/kg	.96	SW 8310	05/27/94
Phenanthrene	<.11	mg/kg	.11	SW 8310	05/27/94
Pyrene	2.4	mg/kg	.064	SW 8310	05/27/94
LUST					
Diesel Range Organics	200	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

✓T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.

Reviewed and Approved by:

Reviewed and Approved

Wes Saferite

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES^{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000516
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-2 S-3 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Diesel concentration 180 mg/kg.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

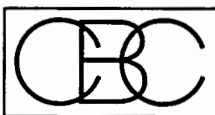
Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

+ = Due to extract volume.



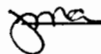
**ENVIRONMENTAL
LABORATORIES^{INC.}**

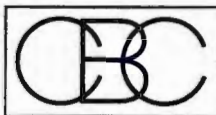
Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000517
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-3 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	6.2	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	48	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	8.8	mg/kg	.001	SW 8020	05/25/94
Benzene	<.002	mg/kg	.002	SW 8020	05/25/94
Ethylbenzene	0.031	mg/kg	.002	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	0.090	mg/kg	.002	SW 8020	05/25/94
P,M-Xylenes	0.011	mg/kg	.002	SW 8020	05/25/94
Toluene	0.0046	mg/kg	.002	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	14	mg/kg	1.92	SW 8310	05/27/94
Dibenzo (a,h) anthracene	0.66	mg/kg	.112	SW 8310	05/27/94
2-Methylnaphthalene	18	mg/kg	1.92	SW 8310	05/27/94
Acenaphthene	7.2	mg/kg	2	SW 8310	05/27/94
Acenaphthylene	<3.6	mg/kg	3.6	SW 8310	05/27/94
Anthracene	<2.6	mg/kg	2.6	SW 8310	05/27/94
Benzo (a) anthracene	3.3	mg/kg	.096	SW 8310	05/27/94
Benzo (a) pyrene	2.9	mg/kg	.112	SW 8310	05/27/94
Benzo (b) fluoranthene	2.2	mg/kg	.08	SW 8310	05/27/94
Benzo (g,h,i) perylene	2.9	mg/kg	.26	SW 8310	05/27/94
Benzo (k) fluoranthene	1.2	mg/kg	.068	SW 8310	05/27/94
Chrysene	4.3	mg/kg	.128	SW 8310	05/27/94
Fluoranthene	<.24	mg/kg	.24	SW 8310	05/27/94
Fluorene	4.8	mg/kg	.5	SW 8310	05/27/94

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**ENVIRONMENTAL
LABORATORIES^{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000517
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-3 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno (1,2,3,c,d)pyrene	<.048	mg/kg	.048	SW 8310	05/27/94
Naphthalene	3.2	mg/kg	1.92	SW 8310	05/27/94
Phenanthrene	<.22	mg/kg	.22	SW 8310	05/27/
Pyrene	<.128	mg/kg	.128	SW 8310	05/27/
LUST					
Diesel Range Organics	760	mg/kg	4	WIMODDRO	05/19/

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

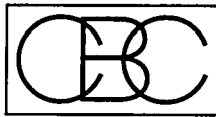
+ = Due to extract volume.

Reviewed and Approved by:

Reviewed and Approved:

Wes Saferite

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000517
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-3 S-3 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Sample weight 19.13 grams. Diesel concentration 660 mg/kg.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.



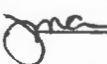
**ENVIRONMENTAL
LABORATORIES INC.**

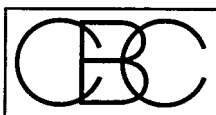
Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000518
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-4 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	18	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	<.001	mg/kg	.001	SW 8020	05/25/94
P,M-Xylenes	<.001	mg/kg	.001	SW 8020	05/25/94
Toluene	<.001	mg/kg	.001	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	<.0096	mg/kg	.0096	SW 8310	05/25/94
Dibenzo(a,h)anthracene	<.00056	mg/kg	.00056	SW 8310	05/25/94
2-Methylnaphthalene	0.023	mg/kg	.0096	SW 8310	05/25/94
Acenaphthene	0.019	mg/kg	.01	SW 8310	05/25/94
Acenaphthylene	<.018	mg/kg	.018	SW 8310	05/25/94
Anthracene	<.013	mg/kg	.013	SW 8310	05/25/94
Benzo(a)anthracene	0.024	mg/kg	.00048	SW 8310	05/25/94
Benzo(a)pyrene	0.021	mg/kg	.00056	SW 8310	05/25/94
Benzo(b)fluoranthene	0.015	mg/kg	.0004	SW 8310	05/25/94
Benzo(g,h,i)perylene	0.023	mg/kg	.0013	SW 8310	05/25/94
Benzo(k)fluoranthene	<.00034	mg/kg	.00034	SW 8310	05/25/94
Chrysene	0.024	mg/kg	.00064	SW 8310	05/25/94
Fluoranthene	0.033	mg/kg	.0012	SW 8310	05/25/94
Fluorene	0.014	mg/kg	.0025	SW 8310	05/25/94

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**ENVIRONMENTAL
LABORATORIES^{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000518
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-4 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	0.013	mg/kg	.00024	SW 8310	05/25/94
Naphthalene	0.020	mg/kg	.0096	SW 8310	05/25/94
Phenanthrene	0.058	mg/kg	.0011	SW 8310	05/25/94
Pyrene	0.0096	mg/kg	.00064	SW 8310	05/25/94
LUST					
Diesel Range Organics	<4	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

*T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.

Reviewed and Approved by:

Wes Saferite

Reviewed and Approved

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000518
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-4 S-3 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Contamination detected. G.C. chromatogram does not match Diesel standard pattern.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

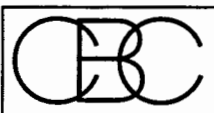
Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

+ = Due to extract volume.



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000519
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

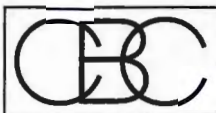
Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-5 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	7.3	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	<.001	mg/kg	.001	SW 8020	05/25/94
P,M-Xylenes	<.001	mg/kg	.001	SW 8020	05/25/94
Toluene	<.001	mg/kg	.001	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	<.0096	mg/kg	.0096	SW 8310	05/25/94
Dibenzo (a,h) anthracene	0.0020	mg/kg	.00056	SW 8310	05/25/94
2-Methylnaphthalene	<.0096	mg/kg	.0096	SW 8310	05/25/94
Acenaphthene	<.01	mg/kg	.01	SW 8310	05/25/94
Acenaphthylene	<.018	mg/kg	.018	SW 8310	05/25/94
Anthracene	<.013	mg/kg	.013	SW 8310	05/25/94
Benzo (a) anthracene	<.00048	mg/kg	.00048	SW 8310	05/25/94
Benzo (a) pyrene	0.016	mg/kg	.00056	SW 8310	05/25/94
Benzo (b) fluoranthene	0.017	mg/kg	.0004	SW 8310	05/25/94
Benzo (g,h,i) perylene	0.030	mg/kg	.0013	SW 8310	05/25/94
Benzo (k) fluoranthene	<.00034	mg/kg	.00034	SW 8310	05/25/94
Chrysene	<.00064	mg/kg	.00064	SW 8310	05/25/94
Fluoranthene	0.043	mg/kg	.006	SW 8310	05/27/94
Fluorene	<.0025	mg/kg	.0025	SW 8310	05/25/94

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000519
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-5 S-3 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	0.012	mg/kg	.00024	SW 8310	05/25/94
Naphthalene	<.0096	mg/kg	.0096	SW 8310	05/25/94
Phenanthrene	0.064	mg/kg	.0055	SW 8310	05/27/94
Pyrene	0.010	mg/kg	.0032	SW 8310	05/27/94
LUST					
Diesel Range Organics	<4	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

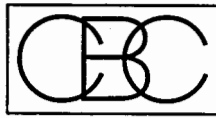
+ = Due to extract volume.

Reviewed and Approved by:

Reviewed and Approved:

Wes Saferite

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/07/94
Project Number: 9405241
Lab ID: 94-0000520
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-6 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	0.010	mg/kg	.00024	SW 8310	05/22/94
Naphthalene	0.090	mg/kg	.0096	SW 8310	05/22/94
Phenanthrene	0.040	mg/kg	.0011	SW 8310	05/22/94
Pyrene	0.0052	mg/kg	.00064	SW 8310	05/22/94
LUST					
Diesel Range Organics	<4	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

✓T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

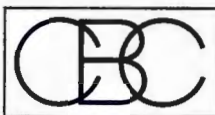
+ = Due to extract volume.

Reviewed and Approved by:

Wes Saferite

Reviewed and Approved

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/07/94
Project Number: 9405241
Lab ID: 94-0000520
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-6 S-2 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Contamination detected. G.C. chromatogram does not match Diesel standard pattern. Rise in sample baseline.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

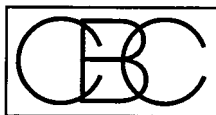
Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

+ = Due to extract volume.



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/07/94
Project Number: 9405241
Lab ID: 94-0000520
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-6 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	13	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/21/94
Ethylbenzene	<.001	mg/kg	.001	SW 8020	05/21/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	<.001	mg/kg	.001	SW 8020	05/21/94
P,M-Xylenes	<.001	mg/kg	.001	SW 8020	05/21/94
Toluene	<0.001D	mg/kg	.001	SW 8020	05/21/94
HPLC					
1-Methylnaphthalene	0.034	mg/kg	.0096	SW 8310	05/22/94
Dibenzo (a,h) anthracene	0.0015	mg/kg	.00056	SW 8310	05/22/94
2-Methylnaphthalene	0.045	mg/kg	.0096	SW 8310	05/22/94
Acenaphthene	<.01	mg/kg	.01	SW 8310	05/22/94
Acenaphthylene	<.018	mg/kg	.018	SW 8310	05/22/94
Anthracene	<.013	mg/kg	.013	SW 8310	05/22/94
Benzo (a) anthracene	<.00048	mg/kg	.00048	SW 8310	05/22/94
Benzo (a) pyrene	0.014	mg/kg	.00056	SW 8310	05/22/94
Benzo (b) fluoranthene	0.013	mg/kg	.0004	SW 8310	05/22/94
Benzo (g,h,i) perylene	0.025	mg/kg	.0013	SW 8310	05/22/94
Benzo (k) fluoranthene	0.0062	mg/kg	.00034	SW 8310	05/22/94
Chrysene	<.00064	mg/kg	.00064	SW 8310	05/22/94
Fluoranthene	0.023	mg/kg	.0012	SW 8310	05/22/94
Fluorene	<.0025	mg/kg	.0025	SW 8310	05/22/94

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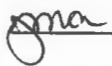
ENVIRONMENTAL LABORATORIES INC.

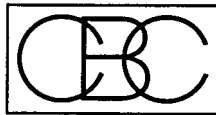
Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000521
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-7 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	16	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	0.0016	mg/kg	.001	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	<.001	mg/kg	.001	SW 8020	05/25/94
P,M-Xylenes	<.001	mg/kg	.001	SW 8020	05/25/94
Toluene	<.001	mg/kg	.001	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	<.0096@	mg/kg	.0096	SW 8310	05/23/94
Dibenzo (a, h) anthracene	<.00056@	mg/kg	.00056	SW 8310	05/23/94
2-Methylnaphthalene	<.0096@	mg/kg	.0096	SW 8310	05/23/94
Acenaphthene	<.01@	mg/kg	.01	SW 8310	05/23/94
Acenaphthylene	<.018	mg/kg	.018	SW 8310	05/23/94
Anthracene	0.032	mg/kg	.013	SW 8310	05/23/94
Benzo (a) anthracene	<.00048@	mg/kg	.00048	SW 8310	05/23/94
Benzo (a) pyrene	0.027	mg/kg	.00056	SW 8310	05/23/94
Benzo (b) fluoranthene	<.0004	mg/kg	.0004	SW 8310	05/23/94
Benzo (g, h, i) perylene	0.035	mg/kg	.0013	SW 8310	05/23/94
Benzo (k) fluoranthene	0.0096	mg/kg	.00034	SW 8310	05/23/94
Chrysene	<.00064	mg/kg	.00064	SW 8310	05/23/94
Fluoranthene	<.0024	mg/kg	.0012	SW 8310	05/23/94
Fluorene	0.14	mg/kg	.025	SW 8310	05/22/94

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000521
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

-ample Desc: TB-7 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	0.012	mg/kg	.00024	SW 8310	05/23/94
Naphthalene	<0.0096@	mg/kg	.0096	SW 8310	05/23/94
Phenanthrene	0.044	mg/kg	.0011	SW 8310	05/23/94
Pyrene	0.015	mg/kg	.00064	SW 8310	05/23/94
LUST					
Diesel Range Organics	16	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

✓T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.

Reviewed and Approved by:

Reviewed and Approved

Wes Saferite

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES^{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000521
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-7 S-2 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Diesel concentration 16 mg/kg.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

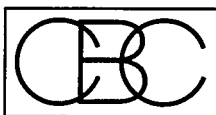
Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

+ = Due to extract volume.



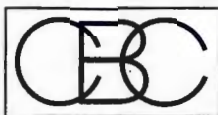
**ENVIRONMENTAL
LABORATORIES^{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000521
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-7 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
02	Phenanthrene estimated off of the UV detector due to matrix interference.				



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000522
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

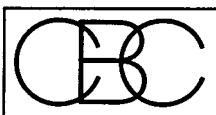
Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-8 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	24	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	<.001	mg/kg	.001	SW 8020	05/25/94
P,M-Xylenes	<.001	mg/kg	.001	SW 8020	05/25/94
Toluene	<.001	mg/kg	.001	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	<.0096	mg/kg	.0096	SW 8310	05/22/94
Dibenzo (a, h) anthracene	0.092	mg/kg	.00056	SW 8310	05/22/94
2-Methylnaphthalene	<.0096	mg/kg	.0096	SW 8310	05/22/94
Acenaphthene	0.49	mg/kg	.01	SW 8310	05/22/94
Acenaphthylene	<.018	mg/kg	.018	SW 8310	05/22/94
Anthracene	0.49	mg/kg	.013	SW 8310	05/22/94
Benzo (a) anthracene	1.0	mg/kg	.048	SW 8310	05/27/94
Benzo (a) pyrene	0.82	mg/kg	.056	SW 8310	05/27/94
Benzo (b) fluoranthene	0.72	mg/kg	.0004	SW 8310	05/22/94
Benzo (g, h, i) perylene	0.68	mg/kg	.0013	SW 8310	05/22/94
Benzo (k) fluoranthene	0.36	mg/kg	.00034	SW 8310	05/22/94
Chrysene	1.0	mg/kg	.064	SW 8310	05/27/94
Fluoranthene	1.5	mg/kg	.0012	SW 8310	05/22/94
Fluorene	0.19	mg/kg	.0025	SW 8310	05/22/94

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000522
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-8 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	0.47	mg/kg	.00024	SW 8310	05/22/94
Naphthalene	<.0096	mg/kg	.0096	SW 8310	05/22/94
Phenanthrene	2.0	mg/kg	.11	SW 8310	05/27/94
Pyrene	0.39	mg/kg	.00064	SW 8310	05/22/94
LUST					
Diesel Range Organics	<4	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

✓T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.

Reviewed and Approved by:

Wes Saferite

Reviewed and Approved

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000522
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-8 S-2 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Contaminatin detected. G.C. chromatogram does not match Diesel standard pattern. Contamination most likely due to sample vail septa.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

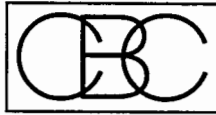
Elevated Detection Limits :

@ = Due to matrix inmterference.

= Due to sample concentration.

\$ = Due to sample quantity.

+ = Due to extract volume.



**ENVIRONMENTAL
LABORATORIES^{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000522
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-8 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
02	Fluorene is determined off of the UV detector, due to matrix interference.				



ENVIRONMENTAL LABORATORIES INC.

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000523
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

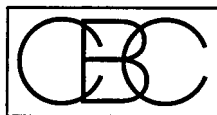
Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-9 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	9.5	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	100	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	77	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	0.59	mg/kg	.005	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	1.7	mg/kg	.005	SW 8020	05/25/94
P,M-Xylenes	0.14	mg/kg	.005	SW 8020	05/25/94
Toluene	0.064	mg/kg	.005	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	19	mg/kg	.96	SW 8310	05/26/94
Dibenzo(a,h)anthracene	<.056	mg/kg	.056	SW 8310	05/26/94
2-Methylnaphthalene	37	mg/kg	.96	SW 8310	05/26/94
Acenaphthene	2.7	mg/kg	1	SW 8310	05/26/94
Acenaphthylene	<1.8	mg/kg	1.8	SW 8310	05/26/94
Anthracene	<1.3	mg/kg	1.3	SW 8310	05/26/94
Benzo(a)anthracene	<.048	mg/kg	.048	SW 8310	05/26/94
Benzo(a)pyrene	<.056	mg/kg	.056	SW 8310	05/26/94
Benzo(b)fluoranthene	<.04	mg/kg	.04	SW 8310	05/26/94
Benzo(g,h,i)perylene	<.13	mg/kg	.13	SW 8310	05/26/94
Benzo(k)fluoranthene	<.034	mg/kg	.034	SW 8310	05/26/94
Chrysene	<.064	mg/kg	.064	SW 8310	05/26/94
Fluoranthene	<.12	mg/kg	.12	SW 8310	05/26/94
Fluorene	2.2	mg/kg	.25	SW 8310	05/26/94

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000523
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-9 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	<.024	mg/kg	.024	SW 8310	05/26/94
Naphthalene	<.96	mg/kg	.96	SW 8310	05/26/94
Phenanthrene	<.11	mg/kg	.11	SW 8310	05/26/94
Pyrene	2.0	mg/kg	.064	SW 8310	05/26/94
LUST					
Diesel Range Organics	900	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

✓T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.

Reviewed and Approved by:

Reviewed and Approved

Wes Saferite

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000523
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-9 S-2 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Diesel concentration 900 mg/kg.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

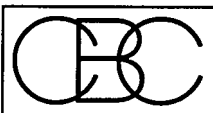
Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

+ = Due to extract volume.



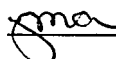
**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000524
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-10 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	12	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	0.0022	mg/kg	.001	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	<.001	mg/kg	.001	SW 8020	05/25/94
P,M-Xylenes	<.001	mg/kg	.001	SW 8020	05/25/94
Toluene	<.001	mg/kg	.001	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	0.11	mg/kg	.0096	SW 8310	05/22/94
Dibenzo(a,h)anthracene	0.0027	mg/kg	.00056	SW 8310	05/22/94
2-Methylnaphthalene	0.060	mg/kg	.0096	SW 8310	05/22/94
Acenaphthene	0.066	mg/kg	.01	SW 8310	05/22/94
Acenaphthylene	<.018	mg/kg	.018	SW 8310	05/22/94
Anthracene	<.013	mg/kg	.013	SW 8310	05/22/94
Benzo(a)anthracene	<.00048	mg/kg	.00048	SW 8310	05/22/94
Benzo(a)pyrene	0.0011	mg/kg	.00056	SW 8310	05/22/94
Benzo(b)fluoranthene	<.0004	mg/kg	.0004	SW 8310	05/22/94
Benzo(g,h,i)perylene	<.0013	mg/kg	.0013	SW 8310	05/22/94
Benzo(k)fluoranthene	<.00034	mg/kg	.00034	SW 8310	05/22/94
Chrysene	<.00064	mg/kg	.00064	SW 8310	05/22/94
Fluoranthene	<.0012	mg/kg	.0012	SW 8310	05/22/94
Fluorene	0.024	mg/kg	.0025	SW 8310	05/22/94

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000524
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-10 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	<.00024	mg/kg	.00024	SW 8310	05/22/94
Naphthalene	0.016	mg/kg	.0096	SW 8310	05/22/94
Phenanthrene	<.0011	mg/kg	.0011	SW 8310	05/22/94
Pyrene	<.00064	mg/kg	.00064	SW 8310	05/22/94
LUST					
Diesel Range Organics	23	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

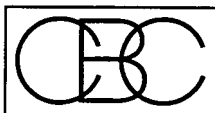
+ = Due to extract volume.

Reviewed and Approved by:

Reviewed and Approved:

Wes Saferite

Jayne Armbruster

**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000525
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-11 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	19	%	.1	SW 5030	05/13/94
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	<.001	mg/kg	.001	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	<.001	mg/kg	.001	SW 8020	05/25/94
P,M-Xylenes	<.001	mg/kg	.001	SW 8020	05/25/94
Toluene	<.001	mg/kg	.001	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	<.0096	mg/kg	.0096	SW 8310	05/22/94
Dibenzo(a,h)anthracene	<.00056	mg/kg	.00056	SW 8310	05/22/94
2-Methylnaphthalene	<.0096	mg/kg	.0096	SW 8310	05/22/94
Acenaphthene	<.01	mg/kg	.01	SW 8310	05/22/94
Acenaphthylene	<.018	mg/kg	.018	SW 8310	05/22/94
Anthracene	<.013	mg/kg	.013	SW 8310	05/22/94
Benzo(a)anthracene	<.00048	mg/kg	.00048	SW 8310	05/22/94
Benzo(a)pyrene	<.00056	mg/kg	.00056	SW 8310	05/22/94
Benzo(b)fluoranthene	0.0013	mg/kg	.0004	SW 8310	05/22/94
Benzo(g,h,i)perylene	<.0013	mg/kg	.0013	SW 8310	05/22/94
Benzo(k)fluoranthene	<.00034	mg/kg	.00034	SW 8310	05/22/94
Chrysene	<.00064	mg/kg	.00064	SW 8310	05/22/94
Fluoranthene	<.0012	mg/kg	.0012	SW 8310	05/22/94
Fluorene	<.0025	mg/kg	.0025	SW 8310	05/22/94

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**ENVIRONMENTAL
LABORATORIES^{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000525
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-11 S-2 soil / Project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	<.00024	mg/kg	.00024	SW 8310	05/22/94
Naphthalene	<.0096	mg/kg	.0096	SW 8310	05/22/94
Phenanthrene	0.0022	mg/kg	.0011	SW 8310	05/22/94
Pyrene	<.00064	mg/kg	.00064	SW 8310	05/22/94
LUST					
Diesel Range Organics	4.1	mg/kg	4	WIMODDRO	05/19/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

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Elevated Detection Limits :

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= Due to sample concentration.

\$ = Due to sample quantity.

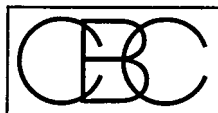
+ = Due to extract volume.

Reviewed and Approved by:

Wes Saferite

Reviewed and Approved:

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000525
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-11 S-2 soil / Project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 G.C. chromatogram does not match Diesel standard pattern.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

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= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

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**ENVIRONMENTAL
LABORATORIES INC.**

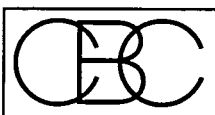
Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000526
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-12 - Soil S-2 project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
INORGANIC					
WET CHEMISTRY					
Moisture (%)	22	%	.1	SW 5030	05/13/
ORGANIC					
GC VOLATILES					
1,2,4-Trimethylbenzene	65	mg/kg	.001	SW 8020	05/25/94
1,3,5-Trimethylbenzene	5.2	mg/kg	.001	SW 8020	05/25/94
Benzene	<.001	mg/kg	.001	SW 8020	05/25/94
Ethylbenzene	0.013	mg/kg	.001	SW 8020	05/25/94
Methyl Tertiary Butyl Ether (MTBE)	<.001	mg/kg	.001	SW 8020	05/25/94
o-Xylene	0.0018	mg/kg	.001	SW 8020	05/25/94
P,M-Xylenes	0.0022	mg/kg	.001	SW 8020	05/25/94
Toluene	<.001	mg/kg	.001	SW 8020	05/25/94
HPLC					
1-Methylnaphthalene	0.92	mg/kg	.0096	SW 8310	05/27/94
Dibenzo (a, h) anthracene	<.00056	mg/kg	.00056	SW 8310	05/27/94
2-Methylnaphthalene	0.99	mg/kg	.0096	SW 8310	05/27/94
Acenaphthene	0.091	mg/kg	.01	SW 8310	05/27/94
Acenaphthylene	0.11	mg/kg	.018	SW 8310	05/27/94
Anthracene	<.013	mg/kg	.013	SW 8310	05/27/94
Benzo (a) anthracene	0.061	mg/kg	.00048	SW 8310	05/27/94
Benzo (a) pyrene	<.00056	mg/kg	.00056	SW 8310	05/27/94
Benzo (b) fluoranthene	0.10	mg/kg	.0004	SW 8310	05/27/94
Benzo (g, h, i) perylene	0.0076	mg/kg	.0013	SW 8310	05/27/94
Benzo (k) fluoranthene	<.00034	mg/kg	.00034	SW 8310	05/27/94
Chrysene	0.010	mg/kg	.00064	SW 8310	05/27/94
Fluoranthene	<.0012	mg/kg	.0012	SW 8310	05/27/94
Fluorene	<.0025	mg/kg	.0025	SW 8310	05/27/94

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**ENVIRONMENTAL
LABORATORIES INC.**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000526
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-12 - Soil S-2 project #50993533

	Result	Unit	Det. Limit	Procedure	Test Date
Indeno(1,2,3,c,d)pyrene	<.00024	mg/kg	.00024	SW 8310	05/27/94
Naphthalene	0.30	mg/kg	.0096	SW 8310	05/27/94
Phenanthrene	0.65	mg/kg	.0011	SW 8310	05/27/94
Pyrene	<.00064	mg/kg	.00064	SW 8310	05/27/94
LUST					
Diesel Range Organics	150	mg/kg	4	WIMODDRO	05/20/94

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

"T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

= Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

Elevated Detection Limits :

= Due to matrix interference.

= Due to sample concentration.

= Due to sample quantity.

+ = Due to extract volume.

Reviewed and Approved by:

Wes Saferite

Reviewed and Approved

Jayne Armbruster



**ENVIRONMENTAL
LABORATORIES_{INC.}**

Date of Report: 06/08/94
Project Number: 9405241
Lab ID: 94-0000526
Date Collected: 05/11/94 00:00
Collected By: Client
Date Received: 05/12/94 16:20
C of C Number: 0
Temperature:

Attention: Craig Denny
Dahl and Associates
4390 McMenemy Road
Saint Paul MN 55127-6004

Sample Desc: TB-12 - Soil S-2 project #50993533

Result	Unit	Det. Limit	Procedure	Test Date
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COMMENTS

01 Diesel concentration 140 mg/kg.

Please Contact Client Services with any questions. Water samples are disposed of 30 days after receipt; soil samples will be disposed of 6 weeks after receipt; waste samples (non-water, non-soil) will be returned 6 weeks after receipt.

N/T = Not Tested, N/A = Not Applicable, N/D = Not Detected.

D = Detected below the Quantitation Limit. J = Estimated below the Quantitation Limit.

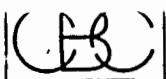
Elevated Detection Limits :

@ = Due to matrix interference.

= Due to sample concentration.

\$ = Due to sample quantity.

+ = Due to extract volume.



**ENVIRONMENTAL
LABORATORIES INC.**

CHAIN OF CUSTODY RECORD
LUST PROGRAM
Form 4400-151 11-91

899

Note: This form is required by the Department of Natural Resources for leaking underground storage tank sites in compliance with ch. NR 500-540, NR 158 and NR 419, Wis. Adm. Code.

Sample Collector(s) <u>DAHL & Associates</u>	Title/Work Station/Company <u>50443533</u>	Telephone Number (include area code) <u>612-490-2905</u>
Property Owner	Property Address	Telephone Number (include area code)

I hereby certify that I received, properly handled, and disposed of these samples as noted below:

Relinquished By (Signature) <u>[Signature]</u>	Date/Time <u>5/12/94 4:15</u>	Received By (Signature) <u>[Signature]</u>
Relinquished By (Signature) <u>[Signature]</u>	Date/Time <u>5/12/94 4:20</u>	Received By (Signature)
Relinquished By (Signature)	Date/Time	Received for Laboratory By (Signature)

Temperature of temperature blank: ROT

260ml (2) 4oz
1 bag

If samples were received on ice and there was ice remaining, you may report the temperature as "received on ice". If all of the ice was melted, the temperature of the melt may be substituted for a temperature blank.

Field ID Number	Date Collected	Time Collected	Sample		Preserv. Type	Location/Description (see footnote 2)	Analysis Type	Lab ID Number	No./Type of Containers	Sample Condition			
			Type ¹	Device						Cracked /Broken	Improperly Sealed	Good Condition	Other Comments
✓ TB-1 ✓	5/11/94	PM	Soil		NONE	S-3	REL Part Abundant M2	(515)	5 4oz 2oz			x	
✓ TB-2 ✓	↓	↓	Soil		↓	S-3		(516)	5			y	
✓ TB-3 ✓	↓	↓	Soil			S-3		(517)	5			v	
✓ TB-4 ✓	5/12/94		Soil			S-3		(518)	5			✓	
✓ TB-5 ✓	↓	↓	Soil			S-3		(519)	5			✓	
✓ TB-6 ✓	↓	↓	Soil			S-2		(520)	5			✓	
✓ TB-7 ✓	↓	↓	Soil			S-2		(521)	5			✓	
✓ TB-8 ✓	↓	↓	Soil			S-2		(522)	5			✓	
✓ TB-9 ✓	↓	↓	Soil			S-2		(523)	5			✓	

¹Specify groundwater, surface water, soil, leachate, sludge, etc.

²Sample description must clearly correlate the sample ID to the sampling location.

DEPARTMENT USE/OPTIONAL FOR SOIL SAMPLERS	DEPARTMENT USE ONLY
Disposition of unused portion of sample Laboratory should:	Split samples: Offered? ☐ Yes ☐ No (Check one)
☐ Dispose ☐ Retain for ____ days	Accepted? ☐ Yes ☐ No (Check one)
☐ Return ☐ Other	Accepted By: _____ Signature



ENVIRONMENTAL
LABORATORIES INC.

CHAIN OF CUSTODY RECORD

LUST PROGRAM

Form 4400-151

11-91

Note: This form is required by the Department of Natural Resources for leaking underground storage tank sites in compliance with ch. NR 500-540, NR 158 and NR 419, Wis. Adm. Code.

Sample Collector(s) <u>DAHL & Associates</u>	Title/Work Station/Company <u>50943533</u>	Telephone Number (include area code) <u>612-490-2905</u>
Property Owner	Property Address	Telephone Number (include area code)

I hereby certify that I received, properly handled, and disposed of these samples as noted below:

Relinquished By (Signature) <u>[Signature]</u>	Date/Time <u>5/12/94 4:15</u>	Received By (Signature) <u>[Signature]</u>
Relinquished By (Signature) <u>[Signature]</u>	Date/Time <u>5/12/94 4:20</u>	Received By (Signature)
Relinquished By (Signature)	Date/Time	Received for Laboratory By (Signature)

Temperature of temperature blank: ROI

If samples were received on ice and there was ice remaining, you may report the temperature as "received on ice". If all of the ice was melted, the temperature of the melt may be substituted for a temperature blank.

Field ID Number	Date Collected	Time Collected	Sample		Preserv. Type	Location/Description (see footnote 2)	Analysis Type	Lab ID Number	No./Type of Containers	Sample Condition			
			Type ¹	Device						Cracked /Broken	Improperly Sealed	Good Condition	Other Comments
✓ TB-10	5/12/94	PM	Soil		NONE	S-2	PVAC DECO DAHL Mfg. Co.	5094	5			X	
✓ TB-11	L	L	Soil			S-2		5095	4oz Zinc capped Pail			✓	
✓ TB-12	L	L	Soil			S-2		5096				X	
						S		5097					
✓ Barrel #1	5/12/94	P.M.	Soil		L	CONTAINMENT EXCEL			5			X	

¹Specify groundwater, surface water, soil, leachate, sludge, etc.

²Sample description must clearly correlate the sample ID to the sampling location.

DEPARTMENT USE/OPTIONAL FOR SOIL SAMPLERS	DEPARTMENT USE ONLY
Disposition of unused portion of sample Laboratory should: ☐ Dispose ☐ Return ☐ Retain for ____ days ☐ Other	Split samples: Offered? ☐ Yes ☐ No (Check one) Accepted? ☐ Yes ☐ No (Check one) Accepted By: _____ Signature

Reference Information:

DAHL Well Number MW-1
 Unique Well Number
 Date Installed 5/11/94
 Driller/Co. Bacett
 Rig CME 45
 Method Solid Hollow
 Ground Surface Elev.

Above Grade Completion:

Protective case: 1
 Locking Cover: 1
 Lock Number: 2121
 Guard Post: (Not Shown)
 Type: N
 Quantity:

Summary of Construction:

Joint Locations (Below Grade)

1-5" BG

Collar & Surface Seal:

Interval GRADE
 Thickness
 Type

Grout:

Depth (Grade to Top) GRADE
 Thickness
 Type

Casing:

Length 7'
 Diameter 2"
 Joints 1-5" BG
 Type PUL FLUSH STEEL

Screen:

Length 10'
 Screen Interval 5-15
 Diameter 2"
 Slot Size .010
 Joints 1-5" BG
 Type PUL
 Make FLUSH TRAND

Bentonite Seal:

Depth (Grade to Top) 1"
 Thickness 2"
 Type Pellet

Well Pack:

Depth (Grade to Top) 3"
 Thickness 12"
 Above Screen 2"
 Below Screen N/A
 Type #30
 Interval 3-15"
 Natural Pack: N/A
 Interval

Water Table:

Depth From Grade 6'
 (While Drilling)

Boring:

Depth (Grade to Bottom) 16'
 Diameter of Hole

Note:

Overall Length of Screen & Casing 17'

Note:

All Depths & Heights Measured From Grade.

4390 McMenemy Road
 Saint Paul, MN. 55127
 Phone (612)490-2905
 FAX (612)490-3777

DAHL

& ASSOCIATES, INC.

Environmental Consultants, Contractors & Engineers

MONITORING WELL FIELD

DAHL STD NO: MWELL-MW-FLD

DATE DRAWN	03/16/92	DRAWN BY	Jim N.	APPR. BY	
PROJECT NUMBER		DRAWING NUMBER	A- -A		

PLOT DATE	04/14/92	AUTOCAD FILE NAME	A- -A	PLOT SCALE	1" = 2'
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Reference Information:

DAHL Well Number MW-2
 Unique Well Number _____
 Date Installed 5/11/92
 Driller/Co. Buratt
 Rig CME 45
 Method SO.10 / 1600
 Ground Surface Elev. _____

Summary of Construction:

Joint Locations (Below Grade)
1 - 3' FIB

Casing:

Length 5' FT
 Diameter 2"
 Joints 1 - 3' BCL
 Type FLUSH THREAD

Screen:

Length 10'
 Screen Interval 3-13'
 Diameter 2"
 Slot Size 010
 Joints 1 - 3' BCL
 Type PUL
 Make FULLER (screen)

Water Table:

Depth From Grade 10' FT
 (While Drilling)

Boring:

Depth (Grade to Bottom) _____
 Diameter of Hole _____

Above Grade Completion:

Protective case: _____
 Locking Cover: _____
 Lock Number: 2121
 Guard Post: (Not Shown)
 Type: NA
 Quantity: _____

Collar & Surface Seal:

Interval GRADE
 Thickness _____
 Type _____

Grout:

Depth (Grade to Top) GRADE
 Thickness 1/2 FT
 Type CEMENT

Bentonite Seal:

Depth (Grade to Top) 0-1/2
 Thickness 1/2 FT
 Type PELLETS

Well Pack:

Depth (Grade to Top) 1 FT
 Thickness 12 FT
 Above Screen 2 FT
 Below Screen NA
 Type #50
 Interval 1-13 FT
 Natural Pack NA
 Interval _____

Note:

Overall Length of Screen & Casing 15' FT

Note:

All Depths & Heights Measured From Grade.

4390 McMenemy Road
 Saint Paul, MN. 55127
 Phone (612)490-2905
 FAX (612)490-3777

DAHL

& ASSOCIATES, INC.

Environmental Consultants, Contractors & Engineers

MONITORING WELL FIELD

DAHL STD NO: MWELL-MW-FLD

DATE DRAWN	03/16/92	DRAWN BY	Jimm N.	APPR. BY	
PROJECT NUMBER		DRAWING NUMBER	A- -A		

PLOT DATE	04/14/92	AUTOCAD FILE NAME	A- -A	PLOT SCALE	1' = 2'
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50443533

Reference Information:

DAHL Well Number MW-7 (TB-3)
 Unique Well Number _____
 Date Installed 5/11/94
 Driller/Co. Barrett
 Rig _____
 Method Hollow/Solid
 Ground Surface Elev. _____

Summary of Construction:

Joint Locations (Below Grade)
1 - 5' FT BG

Casing:

Length 3.25' FT
 Diameter 2"
 Joints 1 - 5' FT BG
 Type PVC FLEX THREADED

Screen:

Length 8' FT
 Screen Interval 5 - 13' FT
 Diameter 2"
 Slot Size .010
 Joints 1 - 5' FT BG
 Type FLUGH THREADED
 Make PVC

Water Table:

Depth From Grade 6' 6"
 (While Drilling)

Boring:

Depth (Grade to Bottom) _____
 Diameter of Hole 13.95'

Above Grade Completion:

Protective case: _____
 Locking Cover: 2000 1
 Lock Number: 2121
 Guard Post: (Not Shown)
 Type: NA
 Quantity: _____

Collar & Surface Seal:

Interval GRADE
 Thickness _____
 Type _____

Grout:

Depth (Grade to Top) GRADE
 Thickness 1' FT
 Type CEMENT (SAND)

Bentonite Seal:

Depth (Grade to Top) 1' FT
 Thickness 2' FT
 Type PILLERS

Well Pack:

Depth (Grade to Top) 3' FT
 Thickness 10' FT
 Above Screen 2' FT
 Below Screen NA
 Type #10
 Interval 3 - 13.25' FT
 Natural Pack: NA
 Interval _____

Note:

Overall Length of Screen & Casing 13.25'

Note:

All Depths & Heights Measured From Grade.

4390 McMenemy Road
 Saint Paul, MN. 55127
 Phone (612)490-2905
 FAX (612)490-3777

DAHL

& ASSOCIATES, INC.

Environmental Consultants, Contractors & Engineers

MONITORING WELL
FIELD

DAHL STD NO: MWELL-MW-FLD

DATE DRAWN	03/16/92	DRAWN BY	Jim N.	APPR. BY	
PROJECT NUMBER		DRAWING NUMBER	A- -A		

PLOT DATE	04/14/92	AUTOCAD FILE NAME	A- -A	PLOT SCALE	1' = 2'
--------------	----------	----------------------	-------	---------------	---------

WELL-CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

SWSec31T8NR21E
NWSec6T7NR21E

JUL 25 1945

1. County Milwaukee { Town Wauwatosa
Village _____
City _____
2. Location 117 th & Hampton
3. Owner or Agent Owner - Paul Winter
4. Address 117th & Hampton Milwaukee, Wis.
5. From well to nearest: Building 15 ft; sewer none ft; drain none ft; septic tank none ft;
dry well or filter bed none ft; abandoned well none ft.
6. Well is intended to supply water for: Home

7. DRILLHOLE OR EXCAVATION:

Dia. (in.)	From (ft.)	To (ft.)
10	surface	30 ft.
6	30 ft.	115 ft.

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	Wrought steel	surface	115

9. GROUT:

Kind	From (ft.)	To (ft.)
Mud	surface	30 ft.

10. FORMATIONS:

Kind	Thick-ness (ft.)	Total Depth (ft.)
Red clay	15	15
Blue clay	15	15
Blue clay	15	15
Hard pan	5	5
Sandy loam	10	10
Blue clay	10	10
Sandy loam	20	20
Hard pan	8	8
Blue clay	10	10
Hard pan & Gravel	6	6
Gravel	1	1

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 10 GPM.Depth from surface to water: 33 ft.Water-level when pumping: 33 ft.

Water sample sent to laboratory at

Kenosha on January 22 1945Construction of the well was completed on
January 18 1945The well is terminated 6" above _____ inches
(above) (below) the permanent grade.

Was the well disinfected upon completion?

Yes X No _____

Was the well sealed watertight upon completion?

Yes X No _____

Signature

Registered Well Driller

A. F. Leissring & Son
A. F. Leissring

Complete Mail Address

Butler Wis

WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

APR 30 1945

Note: Section 31 of the Wisconsin Well Construction 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 Andrew Huff Driller A. F. Leisnering & Son
 Street or RFD 117 St - 4637 House No. Post Office Butler Wis
 Post Office Milwaukee Wis Date April 28 Permit No. 58

LOCATION OF PREMISES

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

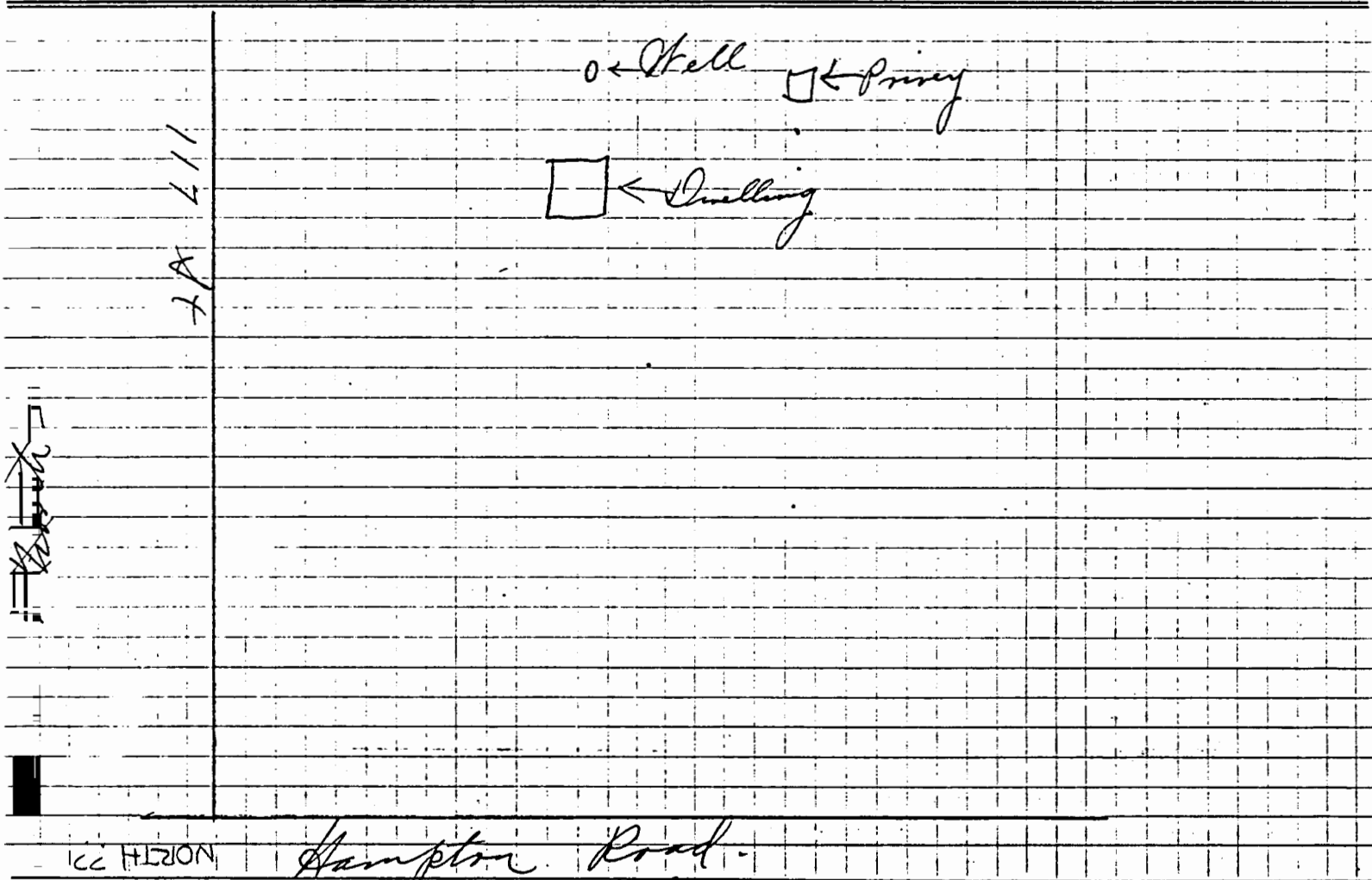
Y					

Sec. No. 6
 Twp. North 7N
 Range 21E { E W

Milwaukee County Wauwatosa Town
Private Dwelling - near 117 St
 Describe further by subdivision, plat, district, lake, lot.
Nearest Principal Highway
 block, nearest principal highway, etc., whichever apply.
Hampton Road

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

MAR 3 1944

Note: Section 31 of the Wisconsin Well Construction 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 Peter P. Eilbes Driller Joe Rustach
Street or RFD 4628 No. 117 St Post Office 150 No. 125 St Butler Wis
Post Office Butler Wis Date 2-19-44 Permit No. 328

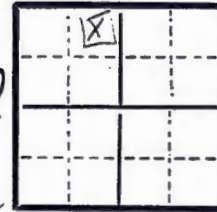
LOCATION OF PREMISES

Milwaukee County Town of Wauwatosa Town

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

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

3 Blocks south of Hampton Road
block, nearest principal highway, etc., whichever apply.



Sec. No. 6
Twp. No. 7
Range 21 { E W

DIAGRAM OF PREMISES

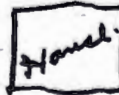
See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

Hampton Road.

Direction North



No. 117 St
No. 20. Sewer
House No. 4628



Well 13 ft from house
Slope East
40 ft from house



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

MAR 2 1944

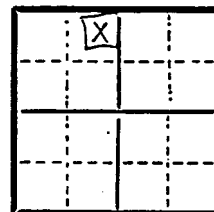
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Harvey Bruckhaber Driller Joe Ruptash
 Street or RFD 4668 no. 117 st Post Office 130 no. 125 st Butler Wis
 Post Office Town of Wauwatosa Date 1-31-44 Permit No. 328

LOCATION OF PREMISES

Milwaukee Wauwatosa
 County Town

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



Sec. No. 6
 Twp. No. 7
 Range 21 { E W }

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

2 Blocks South of Hampton Road
 block, nearest principal highway, etc., whichever apply.

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

Hampton Road

no. 117 st
no. 5 sewer



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

DEC 15 1949

THIS REPORT IS TO BE FILED IN THE WELL LOGS OF THE STATE OF WISCONSIN

1. County Milwaukee { Town Town of Wauwatosa
Village _____
City _____
2. Location Sec 6 TWP. 7 Range 21E
3. Owner or Agent Mrs. Paul Pietura
4. Address 4669 no. 117 St Milwaukee Wisc
5. From well to nearest: Building 12 ft; sewer 24 ft; drain _____ ft; septic tank _____ ft;
dry well or filter bed _____ ft; abandoned well _____ ft.
6. Well is intended to supply water for: home

7. DRILLHOLE OR EXCAVATION:

Dia. (in.)	From (ft.)	To (ft.)
<u>10 inch</u>	<u>0</u>	<u>20</u>
<u>6 inch</u>	<u>20</u>	<u>113</u>

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
<u>6 in</u>	<u>Standard pipe</u>	<u>0</u>	<u>108</u>

9. GROUT:

Kind	From (ft.)	To (ft.)
<u>mud grouting</u>	<u>0</u>	<u>20</u>

10. FORMATIONS:

Kind	Thick-ness (ft.)	Total Depth (ft.)
<u>black soil</u>	<u>1</u>	<u>1</u>
<u>yellow sand</u>	<u>19</u>	<u>20</u>
<u>sand & mud</u>	<u>20</u>	<u>40</u>
<u>blue clay</u>	<u>35</u>	<u>75</u>
<u>sand & mud</u>	<u>20</u>	<u>95</u>
<u>blue clay</u>	<u>10</u>	<u>105</u>
<u>sand & mud</u>	<u>3</u>	<u>108</u>
<u>solid rock</u>	<u>5</u>	<u>113</u>

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 15 GPM.

Depth from surface to water: 45 ft.

Water-level when pumping: 76 ft.

Water sample sent to laboratory at

Berensha on Nov 17 1949

Construction of the well was completed on Nov 17 1949

The well is terminated 6 inches (above) (below) the permanent grade.

Was the well disinfected upon completion?

Yes X No _____

Was the well sealed watertight upon completion?

Yes X No _____

Signature Joe Ruptash
Registered Well Driller

4832 no. 125 St
Complete Mail Address

Butler Wisconsin

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

NW 1/4 Sec. 6 T7N R21E

SEP 26 1949

BUREAU
ENGINEERING

1. County milwaukee { Town ☐ Village ☐ City ☐ marquette Check one and give name
2. Location on 118 st sec 6 T 7 R 21 E
Name of street and number of premise or Sec. Tn. and R. numbers
3. Owner ☐ or Agent ☐ Edward J. Mandlich
Name of individual, partnership or firm
4. Mail Address 1427 W. Ring st milwaukee
Complete address required
5. From well to nearest: Building 15 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: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)
<u>10</u>	<u>0</u>	<u>20</u>
<u>6</u>	<u>20</u>	<u>125</u>

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
<u>6</u>	<u>std steel</u>		
	<u>Pipe</u>		

9. GROUT:

Kind	From (ft.)	To (ft.)
<u>Clay</u>	<u>0</u>	<u>20</u>

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
<u>Black soil</u>	<u>1</u>	<u>1</u>
<u>yellow pan</u>	<u>15</u>	<u>16</u>
<u>Blue clay</u>	<u>50</u>	<u>66</u>
<u>sand mixed</u>	<u>20</u>	<u>26</u>
<u>Blue clay</u>	<u>10</u>	<u>96</u>
<u>sand mixed</u>	<u>5</u>	<u>101</u>
<u>Blue clay</u>	<u>4</u>	<u>105</u>
<u>solid Rock</u>	<u>20</u>	<u>125</u>

11. MISCELLANEOUS DATA:

Yield test: 7 Hrs. at 5 GPM.Depth from surface to water: 50 ft.Water-level when pumping: 108 ft.

Water sample sent to laboratory at

Kenosha on sep 23 1949

Signature

Registered Well Driller

Construction of the well was completed on

sep 23 1949The well is terminated 6 inches☐ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Complete Mail Address

4832 W 125 st
Butler wis

1. COUNTY Milwaukee		CHECK ONE ☐ Town ☐ Village ☒ City		NAME Wauwatosa				
2. LOCATION (Number and Street or 1/4 section, section, township and range. Also give subdivision name, lot and block numbers when available.) NW1/4; SW1/4; NW1/4; Section 6; T7N; R21E.								
3. OWNER AT TIME OF DRILLING S. K. WILLIAMS CO. Well No. 1								
4. OWNER'S COMPLETE MAIL ADDRESS 4650 No. 124th Street, Wauwatosa, Wis.								
5. Distance in feet from well to nearest: (Record answer in appropriate block)		BUILDING C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FOUNDATION DRAIN SEWER CONNECTED INDEPENDENT	WASTE WATER DRAIN C. I.	TILE	
CLEAR WATER DRAIN C. I.	SEPTIC TANK TILE	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILLO	ABANDONED WELL	SINK HOLE
OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)								

6. Well is intended to supply water for:
manufacturing.

7. DRILLHOLE						10. FORMATIONS		
Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)	Kind	From (ft.)	To (ft.)
16"	Surface	123	10"	564	1500	Drift	Surface	1
15 1/2"	123	564				Limestone	121	367
8. CASING, LINER, CURBING, AND SCREEN						Shale	367	522
Dia. (in.)	Kind and Weight		From (ft.)	To (ft.)		Limestone	552	790
16"	A-53 Grade B 3/8 Wall, Welded		Surface	123		Sandstone	790	1500
10-3/4"	A-53 Grade B .365 Wall Welded		6"±	564				
9. GROUT OR OTHER SEALING MATERIAL						MILWAUKEE CO IND #29 #1 PERM WELL #54824		
Kind		From (ft.)	To (ft.)					
Neat cement		Surface	564					

11. MISCELLANEOUS DATA				Well construction completed on July 19 1968	
Yield test:	12	Hrs. at	250	GPM	Well is terminated 6 inches ☒ above ☐ below finish grade
Depth from surface to normal water level 235 ft.				Well disinfected upon completion ☒ Yes ☐ No	
Depth to water level when pumping 310 ft.				Well sealed watertight upon completion ☒ Yes ☐ No	
Water sample sent to Madison Laboratory on July 3, 1968 laboratory on: 19					

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

SIGNATURE J.E. Leicht		COMPLETE MAIL ADDRESS 6005 W. Martin Drive Milwaukee, Wis. 53213		July 12, 1968 TEL/s	
LAYNE-NORTHWEST CO.		Registered Well Driller			

Please do not write in space below				
COLIFORM TEST RESULT	GAS - 24 HRS.	GAS - 48 HRS.	CONFIRMED	REMARKS
High Capacity Well Approved 8-6-65	7-26-66 #4-	25-68		re: ME. Ostrom 7-19-68 784404 plot
File: Wauwatosa				

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

JW, SE NW SEC 6 T7N R21E7

1. County MILWAUKEETown ☒ WAWAUSA
Village ☐
City ☐

Check one and give name

2. Location 4577 NO. 118TH STREET
Name of street and number of premise or Section, Town and Range numbers3. Owner ☒ or Agent ☐ MR. CHARLES A. FREY
Name of individual, partnership or firm4. Mail Address 4577 NO 118TH STREET
Complete address required5. From well to nearest: Building 19 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: RESIDENTS

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	35	6	35	185

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	STEEL PIPE	0	140

9. GROUT:

Kind	From (ft.)	To (ft.)
PUDDLED CLAY	0	35

11. MISCELLANEOUS DATA:

Yield test: 9 Hrs. at 12 GPM.Depth from surface to water-level: 40 ft.Water-level when pumping: 40 ft.

Water sample was sent to the state laboratory at:

MADISON on OCTOBER 27 1952
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
CLAY	0	90
YELLOW GRAVEL	90	130
SAND	130	140
LIME STONE	140	185

Construction of the well was completed on:

OCTOBER 25 1952The well is terminated 6 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature

Richard Mader
Registered Well Driller

Please do not write in space below

Complete Mail Address

8410 W CALUMET RDMilwaukee

Rec'd

OCT 28 1952

No.

19995

Ans'd

Interpretation

Safe

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs.

48 hrs.

Confirm

B. Coli

Examiner

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☐ Village ☐ City ☒ Wauwatosa
Check one and give name

2. Location 12005 W. Hampton Avenue NW, NW, Sec 6, T7N, R21E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Butler Lime & Cement Co.
Name of individual, partnership or firm

4. Mail Address Same
Complete address required

Location confirmed by Bill Farish
Jan 1990, per phone call to owners.
Entire facility is south of Hampton

5. From well to nearest: Building 20 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: Ready-Mix Concrete Plant

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
16	0	20			
10	20	245			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
	Cement	0	20

9. GROUT:

Kind	From (ft.)	To (ft.)

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 150 GPM.

Depth from surface to water-level: 30 ft.

Water-level when pumping: 135 ft.

Water sample was sent to the state laboratory at:

Milwaukee on 2/26 19 57

dd = 105 City rc = 1.35

MILAEGER WELL DRILLING CO.

Signature [Signature]
Registered Well Driller

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Glacial Drift	0	75
Niagara Limestone	75	245

RECEIVED

MAY 1 1957

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

Feb. 15 1957

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

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

1245 N. 62nd St. Milwaukee 13, Wis.

Complete Mail Address

Please do not write in space below

Rec'd No

Ans'd

Interpretation

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs.

48 hrs.

Confirm

B. Coli

Examiner

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Well 6

SW, NW, WSW, E, T7, R2, E

See Instructions on Reverse Side

RECEIVED

1. County Milwaukee(Town ☐
Village ☐
City ☒WauwatosaCheck one and give APR 4 19622. Location 4650 N. 124th St.

Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Olean Tile Co.

Name of individual, partnership or firm

SANITARY
ENGINEERING4. Mail Address 4650 n. 124th St. Butler Wis.

Complete address required

5. From well to nearest: Building 10 ft; sewer 26 ft; drain 26 ft; septic tank _____ ft;

dry well or filter bed _____ ft; abandoned well _____ ft.

6. Well is intended to supply water for: Warehouse Sanitary

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	250			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Blk. 19.45	0	98-3

9. GROUT:

Kind	From (ft.)	To (ft.)
Drill mud	0	20

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 12 GPM.Depth from surface to water-level: 50 ft.Water-level when pumping: 55 ft.

Water sample was sent to the state laboratory at:

Madison on 12/17 1962

City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay		50
sandy clay	44	94
limestone shell	3	97
limestone	130	227
limestone WB	23	250

Construction of the well was completed on:

Dec. 17 1962The well is terminated 18 inches☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____Signature Garber & Son B. J. Garber 22386 W. Green Rd Waukesha Wis.

Registered Well Driller

Please do not write in space below

Complete Mail Address

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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

NENW Sec 6 T 7 N R 21 E

RECEIVED
APR 12 1950

1. County Milwaukee Town ☒ Village ☐ City ☐ Wauwatosa
 2. Location N. 117 St. & W. Hampton
 3. Owner ☐ or Agent ☒ Frank La Rosa
 4. Mail Address Milwaukee
 5. From well to nearest: Building 4 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: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	80			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	stul	0	74

9. GROUT:

Kind	From (ft.)	To (ft.)
mud	0	20

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 10 GPM.Depth from surface to water-level: 43 ft.Water-level when pumping: 45 ft.

Water sample was sent to the state laboratory at:

Kenosha on Mar 20 1950
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
stony clay	0	60
sandy clay	60	70
hardpan	70	74
limestone	74	80

Construction of the well was completed on:

Mar 18 1950The well is terminated 6 inches☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes _____ No X

Was the well sealed watertight upon completion?

Yes X No _____

Signature

Carl Acku
Registered Well Driller

Please do not write in space below

Complete Mail Address

Route 14 Box 632 Milwaukee

Rec'd

3-21-50

No

4484

Ans'd

3-23-50

Interpretation

Safe

Gas—24 hrs.

10 ml 10 ml 10 ml 10 ml 10 ml

48 hrs.

Confirm

B. Coli

Examiner

LB

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

FEB 14 1950

1. County Milwaukee

Town ☒ Wauwatosa
Village ☐
City ☐

Check one and give name

2. Location N.E. 1/4 of N.W. 1/4 sec. 6 T.7 N. R. 21 E
Name of street and number of premise or Section, Town and Range numbers

BUREAU
SAN. ENG.

3. Owner ☒ or Agent ☐ Kenneth Harins
Name of individual, partnership or firm

4. Mail Address 4773 N. 118 th St. Milwaukee 16 Wisconsin.
Complete address required

5. From well to nearest: Building 14 ft; sewer none; drain none; septic tank none;
dry well or filter bed none; abandoned well none.

6. Well is intended to supply water for: House and lot

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	20			
6	0	99			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	blk. std. steel pipe	0	77

9. GROUT:

Kind	From (ft.)	To (ft.)
Drill cuttings	0	20

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 10 GPM.

Depth from surface to water-level: 45 ft.

Water-level when pumping: 54 ft.

Water sample was sent to the state laboratory at:

Kenosha on 2/7 1950
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	20
Clay sandy	57	77
Limestone	22	99

Construction of the well was completed on:

Feb. 7 1950

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes _____ No x

Was the well sealed watertight upon completion?

Yes x No _____

Signature Garber & Son B.G. Garber 5807 W. Hampton Rd. Milwaukee 16
Registered Well Driller 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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

MILWAUKEE

WAUWATOSA

1. County

Milwaukee

Town ☐
Village ☐
City ☒

Check one and give name

2. Location

4656 North 119th St

SW, NE, NW, Sec 6 T7N R21E

Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐

Fred Starkey

Name of individual, partnership or firm

4. Mail Address

2444 North 35th St Milwaukee Wis

Complete address required

5. From well to nearest: Building *15* ft; sewer *45* ft; drain *15* ft; septic tank *none*

dry well or filter bed *none* ft; abandoned well *none* ft. *city sewer*

6. Well is intended to supply water for: *Residence*

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
<i>10</i>	<i>0</i>	<i>40</i>			
<i>6</i>	<i>40</i>	<i>129</i>			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
<i>6 in</i>	<i>Standard weight steel pipe</i>	<i>0</i>	<i>111</i>

9. GROUT:

Kind	From (ft.)	To (ft.)
<i>Puddled clay</i>	<i>0</i>	<i>40</i>

11. MISCELLANEOUS DATA:

Yield test: *5* Hrs. at *10* GPM.

Depth from surface to water-level: *46* ft.

Water-level when pumping: *50* ft.

Water sample was sent to the state laboratory at:

Madison on *Sept 23* 19*57*

City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
<i>top soil and stone</i>	<i>0</i>	<i>40</i>
<i>blue clay</i>	<i>40</i>	<i>65</i>
<i>sand</i>	<i>65</i>	<i>94</i>
<i>hardpan</i>	<i>94</i>	<i>110</i>
<i>top rock</i>	<i>110</i>	<i>111</i>
<i>lime rock</i>	<i>111</i>	<i>129</i>

RECEIVED

OCT 2 1957

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

Sept 21 19*57*

The well is terminated *6* inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature

Emil H. Goepfer
Registered Well Driller

Complete Mail Address

Please do not write in space below

Rec'd

SEP 24 1957

No.

32940

10 ml 10 ml 10 ml 10 ml 10 ml

Ans'd

Gas—24 hrs.

Interpretation **SAFE**

48 hrs.

Confirm

B. Coli

Examiner

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☐ Village ☐ City ☒ Wauwatosa Check one and give name
2. Location 4636 N. 118 St
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Snapper Brothers Realty Co.
Name of individual, partnership or firm
4. Mail Address 4240 N. Lomb Du Lac, Milw.
Complete address required
5. From well to nearest: Building 15 ft; sewer 52 ft; drain 30 ft; septic tank _____ ft;
dry well or filter bed _____ ft; abandoned well _____ ft.

6. Well is intended to supply water for: one family home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20	7	20	190

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7	steel 27 lb/ft	0	132

9. GROUT:

Kind	From (ft.)	To (ft.)

11. MISCELLANEOUS DATA:

Yield test: 10 Hrs. at 15 GPM.

Depth from surface to water-level: 53 ft.

Water-level when pumping: 56 ft.

Water sample was sent to the state laboratory at:

Madison City on May 15 1958

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Fill	0	2
Top soil	2	3
Clay	3	94
Hard pan	94	108
Sand	108	132
Limestone	132	190

RECEIVED

MAY 22 1958

Construction of the well ~~gas completed~~ **ENVIRONMENTAL** **COMPLETED**

May 12 1958

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature

Charles Poling
Registered Well Driller

Please do not write in space below

7950 W. Food Du Lac Milwaukee, Wisc.
Complete Mail Address

MAY 16 1958

Rec'd _____ No. 12856

10 ml 10 ml 10 ml 10 ml 10 ml

Ans'd _____

Gas—24 hrs. _____

Interpretation

SAFE

48 hrs. _____

Confirm _____

B. Coll _____

Examiner _____

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee
 Town ☒ Wauwatosa
 Village ☐
 City ☐

Check one and give name

2. Location 4641 N. 118th St.

Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Ruben Harder

Name of individual, partnership or firm

4. Mail Address 4641 N. 118th St. Milwaukee Wisc.

Complete address required

 RECEIVED
 FEB 21 1955
ENVIRONMENTAL
SANITATION5. From well to nearest: Building 15 ft; sewer xx ft; drain xx ft; septic tank 40 ft;dry well or filter bed 45 ft; abandoned well xx ft.6. Well is intended to supply water for: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	30			
6	0	125			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	blk. WD 19.45	0	124

9. GROUT:

Kind	From (ft.)	To (ft.)
drill mud	0	30

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 12 GPM.Depth from surface to water-level: 36 ft.Water-level when pumping: 36 ft.

Water sample was sent to the state laboratory at:

Kenosha on 10/14 1941

City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
soil 3' clay sandy		37
gravel clay	4	41
sand muddy clay	31	72
	46	118
gravel	5	123
schell WB	2	125

Construction of the well was completed on:

Oct. 14 1941The well is terminated 6 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐Signature Arber & Krumm
Registered Well Driller5807 W. Hampton Rd Milwaukee

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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

LINE, NW SEC. 6 T1N R21E

1. County Milwaukee Town ☒ Wauwatosa Village ☐ City ☐ Check one and give name
2. Location 4646 N. 118 St.
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Joseph Baumgartner
Name of individual, partnership or firm
4. Mail Address Milwaukee
Complete address required
5. From well to nearest: Building 4 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: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	125			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	steel	0	119

9. GROUT:

Kind	From (ft.)	To (ft.)
mud	0	20

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 14 GPM.Depth from surface to water-level: 35 ft.Water-level when pumping: 40 ft.

Water sample was sent to the state laboratory at:

Kenosha on Mar 24 1950
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
stony clay	0	40
sand	40	50
stony clay	50	80
sandy clay	80	95
stony clay	95	110
hardpan	110	119
limestone	119	125

Construction of the well was completed on:

Mar 23 1950The well is terminated 6 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes _____ No X

Was the well sealed watertight upon completion?

Yes X No _____

Signature

Earl Reker
Registered Well Driller

Please do not write in space below

Complete Mail Address

Route 14 Box 632 MilwaukeeRec'd 3-25-50No. 4685Ans'd 3-29-50

Interpretation

Log

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.	0	0	0	0	0
48 hrs.	+	0	0	0	0
Confirm	0				
B. Coli	0				

Examiner

LBRECEIVED
APR 12 1950
BUREAU
SAN. ENG.

W, NE, NW SEC. 6 T7N R21E

See Instructions on Reverse Side

1. County Milwaukee Town ☐ Wauwatosa Village ☐ City ☒ Check one and give name
2. Location 4666 N 118th St.
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Parkway Homes Inc.
Name of individual, partnership or firm
4. Mail Address 5222 W. Bluemound Rd.
Complete address required
5. From well to nearest: Building 15 ft; sewer 40 ft; drain 25 ft; septic tank _____ ft;
dry well or filter bed _____ ft; abandoned well _____ ft.
6. Well is intended to supply water for: residence

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20	6	20	230

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7	Valley Steel 26 lb.	0	112

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay slurry	0	20

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 20 GPM.Depth from surface to water-level: 40 ft.Water-level when pumping: 42 ft.

Water sample was sent to the state laboratory at:

Madison on Jan 8 1962
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	55
Sandy clay	55	95
Hard Pan clay	95	105
Sand	105	112
Lime Rock	112	230

Construction of the well was completed on: Jan 6 1962The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____Signature Arthur J. Gatzke
Registered Well Driller

Please do not write in space below

8740 W. Kauf Ave Milwaukee, Wis.
Complete Mail AddressRec'd JAN 10 1962 No 1060

Ans'd _____

Interpretation SAFE—BACTERIOLOGICALLY

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli 0

Examiner _____

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Well 6

See Instructions on Reverse Side

RECEIVED

25. NINE, NW Sec. 6 T7N R4E

1. County Milwaukee Town ☐
Village ☐
City ☒ Wauwatosa Check one and give name
2. Location 4666 N. 118th St.
 Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Parkway Homes, Inc.
 Name of individual, partnership or firm
4. Mail Address 5222 W Bluemound Rd.
 Complete address required
5. From well to nearest: Building 15 ft; sewer 40 ft; drain 25 ft; septic tank _____ ft;
 dry well or filter bed _____ ft; abandoned well _____ ft.
6. Well is intended to supply water for: residence

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20	6	20	230

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7od	Valley Steel 26 lb.	0	112

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay slurry	0	20

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 20 GPM.
 Depth from surface to water-level: 40 ft.
 Water-level when pumping: 42 ft.
 Water sample was sent to the state laboratory at:
Madison on Jan. 8, 19 62
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	55
Sandy clay	55	95
Hard pan clay	95	105
Lime rock	112	230

Construction of the well was completed on:

Jan. 6 19 62

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes X No _____

Was the well sealed watertight upon completion?

Yes X No _____

Signature Arthur A. Gatzke
 Registered Well Driller

8740 W. Kaul Ave., Milwaukee, Wis.

Complete Mail Address

Please do not write in space below

Rec'd _____ No. _____

Ans'd _____

Interpretation _____

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli _____

Examiner

784405 plot

1. County Milwaukee Town ☐ Village ☐ City ☒ Wauwatosa
Check one and give name
2. Location 4683 N 118th St.
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Parquay Homes Inc.
Name of individual, partnership or firm
4. Mail Address 5222 W. Bluemound Rd.
Complete address required
5. From well to nearest: Building 15 ft; sewer 40 ft; drain 25 ft; septic tank _____ ft;
dry well or filter bed _____ ft; abandoned well _____ ft.
6. Well is intended to supply water for: residence

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20	6	20	224

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7	Valley Steel	0	107
	26 lb.		

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay slurry	0	20

11. MISCELLANEOUS DATA:

Yield test: 6 Hrs. at 20 GPM.

Depth from surface to water-level: 55 ft.

Water-level when pumping: 65 ft.

Water sample was sent to the state laboratory at:

Madison on Dec 19 1961
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	50
Sandy clay	50	90
Hard Pan clay	90	107
Line Rock	107	224

RECEIVED

DEC 27 1961

Construction of the well was completed on:

Dec 16 1961

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature Arthur G. Gaybe
Registered Well Driller

8740 W. Paul Ave Milwaukee 18 Wis
Complete Mail Address

Please do not write in space below

Rec'd DEC 20 1961 No 48459

Ans'd _____

Interpretation _____

SAFE—BACTERIOLOGICALLY

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli _____

Examiner _____

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

1. County Milwaukee Town ☐ Village ☐ City ☒ Wauwatosa
Check one and give name
2. Location 4623 No. 118th St.
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Edward Werman
Name of individual, partnership or firm
4. Mail Address 9807 W. Belmont St. Wauwatosa
Complete address required
5. From well to nearest: Building 20 ft; sewer 25 ft; drain 20 ft; septic tank — ft;
dry well or filter bed — ft; abandoned well — ft.
6. Well is intended to supply water for: None

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	22			
6	22	291			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
700	Steel 23#	0	123

9. GROUT:

Kind	From (ft.)	To (ft.)
Drill cutting's	0	22

11. MISCELLANEOUS DATA:

Yield test: 9 Hrs. at 10 GPM.
Depth from surface to water-level: 20 ft.
Water-level when pumping: 125 ft.
Water sample was sent to the state laboratory at:
Madison on 9/20 1960
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	60
Sandy	60	123
Gravel	123	291

RECEIVED

OCT 3 1960

SANITARY
ENGINEERING

Construction of the well was completed on:

9/16 1960

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature A. Haldeman Registered Well Driller
Please do not write in space below
Complete Mail Address 1525 S. 82nd St. West Allis

Rec'd SEP 21 1960 No. 86890
Ans'd _____
Interpretation SAFE—BACTERIOLOGICALLY

10 ml 10 ml 10 ml 10 ml 10 ml
Gas—24 hrs. _____
48 hrs. _____
Confirm _____
B. Coli G
Examiner _____

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

WEL 6
RECEIVED

1965

See Instructions on Reverse Side

1. County Midwaukee

Town ☐ Village ☐ City ☒ Wauwatosa

Check one and give name

ENGINEERING

2. Location 4620 North 118th Street

Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☐

Select Builders

Name of individual, partnership or firm

4. Mail Address 9137 West Lisbon Avenue

Complete address required

5. From well to nearest: Building 15 ft; sewer 25 ft; drain 25 ft; septic tank 50 ft;

dry well or filter bed ft; abandoned well ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	118			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel 19 1/2#	0	118

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled Clay	0	20

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 9 GPM.

Depth from surface to water-level: 60 ft.

Water-level when pumping: 65 ft.

Water sample was sent to the state laboratory at:

Madison on 1959

City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Puddled Clay	0	20
Clay	20	60
Sand & Gravel	60	100
Gravel	100	118

Construction of the well was completed on:

August 24 1959

The well is terminated 8 inches

☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature b/a Lentz & Son, Inc.

Registered Well Driller

12545 W. Lisbon Ave., Brookfield, Wis.

Complete Mail Address

Please do not write in space below

Rec'd No.

Ans'd

Interpretation

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs.

48 hrs.

Confirm

B. Coli

Examiner

784406 pdr

WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH JAN 15 1943
WELL DRILLING DIVISION

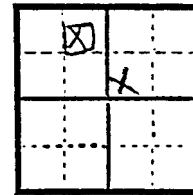
Note: Section 32 of the Wisconsin Well Drilling Sanitary Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Casa F. Mather Driller Plaswell Pump & Well Dr. Co.
 Street or RFD 4671-N. 118th St. Post Office 13822 W. Capital Dr.
 Post Office Butler Wis. Date Jan 13-43 Permit No. 27

LOCATION OF PREMISES

Milwaukee County Gaunwatschen Town
4671-N. 118th St
 Describe further by subdivision, plat, district, lake, lot,
Butler Wisconsin
 block, nearest principal highway, etc., whichever apply.
Hi WAY 11

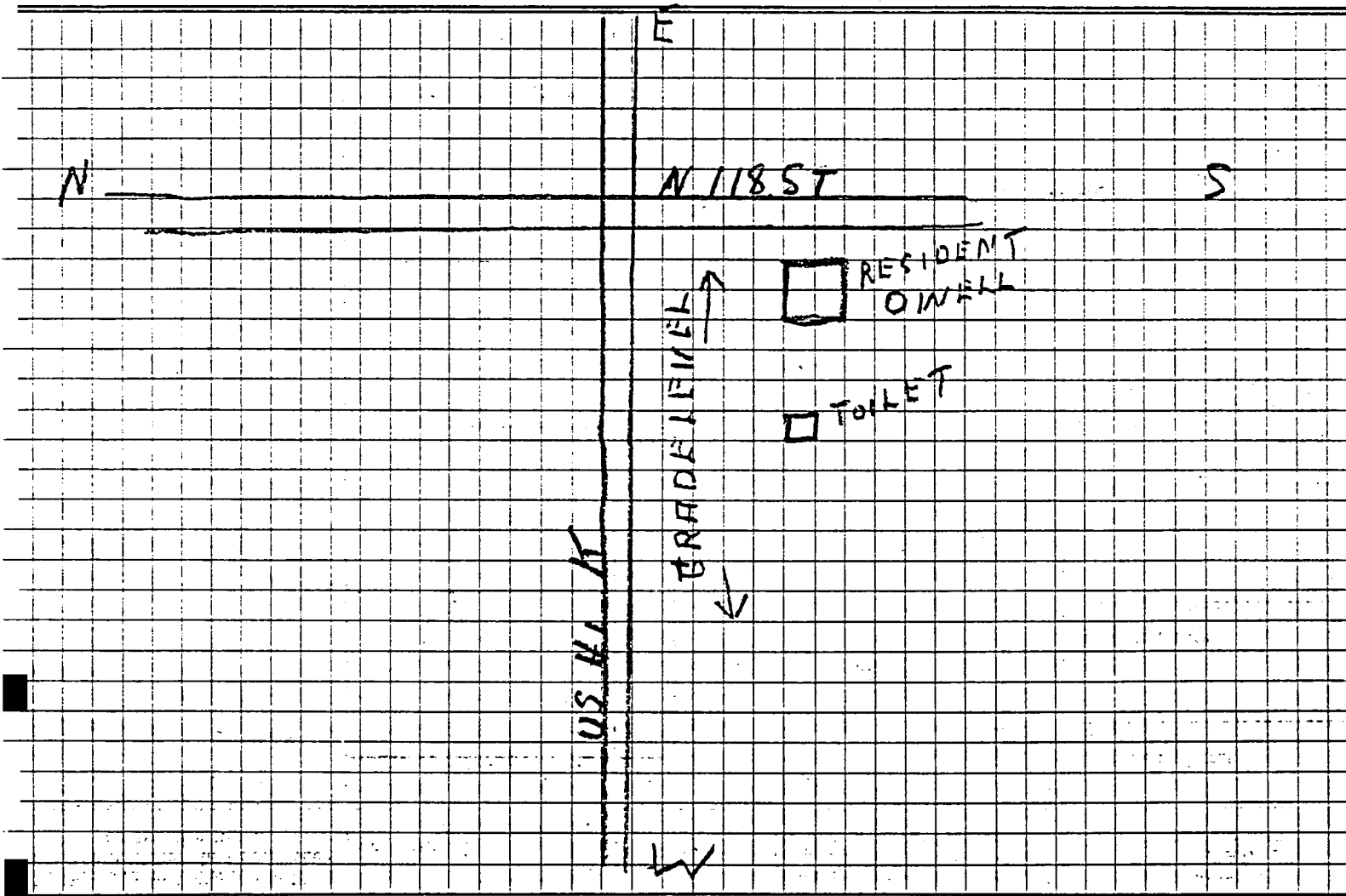
The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section. SW, NE, NW



Sec. 6
 Twp. 7 N.
 Range 21 E

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.



WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

SW, NE, NW SEC. 6 T7N R2E

See Instructions on Reverse Side

1. County MILWAUKEE

Town ☐
Village ☐
City ☒

WAWAUTOSA

Check one and give name:

2. Location 4613 No 118 St

Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ H HOPPE

Name of individual, partnership or firm

4. Mail Address 4613 No 118 St WAWAUTOSA

Complete address required

5. From well to nearest: Building 15 ft; sewer — ft; drain — ft; septic tank — ft;

dry well or filter bed 40 ft; abandoned well 8 ft. 12 ft Dept

6. Well is intended to supply water for: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	50	6	50	216

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	STEEL PIPE	0	131

9. GROUT:

Kind	From (ft.)	To (ft.)
PUDDLED CLAY	0	50

11. MISCELLANEOUS DATA:

Yield test: 12 Hrs. at 16 GPM.

Depth from surface to water-level: 55 ft.

Water-level when pumping: 60 ft.

Water sample was sent to the state laboratory at:

MADISON 23 on August 1956

City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
CHALK	0	100
HARDPAN	100	131
LIME STONE	131	216

Construction of the well was completed on:

August 22 1956

The well is terminated 6 inches

☒ above, below ☒ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature

Joseph Mosher

Registered Well Driller

8410 W CAGUMET RD MILWAUKEE 16

Complete Mail Address

Please do not write in space below

Rec'd

AUG 24 1956

No.

30653

Ans'd

Interpretation

SAFE

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs.

48 hrs.

Confirm

B. Coli

Examiner

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

MILWAUKEE

Town ☒
Village ☐
City ☐

WAUWATOSA

1. County Waukesha

2. Location 4625 N. 113th St. SE, NW, NE, Sec 6
Name of street and number of premise or Section, Town and Range and Meridian

3. Owner ☐ or Agent ☒ Snappy Builders
Name of individual, partnership or firm

4. Mail Address 6223 W. Medford, Milwaukee, Wis.
Complete address required

5. From well to nearest: Building 15 ft; sewer 25 ft; drain 15 ft; septic tank 50 ft;
dry well or filter bed 50 ft; abandoned well _____ ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	steel pipe 19.45#	0	65

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled clay	0	20

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 10 GPM.

Depth from surface to water-level: 40 ft.

Water-level when pumping: 40 ft.

Water sample was sent to the state laboratory at:

Madison, Wis. on May 7 1956
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Puddled clay	0	20
Clay & gravel	20	40
Clay	40	50
Sandy clay	50	55
Sand	55	60
Gravel	60	65
Lime stone	65	114

Construction of the well was completed on:

May 3 1956

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes X No _____

Was the well sealed watertight upon completion?

Yes X No _____

Signature Lentz and Son 1924 N. 18th St. Milwaukee, Wis.
Registered Well Driller 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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH
See Instructions on Reverse Side

1. County MILWAUKEE Waukesha (Town ☒ Village ☐ City ☐
2. Location 4615 N. 113th St. SE 1/4 NE 1/4 Sec 6 T7N R21E
3. Owner ☐ or Agent ☒ Snappy Builders
4. Mail Address 6223 W. Medford, Milwaukee, Wis.
5. From well to nearest: Building 15 ft; sewer 25 ft; drain 15 ft; septic tank 50 ft;
dry well or filter bed 50 ft; abandoned well _____ ft.
6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	steel pipe 19.45#	0	67

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled clay	0	20

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 10 GPM.
Depth from surface to water-level: 40 ft.
Water-level when pumping: 40 ft.
Water sample was sent to the state laboratory at:
Madison, Wis. on May 7 1956
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Puddled clay	0	20
Clay & gravel	20	40
Clay	40	50
Sandy clay	50	60
Sand & gravel	60	67
Lime stone	67	117

Construction of the well was completed on:

May 4 1956

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature LENTZ AND SON 1924 N. 13th St. Milwaukee, Wis.
Registered Well Driller 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 CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

FEB 17 1942

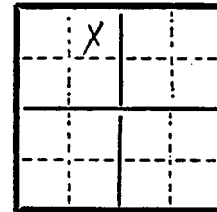
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Gen. Splittsfover Driller Jake Oswald
Street or RFD 4725 No. 117 st Post Office Milwaukee Wis.
Post Office Milwaukee Wis. Date Sept. 1 - 1941 Permit No. 82

LOCATION OF PREMISES

Milwaukee County Wauwatosa Town

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



NW, NE, NW
Sec. No. 6
Twp. No. 7N
Range 21E { E
W

So of Hampton ave.
Describe further by subdivision, plat, district, lake, lot.

1 block so of W. Hampton ave.
block, nearest principal highway, etc., whichever apply.

DIAGRAM OF PREMISES

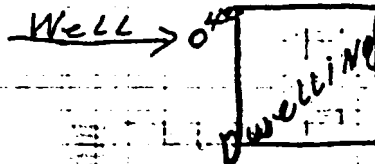
See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

North

W. Hampton ave.

Note
Natural drain to
the South

Slope →



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

FEB 4 1942

Note: Section 31 of the Wisconsin Well Construction 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 Joe Nicholas

Driller A. F. Leising & Son

Street or RFD 117 St

Post Office Butler Wis

Post Office Hannatosa Wis

Date 2/2/42 Permit No. 58

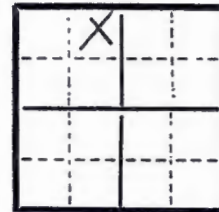
LOCATION OF PREMISES

Milwaukee County Hannatosa Town

Private Dwelling - On 117 St
 Describe further by subdivision, plat, district, lake, lot.

Near Hampton Road
 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 NW, NE, NW

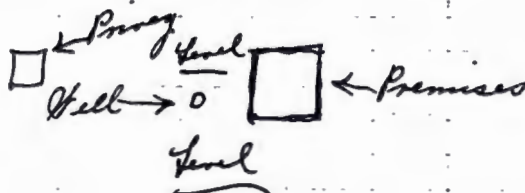


Sec. No. 6
 Twp. No. 7N
 Range 2E { E W

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

Hampton Road



117 St

North

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

NW, NE, NN Sec 6 T7 N R2 E

See Instructions on Reverse Side

1. County Milwaukee Town ☒ Village ☐ City ☐ of Wauwatosa
Check one and give name

2. Location 4773 N. 117 St
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ James Bytell
Name of individual, partnership or firm

4. Mail Address 4773 N. 117 St Milw. Wis.
Complete address required

5. From well to nearest: Building 15 ft; sewer None ft; drain None ft; septic tank None ft;
dry well or filter bed None ft; abandoned well None ft.

6. Well is intended to supply water for: residence

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	30	6"	30	121

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6"	Slender weight wrought iron pipe	0	90

9. GROUT:

Kind	From (ft.)	To (ft.)
slurry clay		

11. MISCELLANEOUS DATA:

Yield test: 20 Hrs. at 10 GPM.

Depth from surface to water-level: 50 ft.

Water-level when pumping: 65 ft.

Water sample was sent to the state laboratory at:

Madison on Oct 17 1951
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay	60	60
clay (sandy)	10	70
clay (stony)	15	85
limestone (broken)	5	90
lime rock	31	121

Construction of the well was completed on:

Oct 15 1951

The well is terminated 6 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Rudolph J. Datzko 1112.50 121. St. W. Allis Wis
Registered Well Driller Complete Mail Address 14

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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee { Town ☐ Village ☐ City ☐ Milwaukee Check one and give name
2. Location 4701 N 118 St
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☐ Mr. Wilhelm M. Gehl
Name of individual, partnership or firm
4. Mail Address 4701 N 118 St
Complete address required
5. From well to nearest: Building 15 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: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10		0			20
6		20			103

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	std. steel pipe		

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay	0	20

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 6 GPM.Depth from surface to water-level: 45 ft.Water-level when pumping: 87 ft.

Water sample was sent to the state laboratory at:

Kenosha on Aug 10 1950
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Black soil	1	1
yellow pan	15	16
Blue clay	55	71
sand and gravel	20	91
Hard Pan	11	102
sand gravel	1	103

Construction of the well was completed on:

Aug 10 1950The well is terminated 6 inches
☐ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes X No _____

Was the well sealed watertight upon completion?

Yes X No _____

Signature

Registered Well Driller

Please do not write in space below

Complete Mail Address

Rec'd _____ No. _____

Ans'd _____

Interpretation _____

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli _____

Examiner _____

RECEIVED
AUG 11 1950
BUREAU
SANITARY ENG.

Joe Ruptas Joe Ruptas

4832 N 125 St

10 ml 10 ml 10 ml 10 ml 10 ml

Butler

Wis

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee

{Town ☐ Wauwatosa
Village ☐
City ☒ Check one and give name

2. Location 4768 N. 118th St.

Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Mary Posnanski

Name of individual, partnership or firm

4. Mail Address 5650 N. 64th St. Wauwatosa 13 Wis.

Complete address required

5. From well to nearest: Building 5 ft; sewer 13 ft; drain none ft; septic tank _____ ft;
dry well or filter bed _____ ft; abandoned well _____ ft.

6. Well is intended to supply water for: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	114			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Blk. Std.	0	75

9. GROUT:

Kind	From (ft.)	To (ft.)

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 9 GPM.

Depth from surface to water-level: 45 ft.

Water-level when pumping: 69 ft.

Water sample was sent to the state laboratory at:

Madison on 2/2 19 60
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
old well		Unknown
cleaned out to 114 ft.		
Iron in bottom		

RECEIVED
FEB 12 1960
SANITARY
ENGINEERING

Construction of the well was completed on:

Feb 1, _____ 19 60

The well is terminated 6 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature Garber & Son B.G. Garber 5807 W. Hampton Rd Milwaukee 18
Registered Well Driller Complete Mail Address

Please do not write in space below

Rec'd FEB 3-1960 No. 3486

Ans'd _____

Interpretation _____

SAFE

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli _____

Examiner _____

1. County Milwaukee Town ☐ Village ☐ City ☒ Wauwatosa APR 17 1964
 2. Location 4702 N. 118 St. Check one and give name: ☒ SANITARY ☐ ENCL ☐ ING
 Name of street and number of premise or Section, Town and Range numbers
 3. Owner ☐ or Agent ☒ Suburban Homes Inc.
 Name of individual, partnership or firm
 4. Mail Address Wauwatosa Wis.
 Complete address required
 5. From well to nearest: Building 16 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: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	160			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel 19.45	0	105

9. GROUT:

Kind	From (ft.)	To (ft.)
mud	0	20

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 15 GPM.
 Depth from surface to water-level: 40 ft.
 Water-level when pumping: 50 ft.

Water sample was sent to the state laboratory at:

Milwaukee on Jan 1964
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	80
sand	80	90
shell rock	90	92
clay	92	100
shell rock	100	105
limestone	105	160

Construction of the well was completed on:

Jan 13 1964

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature Carl Acker 16060 W. National
 Registered Well Driller 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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

RECEIVED

See Instructions on Reverse Side

JUN 11 1964

1. County Milwaukee { Town ☐ Village ☐ City ☒ Wauwatosa Check one and give name
2. Location 4710 N. 118 St.
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Suburban Homes Inc.
Name of individual, partnership or firm
4. Mail Address 4710 N. 118 St. Wauwatosa
Complete address required
5. From well to nearest: Building 15 ft; sewer 25 ft; drain 15 ft; septic tank 50 ft.
dry well or filter bed 50 ft; abandoned well — ft.
6. Well is intended to supply water for: Home

SANITARY
ENGINEERING

RECEIVED

SANITARY
ENGINEERING

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	25			
6	25	165			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std Steel	0	104

9. GROUT:

Kind	From (ft.)	To (ft.)
Mud	0	25

11. MISCELLANEOUS DATA:

Yield test: 1 Hrs. at 20 GPM.Depth from surface to water-level: 44 ft.Water-level when pumping: 50 ft.

Water sample was sent to the state laboratory at:

Madison on June 1964
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	28
Stone	28	31
Clay	31	68
Sandy Clay	68	74
Stoney Clay	74	101
Shell Rock	101	104
Limestone	104	165

Construction of the well was completed on:

June 11, 1964The well is terminated 8 inches☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes X No —

Was the well sealed watertight upon completion?

Yes X No —Signature Earl Aker
Registered Well Driller16060 N. National Av., New Berlin
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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

W-1 6

JW, NEAD 320. 6 TTN 2415

See Instructions on Reverse Side

1. County Milwaukee { Town ☐
Village ☐
City ☒ Wauwatosa Check one and give name
2. Location 4716 N. 118 Street Wauwatosa
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Suburban Homes Inc.
Name of individual, partnership or firm
4. Mail Address 4716 N. 118 Street, Wauwatosa
Complete address required
5. From well to nearest: Building 15 ft; sewer 25 ft; drain 15 ft; septic tank 50 ft;
dry well or filter bed 50 ft; abandoned well ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	165			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std Steel	0	101

9. GROUT:

Kind	From (ft.)	To (ft.)
Mud	0	20

11. MISCELLANEOUS DATA:

Yield test: 1 Hrs. at 20 GPM.Depth from surface to water-level: 42 ft.Water-level when pumping: 50 ft.

Water sample was sent to the state laboratory at:

Madison on June 1964
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	82
Stony Clay	82	97
Shell Rock	97	101
Limestone	101	165

Construction of the well was completed on:

June 5, 1964The well is terminated 10 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐Signature Earl Parker
Registered Well Driller16060 W. National Av. New Berlin
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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee { Town ☐ Wauwatosa
Village ☐
City ☒ Check one and give name
2. Location 4746 No 118 St.
Name of street and number of premise, or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Erwin Hobbs
Name of individual, partnership or firm
4. Mail Address 4746 No 118 St. Milwaukee
Complete address required
5. From well to nearest: Building 22 ft; sewer 25 ft; drain 22 ft; septic tank — ft; —
dry well or filter bed — ft; abandoned well — ft.
6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	1	20			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	1945	0	103

9. GROUT:

Kind	From (ft.)	To (ft.)
P. Stone	0	20

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 15 GPM.
Depth from surface to water-level: 50 ft.
Water-level when pumping: 80 ft.
Water sample was sent to the state laboratory at:
Madison on 11-5 1956
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	1	101
Linke Stone	42	142

RECEIVED

NOV 14 1956

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

11-5 1956

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes yes No —

Was the well sealed watertight upon completion?

Yes yes No —

Signature Otto Raschke 1265571 Lisbon Ave Milwaukee
Registered Well Driller Complete Mail Address

Please do not write in space below

Rec'd NOV 6 1956 No. 40481

10 ml 10 ml 10 ml 10 ml 10 ml

Ans'd SAFE
Interpretation SAFE

Gas—24 hrs. —48 hrs. —Confirm —B. Coll —Examiner —

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Well 6

VW, NE, NW, SEC. 6 T7N R21E

See Instructions on Reverse Side

1. County Milwaukee } Town ☐
 Village ☐
 City ☒ Manitowish Check one and give name
2. Location 4755 N 118 St
 Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Suburban Homes Inc.
 Name of individual, partnership or firm
4. Mail Address 4755 North 118 St, Manitowish
 Complete address required
5. From well to nearest: Building 15 ft; sewer 30 ft; drain 15 ft; septic tank 50 ft;
 dry well or filter bed 50 ft; abandoned well ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	25			
6	25	160			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std Steel	0	81

9. GROUT:

Kind	From (ft.)	To (ft.)
Mud	0	25

11. MISCELLANEOUS DATA:

Yield test: 1 Hrs. at 15 GPM.Depth from surface to water-level: 52 ft.Water-level when pumping: 60 ft.

Water sample was sent to the state laboratory at:

Madison on Oct 1964
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	67
Hardpan	67	81
Limestone	81	160

Construction of the well was completed on:

Oct. 10, 1964The well is terminated 8 inches☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature

Earl Acker
 Registered Well Driller16660 N. National Ave., Manitowish
 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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

Vol 6

See Instructions on Reverse Side

APR 17 1964

1. County Milwaukee { Town ☐ Village ☐ City ☒ Wauwatosa Check one and give name
2. Location 4761 N. 118 St.
Name of street and number of premise or Section, Town, and Range numbers
3. Owner ☐ or Agent ☒ Suburban Homes Inc.
Name of individual, partnership or firm
4. Mail Address Wauwatosa Wis.
Complete address required
5. From well to nearest: Building 15 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: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	150			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel 19.45	0	85

9. GROUT:

Kind	From (ft.)	To (ft.)
mud	0	20

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 20 GPM.Depth from surface to water-level: 49 ft.Water-level when pumping: 55 ft.

Water sample was sent to the state laboratory at:

Madison on Jan 1964
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay	0	35
stone clay	35	75
shell rock	75	85
limestone	85	150

Construction of the well was completed on:

Jan 18 1964The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature

Registered Well Driller

Please do not write in space below

Complete Mail Address

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 CONSTRUCTION REPORT

WISCONSIN STATE BOARD OF HEALTH

WELL CONSTRUCTION DIVISION

AUG 11 1943

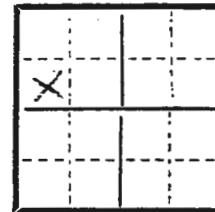
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Leo Wendorf Driller Chas. W. Pump & Well Dr.
 Street or RFD 4768-N. 118th St. 12802-W. Capital Avenue
 Post Office Milwaukee Wis. Post Office Wauwatosa Wis.
 Date Aug. 6-43 Permit No. 37

LOCATION OF PREMISES

Milwaukee County Wauwatosa Town
4768-N. 118th St.
 Describe further by subdivision, plat, district, lake, lot.

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

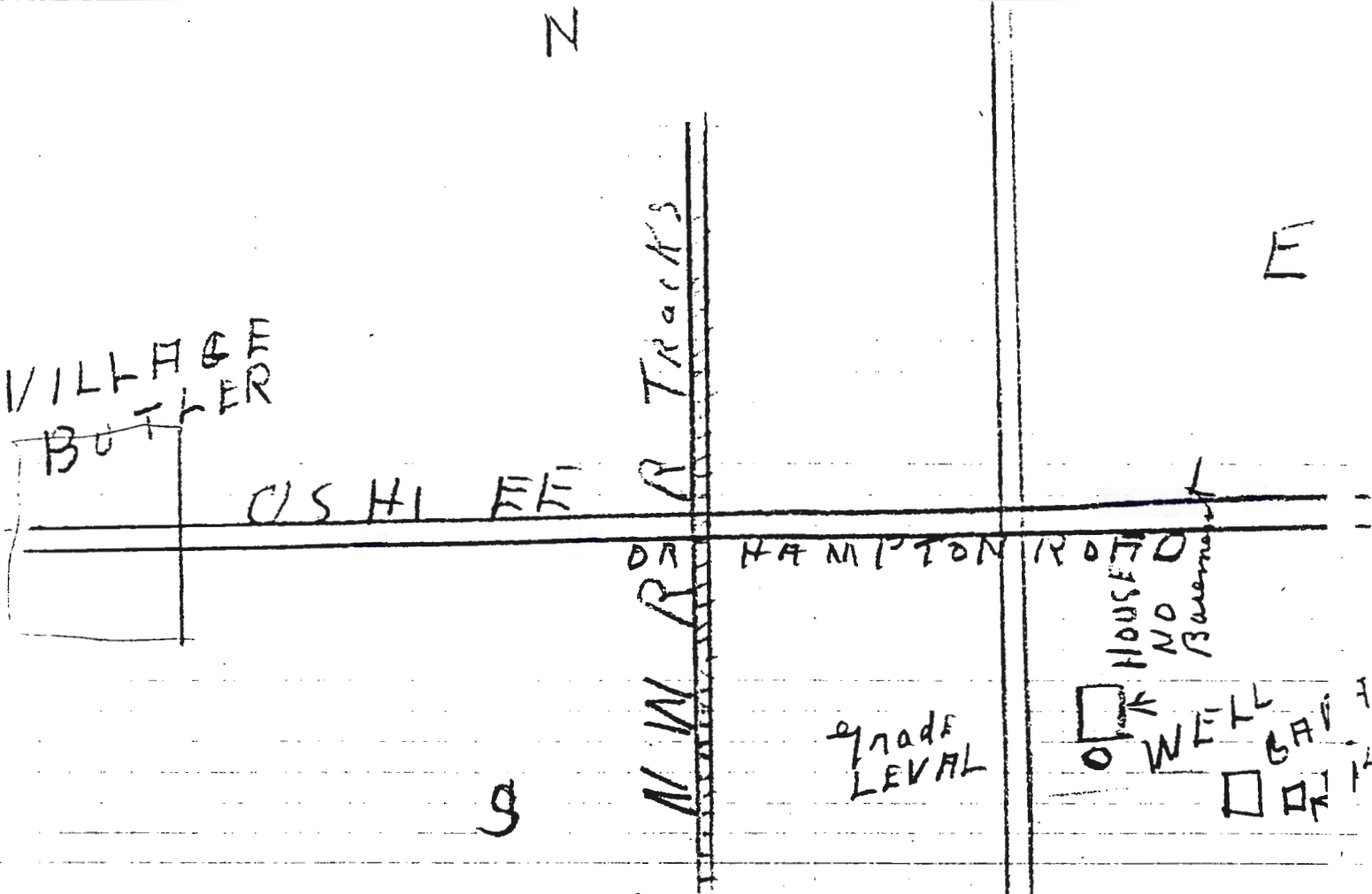


Sec. No. 6
 Twp. North 8
 Range 21 { E
W

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

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

APR 30 1945

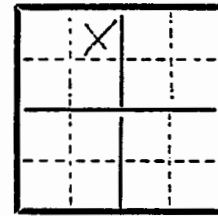
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Frank Bowman Driller A. F. Lissner & Son
 Street or RFD Rd - 117 St 11710 Post Office Butler Wis
 Post Office Butler Wis Date April 28 Permit No. 58

LOCATION OF PREMISES

Milwaukee County Hamontosa Town
Private Dwelling - near 117 St
 Describe further by subdivision, plat, district, lake, lot.
 block, nearest principal highway, etc., whichever apply.

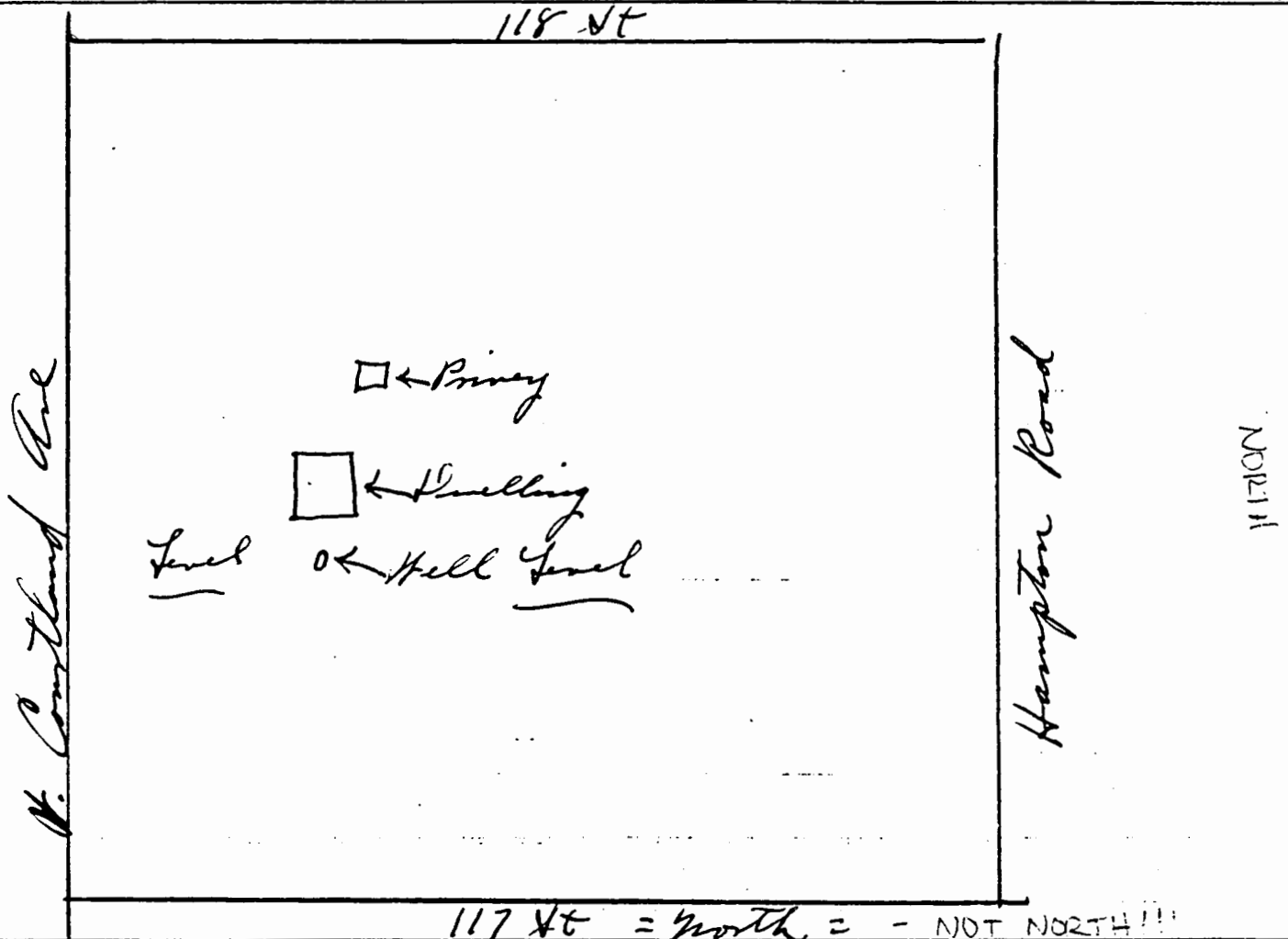
The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.



NW, NE, NW
 Sec. No. 6
 Twp. No. 7N
 Range 2E { E
 W

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

NOV 17 1942

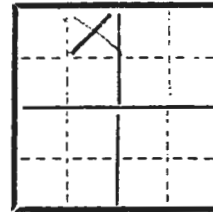
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Lam Ralston Driller Fritz Roschi
Street or RFD 4723 N. 118 Post Office Milwaukee
Post Office Milwaukee Date 11-9-42 Permit No. 343

LOCATION OF PREMISES

Milwaukee County Waunatona Town
4723 N. 118 St. S. 5 Bl. 5 NW 1/4 6
Describe further by subdivision, plat, district, lake, lot.
T 7 N. 21 E
block, nearest principal highway, etc., whichever apply.

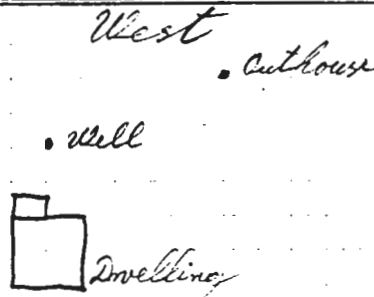
The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.



NW, NE,
Sec. No. NW 6
Twp. North 7N
Range 21 { E
 W

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

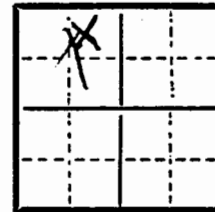
FEB 26 1943

Note: Section 31 of the Wisconsin Well Construction 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 Richard Dieckman Driller A. W. Ackers
Street or RFD 117 1/2 Hampton Post Office 5214 Willard Ave.
Post Office Milwaukee Date Feb 15-43 Permit No. 364

LOCATION OF PREMISES

Milwaukee County Wauwatosa Town Greendale
The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section. NE, NE, NW



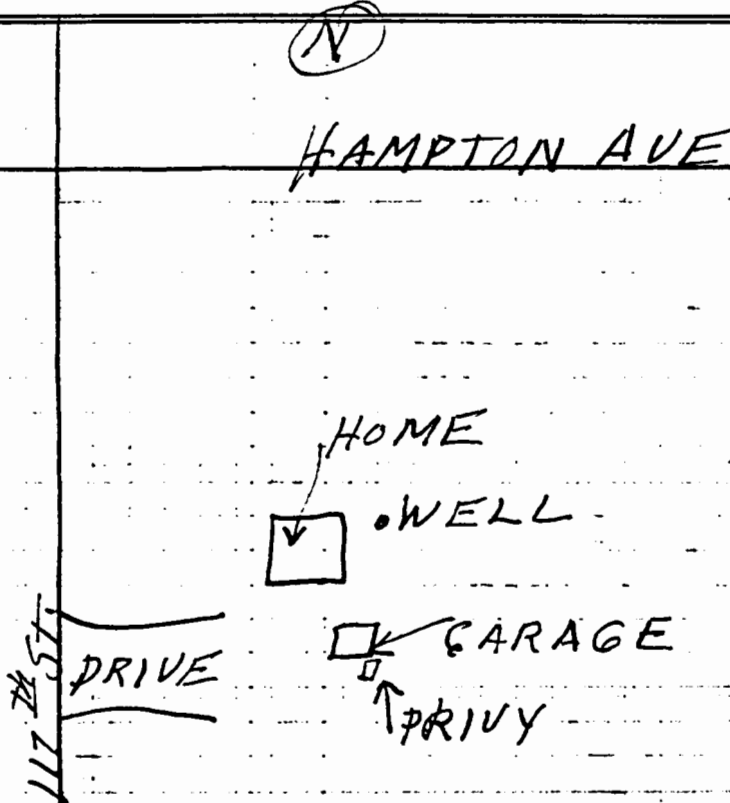
Sec. No. 6
Twp. No. 7N
Range 21 E/W

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

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

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



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

Wsl 6

1. County Milwaukee Town ☐
Village ☐
City ☒ Wauwatosa Check one and give name
 2. Location 11132 W. Ruby SENE Sec 6 T7N R21E1
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☐ Shalater Homes Inc.
Name of individual, partnership or firm

4. Mail Address 9220 W. Barleigh, Milwaukee 22, Wisconsin
Complete address required

RECEIVED

5. From well to nearest: Building 15 ft; sewer city ft; drain _____ ft; septic tank _____ ft;
 dry well or filter bed _____ ft; abandoned well _____ ft.

JUL 3 1961

6. Well is intended to supply water for: Home SANITARY

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	120	6	120	308

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std. steel	0	120

9. GROUT:

Kind	From (ft.)	To (ft.)
Bentonite & Cuttings	0	120

11. MISCELLANEOUS DATA:

Yield test: 2 Hrs. at 12 GPM.

Depth from surface to water-level: 85 ft.

Water-level when pumping: 123 ft.

Water sample was sent to the state laboratory at:

_____ on _____ 19____
City

10. FORMATIONS: ENGINEERING

Kind	From (ft.)	To (ft.)
Red clay	0	12
Blue clay, stony	12	36
Course gravel	36	46
Blue clay	46	101
Hardpan and boulders	101	117
Limerock	117	308

Construction of the well was completed on:

June 12 1961

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes xx No _____

Was the well sealed watertight upon completion?

Yes xx No _____

Signature Richard Berkholz
Registered Well Driller

Richard Berkholz, President

Acker-Berkholtz Co., Inc.
1170 Forest Lane, Brookfield, Wisconsin
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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH
See Instructions on Reverse Side

1. County Milwaukee { Town ☐ Village ☐ City ☐ Wauwatosa
Check one and give name

2. Location 11040 W. Ruby St. SENE SEC 6 T7N R2E
Name of street and number of premise or Sec. Tn. and R. numbers

3. Owner ☐ or Agent ☒ H. Bremer
Name of individual, partnership or firm

4. Mail Address 4429 N. 68th
Complete address required

5. From well to nearest: Building 15 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: _____

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)
8	0	25

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	Casing	0	11.5

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay & fillings	0	25

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Top Soil	3	3
Sand Clay	18	21
Hard pan	8	29
Stony Clay	13	42
Sandy Clay	30	72
hard pan	12	84
Stony Clay	10	94
Gravel	21	115
Lime Stone	63	178

11. MISCELLANEOUS DATA:

Yield test: 10 Hrs. at 7 GPM.

Depth from surface to water: 46 ft.

Water-level when pumping: 54 ft.

Water sample sent to laboratory at Kenosha on 4.3.1948

Construction of the well was completed on 4.3.48

The well is terminated 3 ft ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ☒ No ☐

Was the well sealed watertight upon completion? Yes ☒ No ☐

Signature Walter Bremer 2802 W. Villard Ave
Registered Well Driller Complete Mail Address
Milwaukee 9 Wis.

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☒ Village ☐ City ☐ Wauwatosa
Check one and give name

2. Location 11017 W. Ruby SENE SEC 6 T7N R21E1
Name of street and number of premises or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Everett Lund
Name of individual, partnership or firm

4. Mail Address 11017 W. Ruby Ave. Milwaukee 16 Wisc.
Complete address required

5. From well to nearest: Building no other construction started ft; sewer no other construction started ft; drain no other construction started ft; septic tank no other construction started ft;
dry well or filter bed no other construction started ft; abandoned well no other construction started ft.

6. Well is intended to supply water for: House and lot

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
9	0	20	5	108	256
6	0	152			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	blk. std. WD pipe	0	118
5	" " welded	108	152

9. GROUT:

Kind	From (ft.)	To (ft.)
Drill cuttings	0	20

11. MISCELLANEOUS DATA:

Yield test: 10 Hrs. at 8 GPM.

Depth from surface to water-level: 70 ft.

Water-level when pumping: 140 ft.

Water sample was sent to the state laboratory at:

Kenosha on 5/1 1952
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	40
Gravel	10	50
sand	20	70
gravel	10	80
clay	10 28	90 118
gravel	28	118
limestone	2	120
chalk lime gravel	28	148
limestone	108	256

Construction of the well was completed on:

May 1 1952

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes No ☒

Was the well sealed watertight upon completion?

Yes ☒ No

Signature Garber & Son
Registered Well Driller

5807 W. Hampton Rd. Milwaukee 16
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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☒ Village ☐ City ☐ Wauwatosa
 2. Location 11017 W. Ruby Ave SENE Sec 6 T7N R21E
 Name of street and number of premise or section, Town and Range numbers
 3. Owner ☒ or Agent ☐ Evertt Lund
 Name of individual, partnership or firm
 4. Mail Address 11017 W. Ruby Ave. Milwaukee 16 Wisconsin.
 Complete address required
 5. From well to nearest: Building 15 ft; sewer XX ft; drain 15 ft; septic tank 63 ft;
 dry well or filter bed 63 ft; abandoned well XX ft.

6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
9	0	20	5	106	415
6	0	155			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	blk.WD 19.45	0	118
5	blk.PE Welded 15	106	155

9. GROUT:

Kind	From (ft.)	To (ft.)
Drill cuttings	0	20
neat cement	106	155

11. MISCELLANEOUS DATA:

Yield test: 10 Hrs. at 12 GPM.
 Depth from surface to water-level: 96 ft.
 Water-level when pumping: 188 ft.
 Water sample was sent to the state laboratory at:
Kenosha on 3/23 1954
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay	0	40
gravel	10	50
sand	20	70
gravel	10	80
clay	10	90
Gravelstone	28	128
limestone	2	120
lime schells sand	30	150
limestone	106	256
Over		

Construction of the well was completed on:

May 1 1954³

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes No X

Was the well sealed watertight upon completion?

Yes X No

Signature Garber & Son B. J. Garber 5807 W. Hampton Rd Milwaukee 16
 Registered Well Driller 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 CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

SW, SENE Sec 6 T7N R21E

See Instructions on Reverse Side

1. County Milwaukee Town ☒ Wauwatosa
 Village ☐ City ☐ Check one and only one
 2. Location 4450 N. Lovers Lane Rd.
 Name of street and number of premise or Section, Town and Range numbers
 3. Owner ☒ or Agent ☐ Alvin Emmons
 Name of individual, partnership or firm
 4. Mail Address 1028 W. Scott St. Milwaukee, Wis.
 Complete address required
 5. From well to nearest: Building 15 ft; sewer — ft; drain 15 ft; septic tank — ft;
 dry well or filter bed — ft; abandoned well — ft.

RECEIVED
AUG 28 1952

ENVIRONMENTAL
SANITATION

6. Well is intended to supply water for: Residence

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
12	0	20	6 1/4	20	142

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7-O.D.	Steel	0	130 1/2

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled clay	0	20

11. MISCELLANEOUS DATA:

Yield test: 21 Hrs. at 10 GPM.

Depth from surface to water-level: 60 ft.

Water-level when pumping: 68 ft.

Water sample was sent to the state laboratory at:

Kenosha on Aug 25 1952
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay	0	18
Sand + Gravel	18	26
Hard Pan	26	45
Sand + Gravel	45	54
clay + stone	54	75
clay	75	78
Sand + Gravel	78	86
clay	86	104
Gravel	104	129 1/2
lime stone	129 1/2	162

Construction of the well was completed on:

Aug 23 1952

The well is terminated 6 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Fred W. Krueger
 Registered Well Driller

5241 W. Fond Du Lac ave.
Milwaukee 16, Wis.
 Complete Mail Address

Please do not write in space below

Rec'd _____ No. _____

Ans'd _____

Interpretation _____

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli _____

Examiner _____

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

1. County Milwaukee Town Wauwatosa
Village ☐
City ☐ Check one and give name

2. Location 10923 W. Ruby St. SE, SE, NE, Sec 6 T7N R21E
 Name of street and number of premises or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Adam Wargo
 Name of individual, partnership or firm

4. Mail Address 10921 W. Ruby St. Milwaukee Wis.
 Complete address required

5. From well to nearest: Building 13 ft; sewer ft; drain ft; septic tank 35 ft;
 dry well or filter bed 50 ft; abandoned well ft

6. Well is intended to supply water for: Home

APR 14 1954
 ENVIRONMENTAL
 SANITATION

REC'D
APR 14 1954
**ENVIRONMENTAL
SANITATION**

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.)
6	Std . Wt.	0	126

9. GROUT:

Kind	From (ft.)	To (ft.)
clay	0	126

11. MISCELLANEOUS DATA:

Yield test: 13 Hrs. at 15 GPM.
Depth from surface to water-level: 63 ft.
Water-level when pumping: 68 ft.
Water sample was sent to the state laboratory at:
Madison on April 11 1954
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	9	126
Limestone	126	155
ALSO PUMP INSTALLED		

Construction of the well was completed on:

-----April 9-----1954-----

The well is terminated 6 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes I No

Was the well sealed watertight upon completion?

Yes X No

Signature A. G. Eddy 10949 W. Appleton Ave. Milwaukee Wis.
Registered Well Driller Complete Mail Address
Please do not write in space below

Please do not write in space below

Rec'd APR 12 1955 No. 7192

Ans'd

Interpretation ----- **SAFE** -----

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs.

48 hrs. _____

Confirm

B. Coli

Examiner_____

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

1. County Milwaukee Town ☐ Village ☐ City ☒ Wauwatosa
Check one and give name
2. Location 4511 - N. Delaware Ave NWSE, NESE, T7N R21E
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Heidel Homes
Name of individual, partnership or firm
4. Mail Address 10928 - St. Ruby
Complete address required
5. From well to nearest: Building 18 ft; sewer 50 ft; drain — ft; septic tank — ft;
dry well or filter bed — ft; abandoned well — ft.
6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8 3/4	0	119			
6	119	294			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std. Black Steel	0	119

9. GROUT:

Kind	From (ft.)	To (ft.)
Bentonite	0	119

11. MISCELLANEOUS DATA:

Yield test: 1 1/2 Hrs. at 10 GPM.

Depth from surface to water-level: 75 ft.

Water-level when pumping: 100 ft.

Water sample was sent to the state laboratory at:

not yet taken on 19
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	40
Gravel	40	47
Clay	47	110
Hardpan	110	119
Limestone	119	294

RECEIVED
SEP 2 1958
ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

Aug 19 1958

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes X No —

Was the well sealed watertight upon completion?

Yes X No —

Signature Richard B. Burkhardt
Registered Well Driller

Acker - Burkhardt Co.
16601 - St. Greenfield Ave.
Complete Mail Address
Wauwatosa, Wis.

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

RECEIVED
SEP 5 1950
BUREAU
SAN. ENG.

1. County Milwaukee Town ☒ Wauwatosa
Village ☐
City ☐ Check one and give name
2. Location N. 109 St. and Rudy St.
NW, SE NE Sec 6 Name of street and number of premise or Section, Town and Range numbers
T7N R21E
3. Owner ☒ or Agent ☐ Robert E. Heide
Name of individual, partnership or firm
4. Mail Address 2840 N. 78 St. Milwaukee Wis.
Complete address required
5. From well to nearest: Building 15 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: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	25	6	25	149

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	Casing	0	122

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay & fillings	0	25

11. MISCELLANEOUS DATA:

Yield test: 7 Hrs. at 14 GPM.
Depth from surface to water-level: _____ ft.
Water-level when pumping: 59 ft.
Water sample was sent to the state laboratory at:
Kewaunee on 8.11 1950
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
filling	2	2
Top of rock	1	3
Clay	20	13
Hard pan	4	27
Gravel	2	35
Clay	60	95
Coarse sand	27	122
Thin stone	77	149

Construction of the well was completed on:

Aug 11 1950

The well is terminated 12 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes _____ No X

Was the well sealed watertight upon completion?

Yes X No _____

Signature W. B. Bunker 3535 N. 124 St. Milwaukee Wis.
Registered Well Driller 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 _____

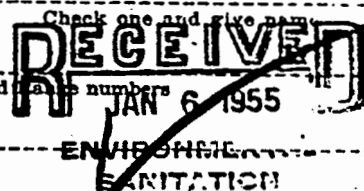
B. Coli _____

Examiner _____

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☒ Wauwatosa
 Village ☐ City ☐ Check one and give name
2. Location 10928 W. Ruby Ave. NE SE, Sec 6 T4N R21E1
 Name of street and number of premise or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Robert Heidel
 Name of individual, partnership or firm
4. Mail Address 10928 W. Ruby Ave. Milwaukee 16 Wisc.
 Complete address required
5. From well to nearest: Building 15 ft; sewer xx ft; drain 15 ft; septic tank 47 ft;
 dry well or filter bed 52 ft; abandoned well xx ft.



6. Well is intended to supply water for: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
9	0	20			
6	0	160			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	blk. WD 19.45	0	125

9. GROUT:

Kind	From (ft.)	To (ft.)
clay drill mud	0	20

11. MISCELLANEOUS DATA:

Yield test: 12 Hrs. at 10 GPM.

Depth from surface to water-level: 62 ft.

Water-level when pumping: 65 ft.

Water sample was sent to the state laboratory at:

Madison on 11/2 1953
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay	0	71
clay sandy	15	86
sand gravel	81	117
clay hardpan	8	125
limestone WB	35	160

Construction of the well was completed on:

Nov. 11 1953

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☐ No ☒

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Garber & Son B.G. Garber 5807 W. Hampton Rd Milwaukee 16
 Registered Well Driller 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 CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

NOV 4 1943

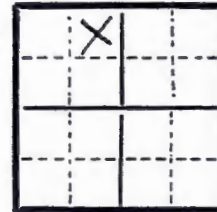
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner D. J. Howick Driller Jake Oswald
Street or RFD 4657 No 117 st Post Office Milwaukee Wis
Post Office Milwaukee Wis Date June 30 1943 Permit No. 165

LOCATION OF PREMISES

Milwaukee Wauwatosa
County Town

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



Sec. No. 6
Twp. No. 7N
Range 2E { E
 W

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

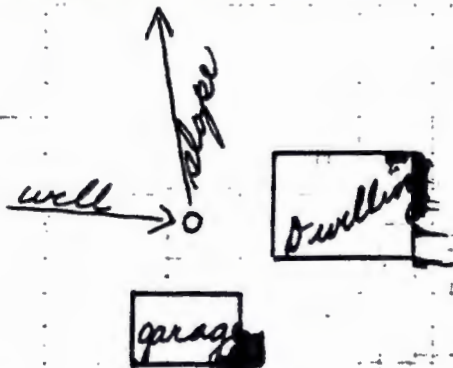
Hampton Road near New Butler
block, nearest principal highway, etc., whichever apply.

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

W. Hampton ave

North



WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH JAN 15 1946
See Instructions on Reverse Side

1. County Milwaukee Town Town of Milwaukee
 2. Location Sec 31 TWR 8 Range 21E
 3. Owner or Agent John Thiry
 4. Address 5444 - no. 25 st town of Milwaukee
 5. From well to nearest: Building 4 ft; sewer 20 ft; drain ft; septic tank ft;
 dry well or filter bed ft; abandoned well ft.
 6. Well is intended to supply water for: home

7. DRILLHOLE OR EXCAVATION:

Dia. (in.)	From (ft.)	To (ft.)
10 drill	0	20
16 in drill	20	74

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
16	Standard pipe	0	66

9. GROUT:

Kind	From (ft.)	To (ft.)
mud	0	20

10. FORMATIONS:

Kind	Thick-ness (ft.)	Total Depth (ft.)
Block soil	1	1
Yellow pan	15	16
blue clay	27	43
Broken rock	23	66
solid rock	8	74

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 15 GPM. Construction of the well was completed on Dec 26
 Depth from surface to water: 28 ft. 19 45
 Water-level when pumping: 55 ft. The well is terminated 8 inches (above) (below) the permanent grade.
 Water sample sent to laboratory at Kenneth on Dec 26 19 45 Was the well disinfected upon completion? Yes X No
 Was the well sealed watertight upon completion? Yes X No

Signature Joe Ruppert Registered Well Driller 4832 20, 125 st Complete Mail Address Butler Wisconsin

WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

APR 30 1945

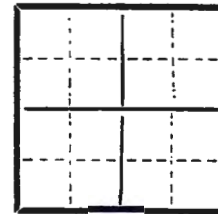
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Mr Pitt Driller A. J. Linnings - Son
Street or RFD 7 Post Office Butler Wis
Post Office Milwaukee Wis Date April 28 Permit No. 58

LOCATION OF PREMISES

Milwaukee County Granville Town
Private Dwelling - near Highway 100
Describe further by subdivision, plat, district, lake, lot.
Between Silver Spring Road &
block, nearest principal highway, etc., whichever apply.
Hampton Road

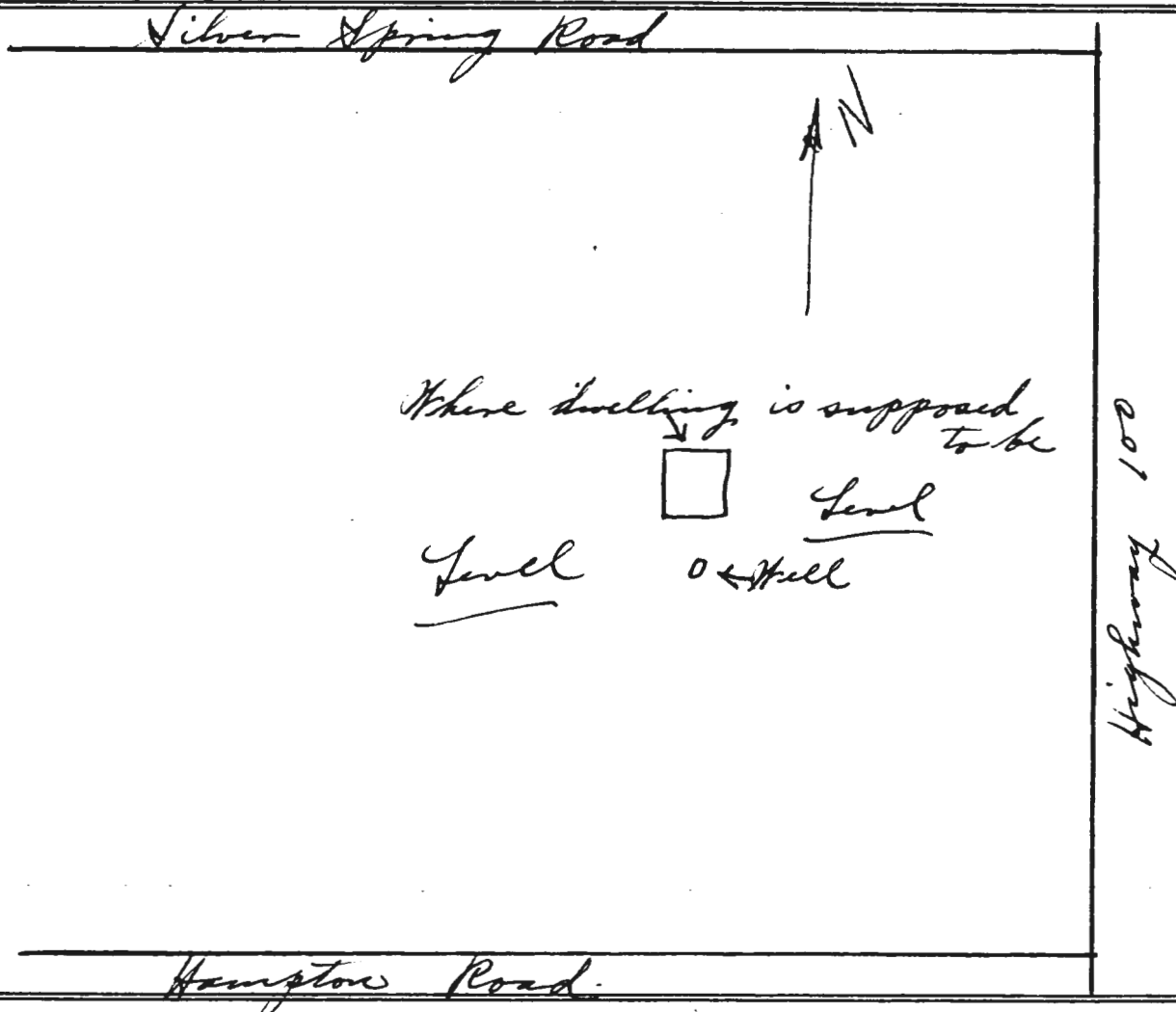
The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.



W 3/4
Sec. No. 31
Twp. No. 8
Range 21 E W

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



FEB 23 1940

WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL DRILLING DIVISION

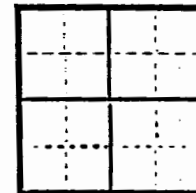
Note: Section 32 of the Wisconsin Well Drilling Sanitary Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Andrew Culbertson Driller Earl Beck ✓
Street or RFD Hwy 100 + Hampton Rd. Post Office 805 N. 112 St.
Post Office Madwaukee Date Jan. 17, 1940 Permit No. 462

LOCATION OF PREMISES

Milwaukee County Granville Town

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



West $\frac{3}{4}$
Sec. 31
Twp. 8N
Range 21 { E
 W

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

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

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.

NORTH

Slope →

• WELL
[] DWELLING

CREEK

HWY 100

HAMPTON RD.

17 1941 ✓

WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

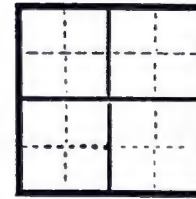
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Mrs. Julia Klisch Driller Eric Gronl
Street or RFD 3 Box 11 St E Post Office Bedarburg
Post Office Milwaukee Date Jan 15-41 Permit No. 132

LOCATION OF PREMISES

Milwaukee County Granville Town

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



W 3/4
Sec. No. 31
Twp. No. 8
Range 2 { E
W

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

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

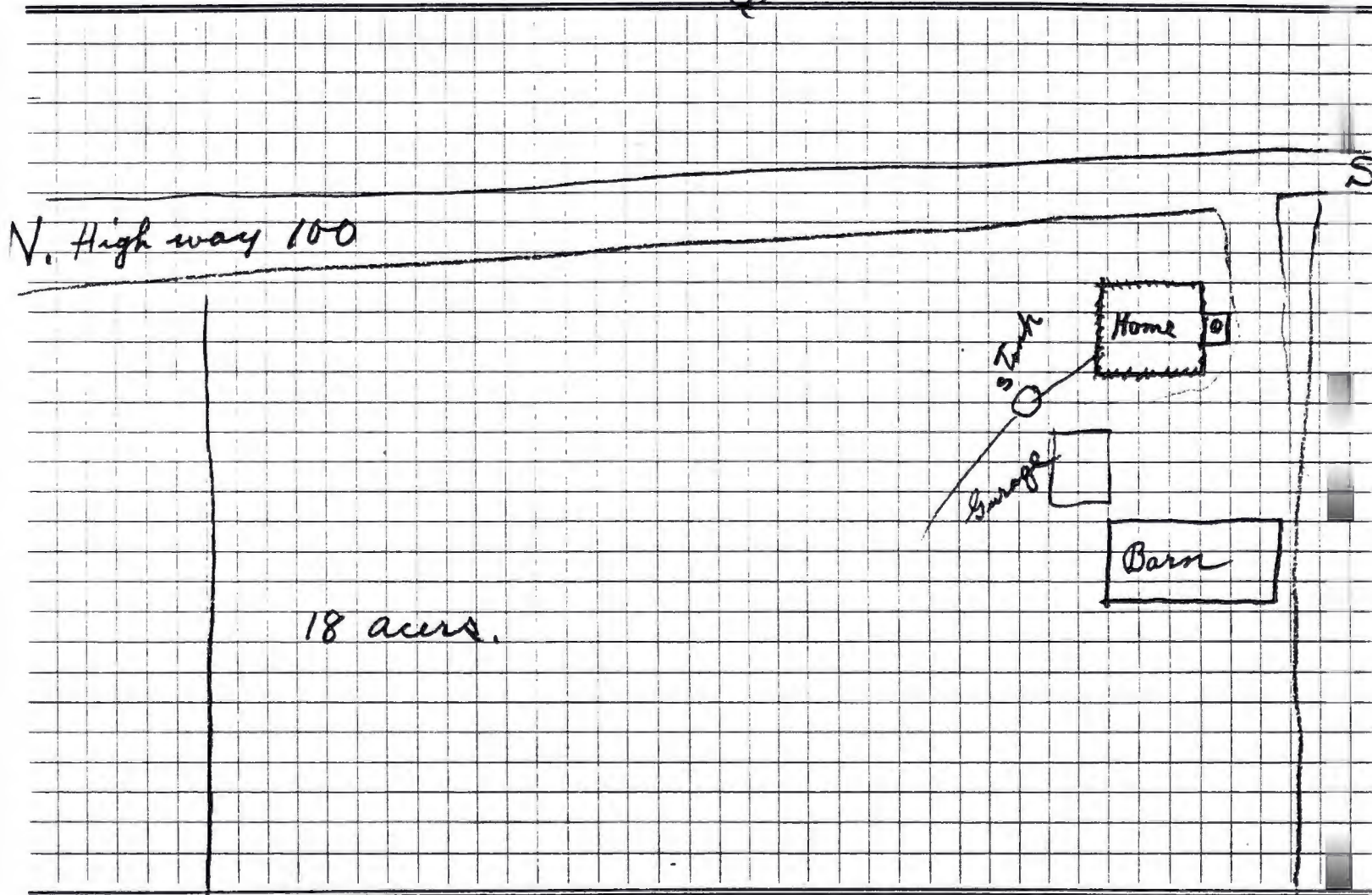
On Highway 100 between Silver Spring and Hampton

DIAGRAM OF PREMISES

18 acres

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

E



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

FEB 19 1945

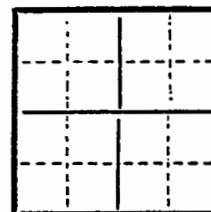
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Andrew Culbertson Driller Jake Oswald
Street or RFD 11420 W Hampton Ave Post Office Waukegan, Wis
Post Office Milwaukee, Wis Date Sept. 14 - 1944 Permit No. 165

LOCATION OF PREMISES

Waukegan County Milwaukee Town

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



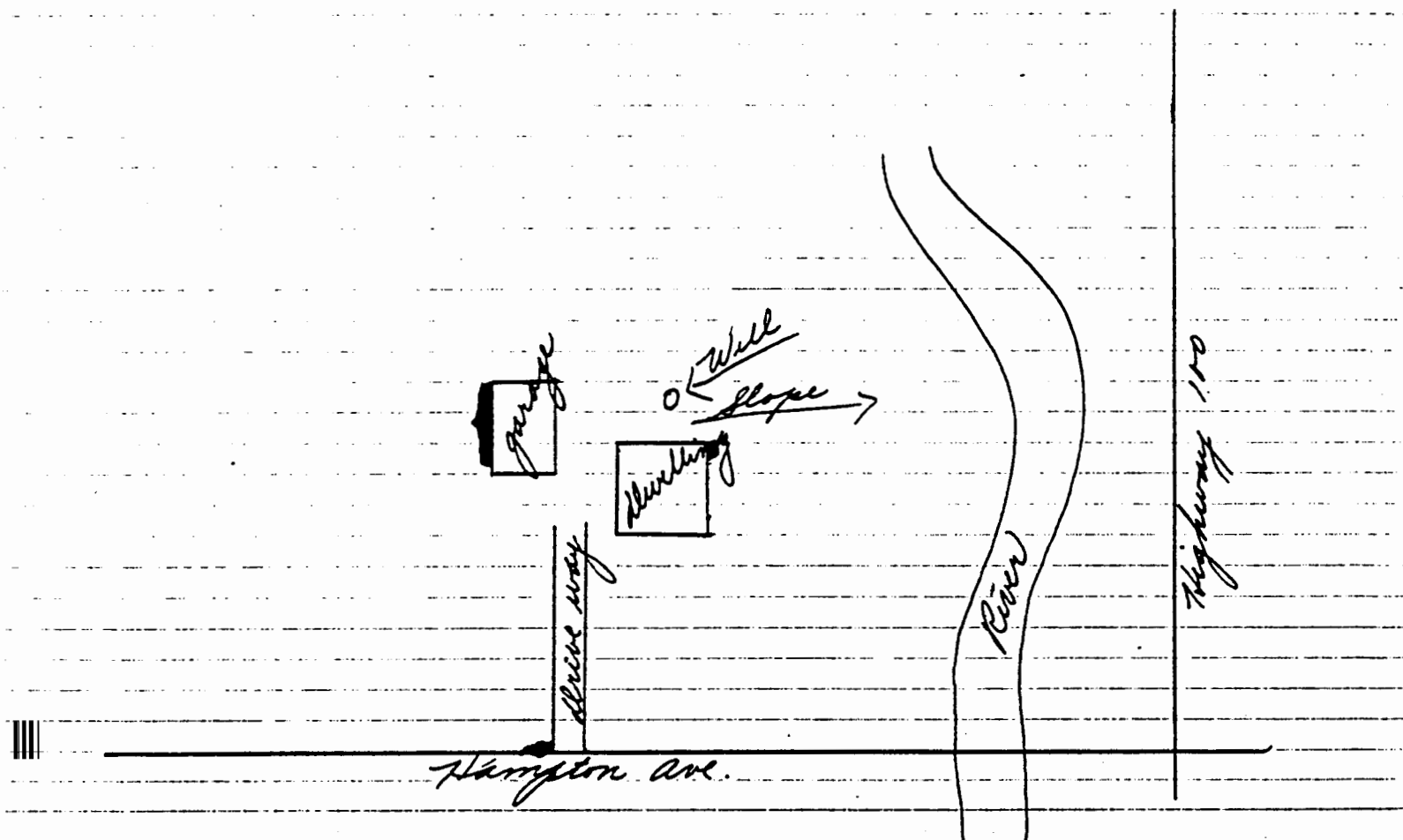
W 3/4
Sec. No. 31
Twp. North 8
Range 21 EW

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

Highway 100
block, nearest principal highway, etc., whichever apply.

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

JUN 12 1942

Note: Section 31 of the Wisconsin Well Construction 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 Julius Kroening Driller A. F. Leisinger & Son
~~Street~~ or RFD 3 Station - 7 - Post Office Butler Wis
 Post Office Milwaukee Wis Date June 11 Permit No. 58

LOCATION OF PREMISES

Milwaukee County Granville Town

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

Private Dwelling - On Highway 100
 Describe further by subdivision, plat, district, lake, lot.

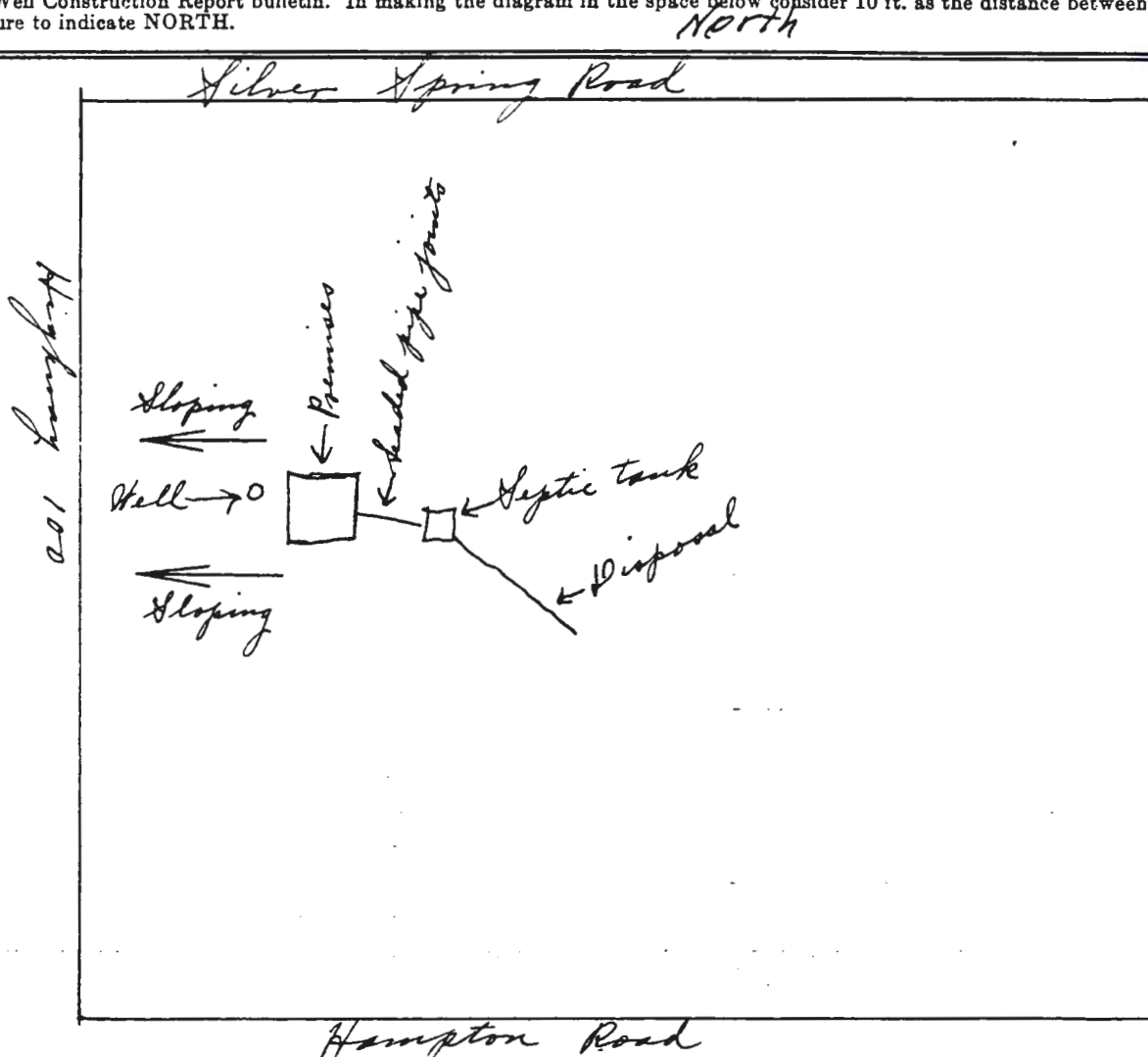
Between Hampton Road & Silver Spring Road
 block, nearest principal highway, etc., whichever apply.



E 1/2
 Sec. No. 36
 Twp. No. 8 N
 Range 21 W

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



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

ML-186-4
SEP 25 1945

1. County Milwaukee Town Grandville
~~Kenosha~~
~~City~~
2. Location S.W. 1/4 sec. 31 T.8N R. 21E.
3. Owner ~~XXXXXX~~ Alfonse Seonbuchner
4. Address 11804 W. Hampton Rd. Milwaukee 9 Wisconsin
5. From well to nearest: Building 15 ft; sewer 26 ft; drain 15 ft; septic tank 40 ft;
dry well or filter bed 80 ft; abandoned well none ft.
6. Well is intended to supply water for: home water supply

7. DRILLHOLE OR EXCAVATION:

Dia. (in.)	From (ft.)	To (ft.)
9	0	22
6	22	98

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	Blk std pipe	0	56

9. GROUT:

Kind	From (ft.)	To (ft.)
Drill cuttings	0	22

10. FORMATIONS:

Kind	Thick-ness (ft.)	Total Depth (ft.)
soil	2	2
sand	335	5
clay	9	14
Gravel	15	29
clay blue	15	44
Gravel muddy	11	55
Limestone light	26	81
Limestone dark W.B.	17	98

11. MISCELLANEOUS DATA:

Yield test: 2 1/2 Hrs. at 15 GPM.

Depth from surface to water: 46 ft.

Water-level when pumping: 48 ft.

Water sample sent to laboratory at
Kenosha on sept. 1 1945.

Construction of the well was completed on Sept. 1 1945
~~August~~

The well is terminated 10 inches
(above) (below) the permanent grade.

Was the well disinfected upon completion?
Yes X No

Was the well sealed watertight upon completion?
Yes X No

Signature B. J. Garber
Registered Well Driller

5807 W. Hampton Rd.
Complete Mail Address
Milwaukee 9 Wisconsin.

WELL-CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee } Town ☐
 Village ☐
 City ☒ Wauwatosa
 Check one and give name:

2. Location SWSW Sec 3 4880 N. 124
T8N R21E
 Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☒ Jos. Wittig G
 Name of individual, partnership or firm

4. Mail Address Milw. Wisc.
 Complete address required

5. From well to nearest: Building 8 ft; sewer 15' ft; drain — ft; septic tank — ft;
 dry well or filter bed — ft; abandoned well — ft.

6. Well is intended to supply water for: Comm. Bldg.

RECEIVED
 MAY 15 1956
 ENVIRONMENTAL
 SANITATION

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	21			
6	21	169			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	New Steel 19 1/2"	0	119

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled Clay	0	21

11. MISCELLANEOUS DATA:

Yield test: 10 Hrs. at 75 GPM.
 Depth from surface to water-level: 40 ft.
 Water-level when pumping: 50 ft.
 Water sample was sent to the state laboratory at:
Madison on 5/7 1956
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	115
Gravel	115	119
Hard Rock	119	169

Construction of the well was completed on:

5/5 1956

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Howard E. Kicker
 Registered Well Driller

2976 N. 84th St Milwaukee 10
 Complete Mail Address

Please do not write in space below

Rec'd MAY 8 1956 No 12751

Ans'd —

Interpretation —

SAFE

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. —

48 hrs. —

Confirm —

B. Coli —

Examiner —

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☐ Village ☐ City ☒ Milwaukee Check one and give name.
2. Location 5050 - N. 124th St. SWNWSE 317 E 10 N 12 E
Name of street and number of premises or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Fred Riefel
Name of individual, partnership or firm
4. Mail Address 3008 - N. Rusk Ave.
Complete address required
5. From well to nearest: Building 6 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: Small Factory

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	87			
6	87	196			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Std. 5 1/2" Std.	0	87

9. GROUT:

Kind	From (ft.)	To (ft.)
Bentonite	0	87

11. MISCELLANEOUS DATA:

Yield test: 1 Hrs. at 2 GPM.

Depth from surface to water-level: 43 ft.

Water-level when pumping: 100 ft.

Water sample was sent to the state laboratory at:

_____ on _____ 19____
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	60
Hardpan	60	84
Limestone	84	196

RECEIVED

JUN 15 1959

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

May 13 1957

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No _____

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature Acker-Cerkholy Co., Inc. 16601 - N. Greenfield Ave.
Registered Well Driller Complete Mail Address
Stankula, Ohio.

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

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

2. Location 5054 N. 124 St. SWANSON Sec. 31 T8N R21E
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☒ Sid Lery
Name of individual, partnership or firm

4. Mail Address 4343 N. 87 St. Milwaukee
Complete address required

5. From well to nearest: Building 3 ft; sewer 25 ft; drain 35 ft; septic tank _____ ft;
dry well or filter bed _____ ft; abandoned well _____ ft.

6. Well is intended to supply water for: small shop

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20	6	20	142

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	23 lbs. ft. steel	0	87

9. GROUT:

Kind	From (ft.)	To (ft.)
clay slurry	0	20

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 10 GPM.

Depth from surface to water-level: 64 ft.

Water-level when pumping: 81 ft.

Water sample was sent to the state laboratory at:

Madison on March 16 1959
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Fill	0	2
Clay	2	68
Hard-p. sh.	68	87
Limestone	87	142

RECEIVED

MAR 24 1959

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

Feb. 1 1959

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Charles P. Long 2450 W. Fond du Lac Ave. Milwaukee 13, Wis.
Registered Well Driller Complete Mail Address

Please do not write in space below

Rec'd MAR 17 1959 5510
No.

Ans'd _____

Interpretation SAFE

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli 6

Examiner _____

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

1. County Milwaukee Town ☐
Village ☐ City of Milwaukee
City ☒ Check one and give name

2. Location 5064 N 124 th
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Fred Reifschneider
Name of individual, partnership or firm

4. Mail Address 3940 N. Lilly, R.D. Milwaukee, 10, Wis
Complete address required

5. From well to nearest: Building 6 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: Shop

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7.0	Steel Pipe, 23#	0	75

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled Clay	0	20

11. MISCELLANEOUS DATA:

Yield test: 3 Hrs. at 9 GPM.

Depth from surface to water-level: 30 ft.

Water-level when pumping: 35 ft.

Water sample was sent to the state laboratory at:

Madison on Jan. 15 1957
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Puddled Caly	0	20
Clay Mix With, small Stones,	20	35
Clay	35	45
Sandy Clay	45	55
Sand	55	60
Sand & Gravel	60	70
Gravel	70	75
Lime Stone	75	127

Construction of the well was completed on:

Jan, 12 1957

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes --- No ---

Was the well sealed watertight upon completion?

Yes * No ---

Signature Lentz & Son, I.N.C., 12545 W. Lisbon, Milwaukee, 10, Wis
Registered Well Driller 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. Coll ---

Examiner ---

RECEIVED

JAN 18 1957

ENVIRONMENTAL
SANITATION

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

1. County Milwaukee Town ☐ Butler Village ☒ CITY OF MILWAUKEE City ☐ Check one and give name.
2. Location 5150 N 124 St. NW, NW, SW, Sec 31 T8N R21E
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Springbloom Farms, Inc.
Name of individual, partnership or firm
4. Mail Address Milwaukee 4 Apiares
Complete address required.
5. From well to nearest: Building 6 ft; sewer none ft; drain none ft; septic tank none ft;
dry well or filter bed none ft; abandoned well none ft.

6. Well is intended to supply water for: farm yard

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	72			
6	72	100			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel	0	72

9. GROUT:

Kind	From (ft.)	To (ft.)
none	0	72

11. MISCELLANEOUS DATA:

Yield test: 4 Hrs. at 20 GPM.

Depth from surface to water-level: 21 ft.

Water-level when pumping: 30 ft.

Water sample was sent to the state laboratory at:

Madison on July 28 1962
City

Signature

Arthur King
Registered Well Driller

Please do not write in space below

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay	0	36
sand	36	61
chert	61	66
broken chert	66	69
limestone	69	100

RECEIVED

AUG 1 1962

Construction of the well was completed on June 27 1962

The well is terminated 10 inches
☒ above, ☐ below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ✓ No

Was the well sealed watertight upon completion?

Yes ✓ No

LIEBAU-LAUN, INC.

1200 W. LIEBAU RD. 124 N.

MEQUON, WISCONSIN

Rec'd

JUL 28 1962

No. 27061

Ans'd

Interpretation

SAFE—BACTERIOLOGICALLY

Gas—24 hrs.

48 hrs.

Confirm

B. Coli

Examiner

10 ml 10 ml 10 ml 10 ml 10 ml

78438 plot

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

1. County Milwaukee Town ☐ Village ☐ City ☒ Milwaukee Check one and give name
2. Location 5110 No. 124th Street NW NWSW Sec 31 T2N R21E
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Acc. Iron & Steel Co.
Name of individual, partnership or firm
4. Mail Address 3731 So. Gladstone Pl.
Complete address required
5. From well to nearest: Building 15 ft; sewer 55 ft; drain 15 ft; septic tank — ft;
dry well or filter bed — ft; abandoned well — ft.

6. Well is intended to supply water for: Shop

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	74	7	0	74

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
7	Steel pipe	0	74

9. GROUT:

Kind	From (ft.)	To (ft.)
Slush	0	74

11. MISCELLANEOUS DATA:

Yield test: 5 Hrs. at 30 GPM.

Depth from surface to water-level: 30 ft.

Water-level when pumping: 35 ft.

Water sample was sent to the state laboratory at:

Madison on Nov. 26 1958
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	67
Sand & L.	6	73
limestone br.	1	74
limestone d.	49	123
limestone w.	17	140

RECEIVED

DEC 10 1958

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

Nov. 21 1958

The well is terminated 13 inches
☒ above, below ☒ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Modern Pump & Well Drilling Co. 14300 W. Capital Dr. Brookfield, W.
Registered Well Driller Complete Mail Address

Please do not write in space below

Rec'd DEC 2 - 1958 No. 88741

Ans'd —

Interpretation Old sample

Gas—24 hrs. —

48 hrs. —

Confirm —

B. Coli —

Examiner —

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☐ Village ☐ City ☒ Grainville Check one and give name
2. Location 5720 no 124 st NW N1/4 Sec 31 T4N R21E
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☐ Fred Rupschneider
Name of individual, partnership or firm
4. Mail Address town Brookfield
Complete address required
5. From well to nearest: Building 5 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: machine shop.

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10				0	20
7				20	100

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
17	in steel pipe		

9. GROUT:

Kind	From (ft.)	To (ft.)
clay	0	20

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 8 GPM.
Depth from surface to water-level: 35 ft.
Water-level when pumping: 66 ft.

Water sample was sent to the state laboratory at:

Kensha on may 28 1953
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
glaucous pan	15	15
Blue clay	30	45
sand mild	5	50
Hard pan	20	70
Broken Rock	10	80
solid Rock	20	100

Construction of the well was completed on:

may 28 1953

The well is terminated 6 inches
☐ above, ☐ below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Joe Rupschneider
Registered Well Driller

Please do not write in space below

Complete Mail Address

Rec'd _____ No. _____

Ans'd _____

Interpretation _____

10 ml Butler 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. _____

Confirm _____

B. Coli _____

Examiner _____

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

1. County Milwaukee Town ☐ Village ☐ City ☒ Wauwatosa
2. Location North 108th Street & Hampton Avenue ? SE Sec 31 T8N R21E
3. Owner ☒ or Agent ☐ Wauwatosa Estates, Atkins-Wahlberg, Inc.
4. Mail Address 612 North Water Street, Milwaukee, Wisconsin
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: General uses

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
16	0	11'-10"	8"	580	1128
10	11'-10"	580			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
16	Steel	0	11'-10"
10	Steel	11	128'
8	Steel	0	580'

9. GROUT:

Kind	From (ft.)	To (ft.)
Neat Cement	0	580

11. MISCELLANEOUS DATA:

Yield test: 12 Hrs. at 300 GPM.
Depth from surface to water-level: 215 ft.
Water-level when pumping: 284 ft.
Water sample was sent to the state laboratory at:
Milwaukee #68 on January 29 1960
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Drift	0	127'
Limestone	127	1400
Shale	1400	509
Limestone	509	809
Sandstone	809	1128

RECEIVED

JUN 1 1960

SANITARY

ENGINEERING

Construction of the well was completed on:

May 11 1960

The well is terminated 12 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes X No _____

Was the well sealed watertight upon completion?

Yes X No _____

Signature Egerer-Galloway Well Corporation, 1012 N. Third St., Milwaukee 3, Wis.
Registered Well Driller Complete Mail Address

Rec'd _____ No. _____
Ans'd _____
Interpretation _____
CC: DIST #✓
FILE
STATE GEOLOGICAL SURVEY

10 ml 10 ml 10 ml 10 ml 10 ml
Gas—24 hrs. _____
48 hrs. _____
Confirm 784389 plot
B. Coli _____
Examiner _____

AUG 13 1940

WELL CONSTRUCTION REPORT

WISCONSIN STATE BOARD OF HEALTH

WELL DRILLING DIVISION

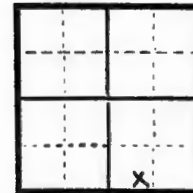
Note: Section 32 of the Wisconsin Well Drilling Sanitary Code, having the force and effect of law, provides that within thirty days after completion of every well the driller shall submit a report covering all essential details of construction to the State Board of Health on a form provided by the Board.

Owner Dora Strathearn Driller Frank Aker & Son
 Street or RFD Soldiers Home Post Office Hales Corners
 Post Office Nurses quarters Wood us. Date 7-28-40 Permit No. 13

LOCATION OF PREMISES

Milwaukee County Granville Town
on Highway 100 one blk north of
W. Hampton Rd.
 Describe further by subdivision, plat, district, lake, lot,
 block, nearest principal highway, etc., whichever apply.

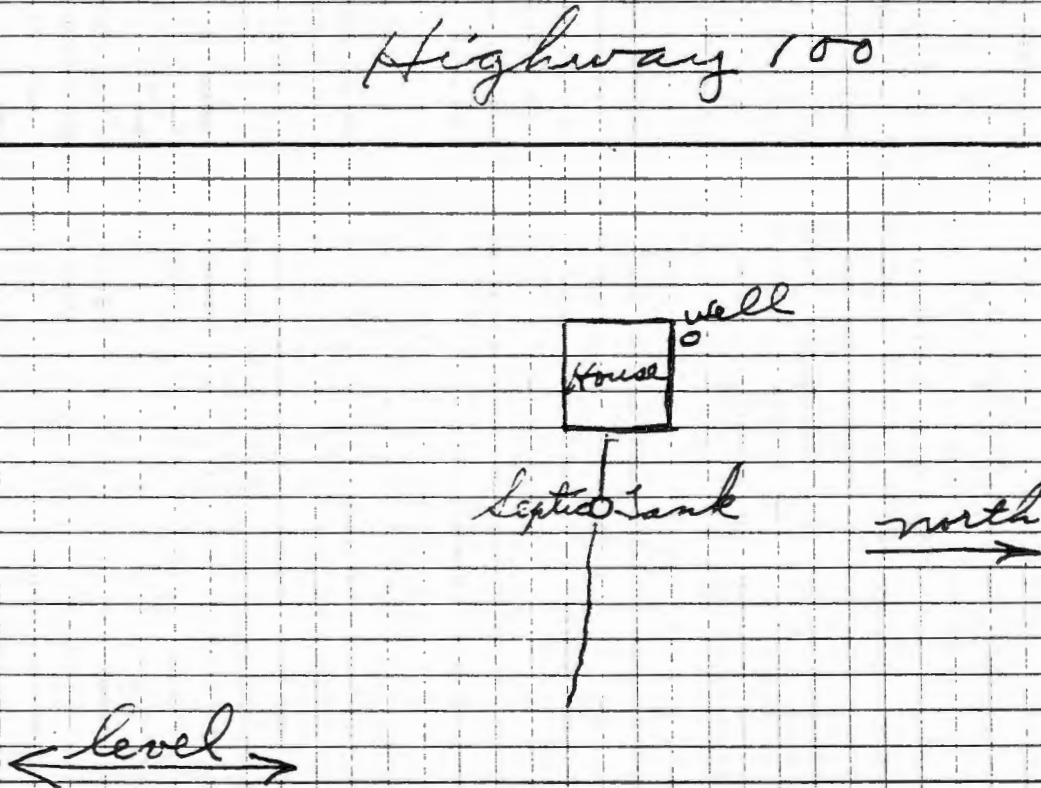
The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.



SW SE 1/4
 Sec. 31
 Twp. 8
 Range 21 E

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.



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

APR 7 1947

1. County Milwaukee { Town Wauwatosa
Village _____
City _____
2. Location 4940 Lovers Lane Dr. NW SW SE Sec 31
T 18 N R 2 E
3. Owner or Agent A. Freiburger
4. Address 4940 Lovers Lane
5. From well to nearest: Building 78 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: Home.

7. DRILLHOLE OR EXCAVATION:

Dia. (in.)	From (ft.)	To (ft.)
8	0	25
6	25	90

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	<u>Std. Blk. Steel</u>	0	60
	<u>pipe</u>		

9. GROUT:

Kind	From (ft.)	To (ft.)
<u>Clay drill cutting</u>	0	25

10. FORMATIONS:

Kind	Thick-ness (ft.)	Total Depth (ft.)
<u>Topsoil</u>	2	2
<u>Clay</u>	33	35
<u>Sand</u>	10	45
<u>Gravel</u>	14	59
<u>Limestone</u>	31	90

11. MISCELLANEOUS DATA:

- Yield test: 8 Hrs. at 15 GPM.
- Depth from surface to water: 10 ft.
- Water-level when pumping: 25 ft.
- Water sample sent to laboratory at Kenosha on 2, 19, 1947
- Construction of the well was completed on 2, 19, 1947
- The well is terminated 12 inches (above) ~~(below)~~ the permanent grade.
- Was the well disinfected upon completion? Yes X No _____
- Was the well sealed watertight upon completion? Yes X No _____
- Signature Walter Berner 2802 W. Villard Ave.
Registered Well Driller Complete Mail Address
Milwaukee 9, Wis.

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH ML-143

See Instructions on Reverse Side

1. County Milwaukee Town ☐ Milwaukee
Village ☐
City ☒ Check one and give name
2. Location at N. 110th and W. Cameron Avenue NWSESE Sec. 31 T8N R21E
Name of street and number of premise or Section, Town and Range numbers
3. Owner ☐ or Agent ☒ Harvest Estates Subdivision Well No. 2
Name of individual, partnership or firm
4. Mail Address Room 6009, 161 W. Wisconsin Avenue, Milwaukee
Complete address required
5. From well to nearest: Building ft; sewer 155 ft; drain ft; septic tank ft;
dry well or filter bed ft; abandoned well ft.

6. Well is intended to supply water for: Subdivision

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
16	0	40			
10	40	250			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
16	Steel	0	40
10	Steel	0	95

9. GROUT:

Kind	From (ft.)	To (ft.)
Cement	0	40

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 200 GPM.
Depth from surface to water-level: 40 ft.
Water-level when pumping: 200 ft.
Water sample was sent to the state laboratory at:
Madison on March April 29 19 57
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Glacial Drift	0	94
Niagara Limestone	94	250

RECEIVED

APR 29 1957

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

April 23 19 57

The well is terminated 12 inches
☐ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature

Ralph E. Milare
Registered Well Driller

Please do not write in space below

Complete Mail Address

Rec'd No

Ans'd

Interpretation

cc: DIST #1
: FILE

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs.

48 hrs. 784390 plot

Confirm

B. Coli

Examiner

WELL CONSTRUCTION REPORT
WISCONSIN STATE BOARD OF HEALTH
WELL CONSTRUCTION DIVISION

FEB 18 1942

Note: Section 31 of the Wisconsin Well Construction 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 John Ellingsworth Driller A. F. Linsing & Son
 Street or ~~RD~~ Rd 108th St R.R. 7. Post Office Butler Wis
 Post Office Hammonda Wis Date 2/17/42 Permit No. 58

LOCATION OF PREMISES

Milwaukee County Granville Town

Private Dwelling - On 108th St
 Describe further by subdivision, plat, district, lake, lot.

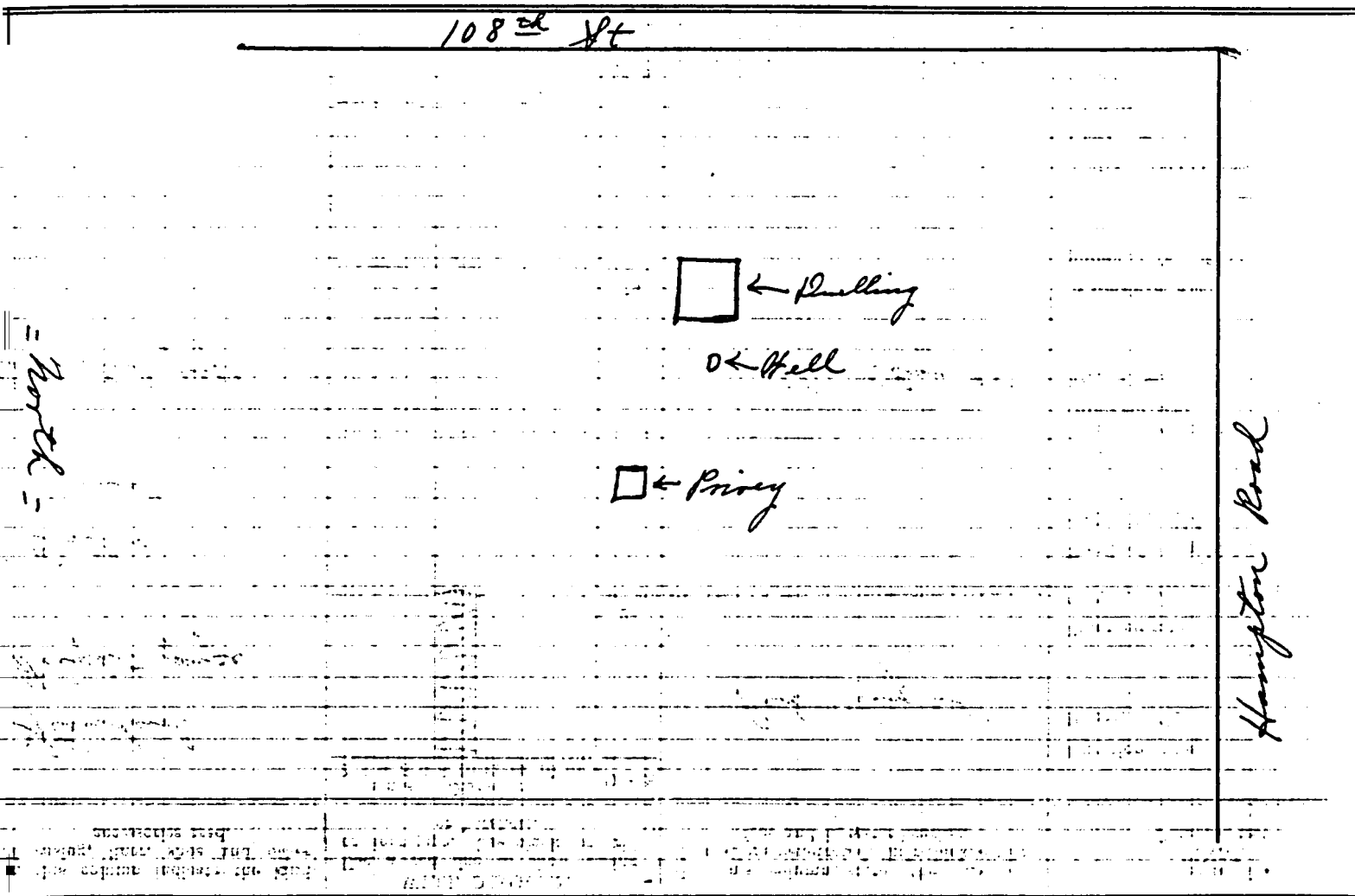
North of Hampton Road About 2 Blocks
 block, nearest principal highway, etc., whichever apply.

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

	NE SE SE
	Sec. No. <u>31</u>
	Twp. No. <u>8</u>
	Range <u>21</u> E W

DIAGRAM OF PREMISES

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.



WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Milwaukee Town ☒ Granville
 Village ☐ City ☐ Check one and give name
 2. Location 5038 Lovers Lane Road NWSE Sec 3/
 Name of street and number of premise or Section, Town and Range numbers
 3. Owner ☐ or Agent ☒ Mid Town Realty
 Name of individual, partnership or firm
 4. Mail Address 2339 W. Mitchell St. Milw. Wis.
 Complete address required
 5. From well to nearest: Building 15 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: Home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	25	6	25	75

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Casing	0	56

9. GROUT:

Kind	From (ft.)	To (ft.)
Clay Drilling	0	25

11. MISCELLANEOUS DATA:

Yield test: 8 Hrs. at 7 GPM.

Depth from surface to water-level: 32 ft.

Water-level when pumping: 35 ft.

Water sample was sent to the state laboratory at:

Madison on 9.19. 1955
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Top Soil	1	1
Clay	19	20
Sand & Gravel	36	56
Sand & Stone	19	75

Construction of the well was completed on:

Sept. 19. 1955

The well is terminated 12 inches

☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes _____ No ☒

Was the well sealed watertight upon completion?

Yes ☒ No _____

Signature H. Berner 3535 91. 124 St. Milwaukee Wis.
 Registered Well Driller Complete Mail Address

Please do not write in space below

Rec'd SEP 20 1955 No. 32108

Ans'd _____

Interpretation SAFE

over

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. 9

Confirm _____

B. Coli 0/5

Examiner _____

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

1. County Walworth Town ☐ Village ☐ City ☒ Milwaukee Check one and give name

2. Location 5101 No. Lovers Lane Name of street and number of premise or Section, Town and Range numbers NWSE Sec 31
T 8N R 21E

3. Owner ☒ or Agent ☐ Bertha Doornik Name of individual, partnership or firm

4. Mail Address 5101 No. Lovers Lane Complete address required

5. From well to nearest: Building 15 ft; sewer 35 ft; drain 15 ft; septic tank 72 ft;
dry well or filter bed 10 ft; abandoned well 25 ft.

6. Well is intended to supply water for: home

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	25	6	25	125

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel pipe	0	53

9. GROUT:

Kind	From (ft.)	To (ft.)
Slush	0	25

11. MISCELLANEOUS DATA:

Yield test: 1 Hrs. at 20 GPM.

Depth from surface to water-level: 34 ft.

Water-level when pumping: 45 ft.

Water sample was sent to the state laboratory at:

Madison on Aug. 30 1961
City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Clay	0	41
sand c.	11	52
limestone ls.	1	53
limestone cl.	47	100
limestone w.	25	125

RECEIVED

SEP 7 1961

SANITARY

Construction of the well was completed on Aug. 30 1961

The well is terminated 10 inches
☒ above, below ☒ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Modern Pump & Well Drilling Co. Registered Well Driller Complete Mail Address 14350 W. Capitol Dr. Brookfield, Wis.

Please do not write in space below

Rec'd SEP 1 1961 No. 34751

Ans'd _____

Interpretation SAFE—BACTERIOLOGICAL

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. _____

48 hrs. 784391 plot

Confirm _____

B. Coli 6-29-000

Examiner _____

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

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

2. Location S. E. Cor of N. 108 th St. and W. Villard Ave
 Name of street and number of premise or Section, Town and Range numbers

NE NE SE Sec 31 T8 N
R21 E 3. Owner ☐ or Agent ☐ Engle burg School District No. 16
 Name of individual, partnership or firm

4. Mail Address 9003 W. Appleton Ave. Milwaukee 18 Wisconsin
 Complete address required

5. From well to nearest: Building 16 ft; sewer not installed yet ft; drain not installed yet ft; septic tank

dry well or filter bed none ft; abandoned well none ft.

6. Well is intended to supply water for: School

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
14	0	23			
8	0	251			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
14	.316 Wall blk.	0	23
8	.280 Wall blk.	0	54-10

9. GROUT:

Kind	From (ft.)	To (ft.)
neat cement	6	23

11. MISCELLANEOUS DATA:

Yield test: 38 Hrs. at 70 GPM.

Depth from surface to water-level: 16 ft.

Water-level when pumping: 50 ft.

Water sample was sent to the state laboratory at:

Madison on 6/5 1956
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
clay	0	16
sand gravel	3	19
clay stony	30	49
sand	4	53
limestone	146	209
limestone crevice	7	216
limestone	35	250

Construction of the well was completed on:

June 5 1956

The well is terminated 8 inches
☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature Garber & Son B.G. Garber 5807 W. Hampton Rd Milwaukee 18
 Registered Well Driller Complete Mail Address

Please do not write in space below

Rec'd JUN - 6 1956 No. 16749

Ans'd

Interpretation **SAFE**

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs. 0 0 0 0

48 hrs. 0 0 0 0

Confirm

B. Coli 9/5

Examiner

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH ML-428

See Instructions on Reverse Side

1. County Waukesha (Town ☐ Village ☐ City ☒ Waukesha
C, E, NE, SE Sec 31 T8N R21E Check one and give name

2. Location Between W. 107 & 103, and 1/2 block south of W. Villard
 Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☐ Harvest Estates Subdivision
 Name of individual, partnership or firm

4. Mail Address Room 6009, 161 W. Wisconsin Ave. Milwaukee 3, Wis.
 Complete address required

5. From well to nearest: Building ft; sewer 150 ft; drain ft; septic tank ft;
 dry well or filter bed ft; abandoned well ft.

6. Well is intended to supply water for: Community Water System

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
16	0	40			
10	40	250			

8. CASING AND LINER, PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
16	Steel	0	40
10	Steel	0	67

9. GROUT:

Kind	From (ft.)	To (ft.)
Cement	0	40

11. MISCELLANEOUS DATA:

Yield test: 24 Hrs. at 205 GPM.

Depth from surface to water-level: 15 ft.

Water-level when pumping: 155 ft.

Water sample was sent to the state laboratory at:

Madison on March 27 1957
 City

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Glacial Drift	0	67
Niagara Limestone	67	250

RECEIVED

MAR 29 1957

ENVIRONMENTAL
SANITATION

Construction of the well was completed on:

March 15 1957

The well is terminated 18 inches

☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion?

Yes ☒ No ☐

Was the well sealed watertight upon completion?

Yes ☒ No ☐

Signature MYLAER WELL DRILLING CO.
Ralph E. Milager
 Registered Well Driller

1245 N. 62nd St., Milwaukee 13, Wis.
 Complete Mail Address

Please do not write in space below

Rec'd No

Ans'd

Interpretation

OC: THWAITES
1 DIST #2
1 FILE
sent 4-12-57

10 ml 10 ml 10 ml 10 ml 10 ml

Gas—24 hrs.

48 hrs.

Confirm 784393 plot

B. Coli

Examiner

WELL NO. 1, HARVEST ESTATES SUBDIVISION, MILWAUKEE, MILWAUKEE CO., WIS.

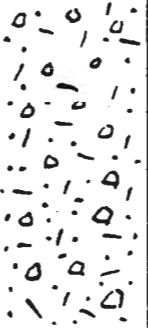
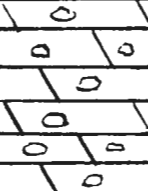
NE 1/4, NE 1/4 SE 1/4 sec. 31, T. 8 N., R. 21 E.

3/15

Milaeger Well Drilling Co., Contractors, 1957

Samples examined by F. T. Thwaites and J. B. Steuerwald, Nos. 19508, 195097

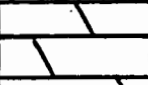
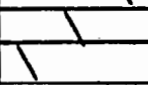
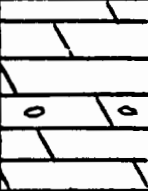
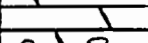
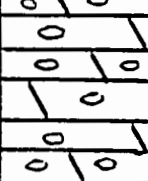
ALT 720 ETM

D R I F T	0-70	70		Till, gray, dolomitie	16" pipe cement 40 45 water 10" pipe 67
	70-80	10		Dolomite, medium gray, much drift	
	80-165	25		Dolomite, light to medium gray	
	165-205	40		Dolomite, light gray; chert, white	
	205-250	45		Dolomite, medium gray	10" hole
N I A G A R A	180				

Tested 24 hours at 205 g.p.m. specific capacity = 1.37 g.p.m./ft.

Zdditional copies may be secured from Wisconsin Geological Survey, Science Hall, Madison 6, Wis.

BUTLER (TEWS) LIME AND CEMENT CO., WELL, BUTLER, MILWAUKEE CO., WIS.
 SW 1/4 sec. 31, T. 8 N., R. 21 E. 12005 W. Hampton Ave.
 Milaeger Well Drilling Co., 1957
 Samples examined by F. T. Thwaites and J. B. Steuerwald, Nos.
 194884-194899

65	0-65	65		Till, gray, dolomitic	16" pipe cement 20 30 water 10" pipe
	65-90	25		Dolomite, light gray, some medium gray	75
180	90-105	15		Dolomite, light to medium gray, yellow-gray, broken	
	105-135	30		Dolomite, light to medium gray, yellow-gray	
	135-150	15		Dolomite, light to medium gray	
	150-190	40		Dolomite, light gray, light yellow-gray, very little chert, white	10" hole
	190-200	10		Dolomite, light gray	
	200-205	5		Dolomite, lt. gray, lt. yellow-gray	
	205-245	40		Dolomite, light gray; chert, white	

Tested 8 hours at 150 g.p.m. specific capacity = 1.38 g.p.m./ft.

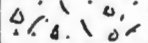
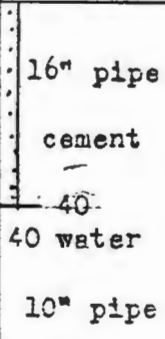
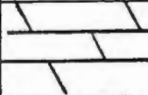
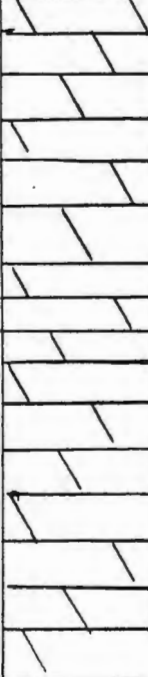
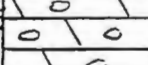
Additional copies may be secured from Wisconsin Geological Survey, Science Hall, Madison 6, Wis.

WELL NO. 2, HARVEST ESTATES SUBDIVISION, MILWAUKEE, MILWAUKEE CO., WIS.

SE¹/₄ sec. 31, T. 8 N., R. 21 E.

Milaeger Well Drilling Co., Contractors, 1957

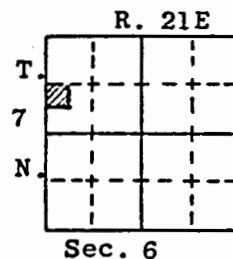
Samples examined by F. T. Thwaites and J. B. Steuerwald, Nos. 195109

D R I F T	0-10	10		Till, red-brown to brown gray, dolomitic	
	10-75	65		Till, gray, dolomitic	
	75-95	20		Dolomite, medium gray, broken, drift	
95	95-235	140		Dolomite, medium to light gray	
155	235-250	15		Dolomite, light gray; chert, white	

Tested 8 hours at 200 g.p.m. specific capacity = 1.25 g.p.m./ft.
Additional copies may be secured from Wisconsin Geological Survey, Science Hall, Madison 6, WIS.

Well name S.K. Williams Co., Well #1
Wauwatosa Township
Owner.... S.K. Williams Co.
Address.. 4650 North 124th Street
Wauwatosa, Wisconsin
Driller.. Layne-Northwest Co.
Engineer.

County: Milwaukee
Completed... 7/68
Field check.
Altitude.... 740' ETM
Use..... Manufacturing
Static w.l.. 235'
Spec. cap... 3.3



Quad. Wauwatosa 7 1/2'

Drill Hole

Casing & Liner Pipe or Curbing

Dia.	from	to	Dia.	from	to	Dia.	Wgt. & Kind	from	to	Dia.	Wgt. & Kind	from	to
10"	0'	123'	10"	564'	1500'	16"	A-53 Grade B 3/8 Wall, Welded	0'	123'	10 3/4"	A-53 Grade B .365 Wall Welded	+6"	564'
1 1/4"	123'	564'											

Grout: Kind	from	to
Neat cement	0'	564'

Samples from 0' to 1500' Rec'd: 8/7/68 Studied by: M. Roshardt Issued: Oct. 1970
Formations: Drift, Silurian Undifferentiated, Maquoketa Shale, Sinnipee Group, St. Peter Sandstone, Woneoc Sandstone, Eau Claire Sandstone, Mt. Simon Sandstone
Remarks: Well tested for 12 hours at 250 gpm with 75' of drawdown.

LOG OF WELL:

	Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
					Mode	Range	
I	0-5		Gravel	Mixed	S pab	Gran/L pab	Dolomite, trap, chert. Much mixed sand. Tr silt, clay.
	5-10		"	"	M pab	Gran/L pab	Same
	10-15		"	"	"	Gran/M pab	Same but little clay.
	15-20		Clay	Gray red	Clay	--	Calcareous. Trace silt, sand, granules.
	20-25		"	"	"	--	Same but few granules.
	25-30		"	"	"	--	Calcareous. Few granules, small pebbles. Trace st, sand.
	30-35		"	"	"	--	Calcareous. Trace granules, small pebbles, sand, silt.
	35-40		"	"	"	--	Same
	40-45		"	"	"	--	"
	45-50		"	"	"	--	"
	50-55		"	"	"	--	"
	55-60		"	"	"	--	"
U	60-65		Gravel	"	S pab	Gran/S pab	Much calcareous clay. Trace sand.
	65-70		"	"	"	Gran/M pab	Same
	70-75		"	"	"	Gran/S pab	"
	75-80		"	"	"	Gran/M pab	"
	80-85		Clay	"	--	--	Calcareous. Trace sand, gravel.
	85-90		Gravel	"	S pab	Gran/S pab	Much calcareous clay. Trace sand.
	90-95		Clay	"	--	--	Calcareous. Trace sand, gravel.
	95-100		Gravel	"	S pab	Gran/M pab	Much calcareous clay. Trace sand.
	100-105		"	"	"	"	Same
	105-110		"	"	"	"	"
	110-115		"	"	M pab	"	"
	115-120		Clay	"	--	--	Calcareous. Trace sand, gravel.
U	120-125		Dolomite	Olive gry	Fn	Fn/M	--
	125-130		"	"	"	"	--
	130-135		"	"	"	"	--
	135-140		"	"	"	"	--
	140-145		"	"	"	"	--
	145-150		"	Tan	"	"	--
	150-155		"	"	"	"	--
	155-160		"	"	"	"	--

Well name: S.K. Williams Co., Well #1

	Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
					Mode	Range	
S	140-165		Dolomite	Oliva gry	Fn	Fn/M	--
I	165-170		"	"	"	"	--
L	170-175		"	"	"	"	--
U	175-180		"	"	"	"	--
R	180-185		"	"	"	"	--
I	185-190		"	"	"	"	--
A	190-195	Δ / Δ	"	"	"	"	Little white chert.
N	195-200	Δ / Δ	"	"	"	"	Same
	200-205	Δ / Δ	"	"	"	"	"
	205-210		"	"	"	"	Trace pyrite.
U	210-215	Δ Δ	"	"	"	"	Little white chert. Trace pyrite.
N	215-220	Δ /	"	"	"	"	Trace chert, pyrite.
D	220-225	Δ /	"	"	"	"	Same
I	225-230	Δ /	"	"	"	"	"
F	230-235	Δ Δ / Δ	"	"	"	"	Much chert. Trace pyrite.
E	235-240	Δ Δ Δ / G	"	"	"	"	Same plus trace glauconite.
R	240-245	G Δ Δ / Δ	"	"	"	"	Same
E	245-250	Δ / Δ Δ G	"	"	"	"	"
N	250-255	G Δ / Δ Δ	"	"	"	"	"
T	255-260	Δ Δ / Δ G	"	"	"	"	"
I	260-265	Δ Δ Δ / G	"	"	"	"	"
A	265-270	Δ G Δ Δ /	"	"	"	"	"
T	270-275	G / Δ Δ Δ	"	"	"	"	"
E	275-280		"	"	M	"	--
D	280-285		"	"	"	"	--
	285-290	Δ /	"	"	"	"	Trace chert.
	290-295	Δ /	"	"	"	"	Same
	295-300	Δ /	"	"	"	"	"
	300-305	Δ /	"	"	"	"	"
	305-310	Δ /	"	"	"	"	"
	310-315		"	"	"	"	--
	315-320		"	"	"	"	--
	320-325		"	"	"	"	--
	325-330		"	"	"	"	--
	330-335		"	"	"	"	--
	335-340	Δ /	"	"	Fn	"	Trace chert.
	340-345	Δ /	"	"	M	"	Same
	345-350	Δ /	"	"	"	"	"
	350-355		"	Tan & gry	Fn & M	"	--
245	355-360	Δ / G	"	"	"	"	Trace glauconite, pyrite, chert.
	360-365	Δ /	"	"	"	"	Trace pyrite, chert.
M	365-370	≡ G	Dolomite	Green gry	M	Fn/M	Little shale. Trace pyrite, glauconite, fossil frag-
A	370-375	G	"	Gray	"	"	Same but trace shale.
Q	375-380		"	"	"	"	Same but no glauconite.
U	380-385		"	"	"	"	Same
O	385-390		"	Green gry	"	"	"
K	390-395		"	"	"	"	"
E	395-400		Shale	Gray	--	--	Little dolomite.
T	400-405		Dolomite	Green gry	M	Fn/M	Trace pyrite, shale, fossil fragments.
A	405-410		Shale	Brown	--	--	Dolomitic.
S	410-415		"	"	--	--	Same
H	415-420		"	Green gry	--	--	Little dolomite.
A	420-425		"	"	--	--	Same
L	425-430		"	Brown	--	--	Dolomitic.
E	430-435		"	Green gry	--	--	Trace dolomite.
	435-440		"	"	--	--	Same
	440-445		"	"	--	--	"
	445-450		"	"	--	--	"
	450-455		"	"	--	--	"
	455-460		"	"	--	--	"
	460-465		"	"	--	--	"
	465-470		"	"	--	--	"
	470-475		"	"	--	--	"
	475-480		"	"	--	--	"
	480-485		"	"	--	--	"
	485-490		"	"	--	--	"

Well name: S.K. Williams Co., Well #1

Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
				Mode	Range	
480-485		Shale	Green gray	--	--	Trace dolomite.
485-500		"	Gray	--	--	"
500-505		"	"	--	--	"
505-510		"	"	--	--	"
510-515		"	"	--	--	Trace dolomite.
515-520		"	"	--	--	Same
520-525		"	"	--	--	"
525-530		"	"	--	--	"
530-535		"	"	--	--	"
535-540		"	"	--	--	Little dolomite.
540-545		"	"	--	--	Trace dolomite.
545-550		"	"	--	--	Same
550-555		"	"	--	--	Little Serrinea dolomite.
555-560		Dolomite	Brown	M	--	Trace pyrite, fossil fragments.
560-565		"	"	"	--	Same
565-570		"	"	"	--	"
570-575		"	"	"	--	"
575-580		"	"	"	--	"
580-585		"	"	"	--	"
585-590		"	"	"	--	"
590-595		"	"	"	--	"
595-600		"	"	"	--	"
600-605		"	"	"	--	"
605-610		"	"	"	--	"
610-615		"	"	"	--	"
615-620		"	"	"	--	"
620-625		"	"	"	--	"
625-630		"	"	"	--	"
630-635		"	"	"	--	"
635-640		"	"	"	--	"
640-645		"	"	"	--	"
645-650		"	"	"	--	"
650-655		"	"	"	--	"
655-660		"	"	"	--	Trace pyrite.
660-665		"	"	"	--	Same
665-670		"	"	"	--	"
670-675		"	"	"	--	"
675-680		"	"	"	--	"
680-685		"	"	"	--	"
685-690		"	"	"	--	"
690-695		"	"	"	--	"
695-700		"	"	"	--	"
700-705		"	"	"	--	"
705-710		"	Brown & gray	"	--	Fav fossil fragments. Trace pyrite.
710-715		"	"	"	--	Same
715-720		"	"	"	--	"
720-725		"	"	"	--	"
725-730		"	Brown	"	--	Trace pyrite.
730-735		"	"	"	--	Same
735-740		"	"	"	--	"
740-745		"	"	"	--	"
745-750		"	"	"	2-4/M	"
750-755		"	"	"	"	"
755-760		"	"	"	"	"
760-765		"	Gray	Fr	"	Trace fossil fragments, pyrite, red speckling.
765-770		"	"	"	"	Same
770-775		"	"	"	"	"
775-780		"	"	"	"	"
780-785		"	"	"	"	"
785-790		Sandstone	"	M & C	Fr/C	Much dolomite cement. Little dolomite. Trace pyrite.
790-795		"	"	"	"	Little dolomite cement. Trace pyrite.
795-800		"	"	"	"	Same
800-805		"	"	"	"	Little silica-dolomite-pyrite cement.
805-810		"	"	"	"	Little dolomite-silica-pyrite cement. Tr br pyritic shale
810-815		"	Light gray	C	"	Trace dolomite-silica-pyrite cement.
815-820		"	"	M & C	"	Same

Well name: S.K. Williams Co., Well #1

	Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
					Mode	Range	
S T. P E T E R S A N D S T O N E	820-825		Sandstone	Light gray	C	Vfn/VC	Trace dolomite-pyrite cement, green shale.
	825-830		"	"	"	"	Same
	830-835		"	"	"	"	"
	835-840		"	"	"	Fn/VC	Same but no shale.
	840-845		"	"	C	"	Same
	845-850		"	"	"	"	Same plus trace green shale.
	850-855		"	"	C AVC	"	Trace silica-pyrite cement.
	855-860		"	"	C	"	Same plus trace dolomite cement.
	860-865		"	Yl or gray	Fn	Vfn/M	Much dolomitic clay matrix.
	865-870		"	"	"	Vfn/C	Same
	870-875		"	"	M	"	Same plus trace dolomite, green shale.
	875-880		"	"	Fn	"	Much dolomitic clay matrix.
	880-885		"	"	"	"	Same
	885-890		"	"	Fn & M	"	Little dolomitic clay matrix.
	890-895		"	"	"	"	Same
	895-900		"	"	"	"	"
	900-905		"	"	M	"	Trace matrix, pyrite.
	905-910		"	"	"	"	Same plus trace dolomite cement.
	910-915		"	"	Fn	"	Trace dolomitic clay matrix, pyrite, green gray shale.
	915-920		"	Tan gray	"	"	Trace clay matrix, pyrite.
210' W O N E W O C 40'	920-925		"	"	Fn & M	"	Same
	925-930		"	"	Fn 2C	"	"
	930-935		"	"	"	"	"
	935-940		"	"	"	"	"
	940-945		"	"	M	"	"
	945-950		"	"	"	Vfn/VC	"
	950-955		"	"	"	Vfn/C	"
	955-960		"	"	"	"	"
	960-965		"	"	"	"	"
	965-970		"	"	"	"	"
	970-975		"	"	"	"	"
	975-980		"	"	"	"	"
	980-985		"	Yellow gray	"	"	Trace clay matrix, white chert.
	985-990		"	"	"	"	Trace clay matrix, pyrite, green shale.
	990-995		"	"	"	"	Little clay matrix. Trace chert, pyrite.
	995-1000		"	Gray or pink	"	Vfn/M	Trace limonite.
	1000-1005		"	"	"	"	Same
	1005-1010		"	"	"	Vfn/C	"
	1010-1015		"	"	"	"	Trace limonite, pyrite, clay matrix.
	1015-1020		"	Tan gray	"	"	Same
E A U C L A I R E 75' M T. S I M O N	1020-1025		"	"	"	"	Little matrix. Trace limonite, pyrite, green gray shale.
	1025-1030		"	"	"	"	Same but little shale.
	1030-1035		"	"	"	"	Same
	1035-1040		"	Gray	"	"	Much dolomite cement. Trace pyrite, shale.
	1040-1045		"	Pink	"	"	Much dolomite cement, gray green shale. Ltl clauconite.
	1045-1050		"	"	"	"	Same
	1050-1055		"	Red brown	Fn	"	Same plus little red shale.
	1055-1060		"	"	"	"	Same
	1060-1065		"	"	M	"	Little dolomite cement, red & green gray shales, clau.
	1065-1070		"	"	"	"	Same but trace of all.
	1070-1075		"	"	"	"	Same
	1075-1080		"	"	"	"	Same but little dolomite cement.
	1080-1085		"	Orange bn	"	Fn/VC	Little matrix. Trace dolomite cement, pyrite.
	1085-1090		"	"	"	Vfn/C	Little matrix.
	1090-1095		"	"	"	"	Little matrix. Trace dolomite cement.
	1095-1100		"	"	"	"	Little matrix. Trace gray green shale.
	1100-1105		"	Pink brown	"	"	Little dolomitic cement. Trace green-red shales.
	1105-1110		"	"	"	"	Same
	1110-1115		"	Yellow gray	"	Fn/VC	Much dolomite cement.
	1115-1120		"	"	"	"	Same
	1120-1125		"	"	"	"	"
	1125-1130		"	Tan	"	Fn/C	Little dolomite cement.
	1130-1135		"	"	"	Vfn/C	Trace dolomite cement.
	1135-1140		"	Pink brown	"	"	Same plus trace red & green shales.
	1140-1145		"	"	"	"	Same
	1145-1150		"	"	"	"	"

Well name: S.K. Williams Co., Well #1

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Depths	Graphic Section	Rock Type	Color	Grain Size		Miscellaneous Characteristics
				Mode	Range	
1150-1155		Sandstone	Tan	M	Vfn/C	Trace dolomite cement. Tr red & gn shales. Tr matrix.
1155-1160		"	"	"	"	Same
1160-1165		"	"	"	"	"
1165-1170		"	Pink gray	"	"	Much dolomite cement. Trace pyrite.
1170-1175		"	Tan	"	"	Little dolomite cement. Trace pyrite, green shale.
1175-1180		"	"	"	"	Little matrix. Trace dolomite cement.
1180-1185		"	"	"	"	Same
1185-1190		"	Pink gray	"	"	"
1190-1195		"	"	"	"	"
1195-1200		"	Tan	"	"	"
1200-1205		"	"	M & C	"	"
1205-1210		"	"	M	"	Same plus trace pyrite.
1210-1215		"	Yellow gray	"	"	Same plus trace green shale.
1215-1220		"	"	"	"	Little matrix. Trace dolomite cement.
1220-1225		"	"	M	Fn/C	Same
1225-1230		"	"	M & C	Fn/VC	Little dolomite cement. Trace green shale.
1230-1235		"	"	M	"	Same
1235-1240		"	"	"	"	"
1240-1245		"	"	"	Vfn/VC	Little matrix. Trace dolomite cement, pyrite.
1245-1250		"	"	"	Vfn/C	Same
1250-1255		"	"	"	"	Trace matrix, cement.
1255-1260		"	"	"	"	Same
1260-1265		"	"	"	"	"
1265-1270		"	"	"	"	"
1270-1275		"	"	"	"	"
1275-1280		"	"	"	"	Little matrix. Trace dolomite cement.
1280-1285		"	"	"	"	Same
1285-1290		"	"	"	"	Trace matrix, dolomite cement, limonite.
1290-1295		"	"	"	"	Little matrix. Trace cement.
1295-1300		"	"	"	"	Trace matrix, dolomite cement, limonite.
1300-1305		"	"	"	"	Little matrix. Trace cement.
1305-1310		"	"	"	"	Same
1310-1315		"	"	"	Vfn/M	"
1315-1320		"	Pink gray	"	Vfn/C	Little matrix. Trace limonite, pyrite, green shale.
1320-1325		"	"	"	"	Same
1325-1330		"	"	"	"	"
1330-1335		"	"	"	"	Same but trace matrix.
1335-1340		"	Yellow gray	"	"	Same but no green shale.
1340-1345		"	"	M & C	Vfn/VC	Same
1345-1350		"	"	M	"	"
1350-1355		"	"	M & C	"	Same plus trace dolomite cement.
1355-1360		"	Pink gray	"	"	Little matrix. Trace dolomite cement, limonite, pyrite.
1360-1365		"	"	M	Vfn/C	Same plus trace green shale.
1365-1370		"	"	M & C	"	Same
1370-1375		"	Yellow gray	M	Vfn/VC	Little matrix. Trace dolomite cement, limonite.
1375-1380		"	"	"	Vfn/C	Same
1380-1385		"	"	"	"	"
1385-1390		"	"	"	"	Same plus trace green shale.
1390-1395		"	Pink gray	"	Vfn/VC	Same but much matrix.
1395-1400		"	Yellow gray	"	Vfn/C	Little matrix. Trace limonite.
1400-1405		"	"	"	"	Same plus trace green shale.
1405-1410		"	"	"	"	Same
1410-1415		"	"	"	"	Same but no shale.
1415-1420		"	"	M & C	Vfn/VC	Trace matrix, gray & green shales.
1420-1425		"	"	M	Vfn/C	Trace matrix, limonite.
1425-1430		"	"	"	"	Same
1430-1435		"	"	"	"	Same plus trace green shale.
1435-1440		"	"	Fn & M	"	Same
1440-1445		"	Yl pink gray	M	"	Same plus trace pyrite.
1445-1450		"	Yellow tan	"	"	Little matrix. Trace limonite.
1450-1455		"	"	"	"	Same plus trace green shale.
1455-1460		"	"	"	"	Much matrix. Trace limonite.
1460-1465		"	Pink gray	Fn	"	Trace matrix, limonite.
1465-1470		"	"	M	"	Little matrix. Trace limonite.
1470-1475		"	Pink brown	"	"	Little matrix. Trace dolomite, limonite, green shale.
1475-1480		"	"	Fn & M	"	Same

Page 6 of 6

PARKWAY HOMESITES WELL, WAUWATOSA, WIS.
 N. 11th and Ruby Sts. SE $\frac{1}{4}$, NE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 6, T.7N., R.21E.
 Milaeger Well Drilling Co., Contractors, 1956
 Samples examined by F. T. Thwaites and J. B. Steuerwald, Nos.
 187690-187847

	0-10	10		No samples		
	10-15	5		Till, gray, dolomitic		16" pipe cement 40
	15-20	5		No sample		
	20-120	100		Till, gray, dolomitic; no samples 35-40, 45-60, 70-75, 105-110, 115-120		10" pipe = 85 water
	120-125	5		Till, gray, dolomitic		
130	125-130	5		Sand, fine, gray		126
	130-165	35		Dolomite, light gray; no samples 145-150; 160-165		
	165-170	5		Dolomite, light gray; chert, white		10" hole
	170-180	10		Dolomite, light gray		
	180-185	5		Dolomite, light gray; chert, white		
	185-195	10		No samples		
	195-200	5		Dolomite, light gray	215-220	8" pipe cemented
	200-225	15		Dolomite, light gray; chert, white	N.S 200-210	
	225-230	5		Dolomite, light gray		
	230-235	5		Dolomite, light gray; chert, white		
	235-270	35		Dolomite, light gray; no samples 245-250, 255-270		
	270-290	20		Dolomite, light gray; chert, white no samples 280-285, 290-295		
	295-320	25		Dolomite, light gray		
	320-365	45		Dolomite, light gray; chert, white		
	365-385	20		Dolomite, light gray		
260	385-390	5		Dolomite, light gray; chert, white		
	390-415	25		Dolomite, lt. blue-gray to light gray; shale, light blue-gray, dolomitic		
	415-438	15		Shale, blue-gray, dolomitic		
	430-440	10		Dolomite, light brown-gray		
	440-510	70		Shale, blue-gray, dolomitic		
	510-515	5		Dolomite, light blue-gray		
	515-575	60		Shale, blue-gray, dolomitic; no samples 540-555, 560-570		
85	575-585	10		Dolomite, light brown-gray		585
	585-605	20		No samples		
	605-675	70		Dolomite, light gray; no samples, 635-640, 645-655		18" hole
	675-685	10		No samples		
	685-705	20		Dolomite, light gray		
	705-715	10		No samples		
	715-735	20		Dolomite, dark blue-gray, some light gray no samples 725-730		
	735-745	10		Dolomite, light gray		

V I L L E	265	745-760	15	No samples
		760-805	45	Dolomite, light gray; no samples 765-775, 780-785
		805-825	20	no samples 805-810, 815-825 Dolomite, very light gray, sandy
		825-840	15	Sandstone, fine to coarse, light gray, dol.
S T P E T E R	215	840-1055	215	Sandstone, fine to medium, light gray much very fine to medium; no sample 850-855 1030-1035
		1055-1095	40	Sandstone, fine, very dolomitic, glauconitic light pink to light gray; n.s. 1060-1065 1075-1085
		1095-1130	35	Sandstone, fine, dolomitic, light gray, some pink, some shale, green-gy; n.s. 1115-1120
		1130-1155	25	Sandstone, fine to medium, light gray
E A U C L A I R E	170	1155-1170	15	Sandstone, fine to medium, very dol, lt. gy, ph
		1170-1205	35	Sandstone, fine to medium, light gray
		1205-1225	20	Sandstone, fine to medium, very dol, lt. gy, ph
		1225-1240	15	Sandstone, fine to medium, light gray
M T S I M O N	175	1240-1360	120	Sandstone, fine to medium, light gray; no sample 1265-1275
		1360-1400	40	No samples

8" hole

Formations: Drift; Niagara; Richmond (Maquoketa); St. Peter; Eau Claire; Mt. Simon
 Many samples lost because of wet tags
 Tested at 250 g.p.m. specific capacity = 1.61 g.p.m./ft.
 Additional copies may be secured from Wisconsin Geological Survey, Science Hall, Madison 6, Wi-

Chicago and North Western
Transportation Company

June 13, 1994



Ms. Pamela Mylotta
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, Wisconsin 53212

Safety, Rules and Casualty Prevention
165 N. Canal St.
Chicago, Illinois 60606

Re: FID # 241012860
ERR/ERP

Dear Ms. Mylotta:

The CNW is in receipt of your letter dated May 25, 1994 regarding the above referenced site. The following is the requested information:

- 1.) The CNW's consultant; Dahl and Associates, 4390 McMenemy Road, St. Paul, Minnesota 55127, will be directing subsequent investigations.
- 2.) Since the reported release was detected as a part of the CNW's 1994 Site Investigation Program, a work plan for which has been previously submitted to the WDNR for review and comment, a large portion of the work required for a remedial investigation has been completed. The next step will be the submittal of a site specific Work Plan to the WDNR for review and approval. The work will be scheduled subsequent to WDNR approval.

If you have any questions, feel free to contact me at 312-559-6585.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brock A. Nelson".

Brock A. Nelson
Director of Environmental Control

cc. D.R. York
Craig Denny-Dahl

Spill ID Number

Y Y M M D D 0-99

Date of Incident CHRONIC	Day of Week	Time of Incident ☐ A.M. ☐ P.M.	Reported By (Name) CRAIG DENNY	Telephone Number (612) 490-2905
Date Reported 5.12.94	Day of Week THUR	Time Reported 0830 ☒ A.M. ☐ P.M.	Agency or Firm Reporting DAHL & ASSOC.	Reported thru Div. Emergen. Gov't. ☐ Yes ☒ No
Substance Involved #2 FUEL	Quantity UNK	Units	Person or Firm Responsible CHICAGO & NORTHWESTERN	
Substance Involved	Quantity	Units	Contact Name DON YORK	Telephone Number (312) 559-6127

Physical Characteristics

☐ Solid ☒ Liquid Color _____

☐ Semisolid ☐ Gas Odor _____

Address — Street or Route
1 NORTHWESTERN CTR

City, State, Zip Code
CHICAGO, IL 60606

Cause of Incident
RELEASES FROM AST - CHRONIC

Exact Location, Description (intersection, mileage, etc.)
4823 N. 119 ST (BUTLER YARD)

County Location
MILWAU

1/4, 1/4, Section, Town, Range
FID# 241012860

_____, _____, _____, T _____, N, R _____

DNR Dist
SE

DNR Area
SEH

Groundwaters Affected
☒ Yes ☐ No ☐ Potential

Surface Waters Affected
☐ Yes ☐ No ☒ Potential

Name of Surface Water

Date District Notified
5.12.94

Day of Week
THUR

Time District Notified
0830
☐ A.M.
☐ P.M.

District Person Notified
JEFF WILLIAMS

Telephone Number
(414) 961-2728

Date Investigated

Day of Week

Time Investigated
☐ A.M.
☐ P.M.

Person Investigating

Telephone Number
()

Action Taken By DNR

☐ No Action Taken ☐ Investigation ☐ Supervise/Conduct Cleanup

☒ Spiller Required To Take Action; Type **INVESTIGATE; REMEDIATE**

☐ Contractor Hired By DNR; Name _____

☐ Amount Recovered _____

☐ 29.29 Enforcement

Other Agencies on Scene

Local **NONE**

State _____

Federal _____

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 **RAILROAD YARD**

Spilled Substance Destination

☐ Air

☒ Soil

☐ Groundwater

☐ Surface Water

☐ Storm Sewer

☐ Sanitary Sewer

☐ Contained/Recovered

☐ Other _____

Person Filing This Report (print name)
JEFF WILLIAMS

Signature
Jeff Williams

Date Signed
5.12.94

Additional Comments:

FREE PRODUCT IN 3 MWS-INSTALLED AS INITIAL INVEST.

NO USTS KNOWN TO BE ON SITE



Carroll D. Besadny
Secretary

September 8, 1992

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

FILE COPY
MAILED 9/14/92

Southeast District
2300 N. Dr. Martin Luther King Jr. Dr.
Post Office Box 12436
Milwaukee, Wisconsin 53212
Telephone: 414-263-8500
Telefax: 414-263-8483

File Ref: Milwaukee Co.
ERRP/ERP

Mr. D. R. York
Chicago and North Western Transportation Company
One North Western Center
Chicago, Illinois 60661

Dear Mr. York:

RE: Chicago and North Western "Butler Yard" Property
119th Street and Hampton Road, Wauwatosa, Wisconsin

The Wisconsin Department of Natural Resources (WDNR) has been notified that petroleum hydrocarbon contamination was discovered during a subsurface investigation performed in the summer and fall of 1991 at the above referenced location. The purpose of this letter is to inform you of your legal responsibilities to address this situation.

The WDNR proceeds in contamination cases under the authority of s. 144.76, Wisconsin Statutes, commonly referred to as Wisconsin's Hazardous Substance Spill Law. The definition of "hazardous substance" as found in s. 144.01(4m), Wisconsin Statutes, includes any discharged solid, semisolid, liquid or gaseous substance, such as petroleum hydrocarbons, that can cause harm to the environment or human health.

Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempt under sub. (9)."

Wisconsin Statute 144.76(3) states: A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

Because Chicago and North Western is the legal owner of a property where a hazardous substance has been released to the environment, the WDNR identifies Chicago and North Western as the party responsible for taking the actions necessary to restore the environment. You are required to:

1. Immediately identify any risks of explosive vapors, free product and/or well contamination, notify the WDNR of those risks and undertake measures to remedy any emergency conditions.
2. Conduct an investigation to determine the extent of contamination, the potential for groundwater impacts and the remedial action(s) necessary to clean up contaminated soil and groundwater.

3. Develop and carry out a remedial action plan for the site in accordance with state laws, regulations and guidance.
4. Treat or dispose of all remediation residuals (products, soils, air emissions, wastewater or sludges) in compliance with all applicable federal, state and local laws and regulations.

The last major submittal for this site was received by the WDNR on December 6, 1991. This was an investigation report, prepared by Graef, Anhalt, Schloemer and Associates, Inc., which indicated that soil contamination, possibly related to spills of petroleum products, exists at the site. The investigation performed by Graef, Anhalt, Schloemer did not define the extent and degree of contamination, an essential step in determining what remedial actions are needed at the site. The December 3, 1991 letter to the WDNR from you indicated that you are proposing to excavate contaminated soils. The WDNR cannot provide an evaluation of that proposal without more detail on the extent and degree of soil contamination, its relationship to potential source areas and the monitoring wells and a description of the specific extent of remedial actions to be taken.

Due to the WDNR workload, it is necessary to rank all contamination cases for review priority. The highest priority sites have assigned WDNR project managers who are actively reviewing and approving investigation and remediation plans. Lower priority cases do not always have assigned WDNR project managers, however, responsible parties are required to proceed with investigation and clean-up efforts. Based on the information currently known about this site, the WDNR has assigned it a lower priority status. Although your case will not likely receive direct WDNR oversight, you should proceed to submit all plans and reports, as well as quarterly status updates, to this office. The WDNR will notify you if active oversight is to be given to your site.

The WDNR suggests that you have a qualified environmental engineer or hydrogeologist direct the remedial investigation, assess the environmental impact and coordinate the implementation of a clean-up program. A document titled "Selecting an Environmental Consultant" and a consultant listing are enclosed for your convenience. Your investigation should follow the requirements contained in the WDNR's latest "Remedial Investigation Checklist" (enclosed). You or your consultant may also request additional remedial response guidance documents from this office.

Within 30 days of receiving this letter, you should provide the WDNR with the following information:

1. The name of the individual/firm who will be directing the remedial actions at this site.
2. The date the remedial investigation will begin (or the date the next work phase will begin, if applicable).
3. Any existing investigation or remediation documentation that you have not already submitted to the WDNR.

Please be advised that, if you fail to respond within the time period stated above, or if you fail to take appropriate action, the WDNR has the authority to proceed with any of the following actions:

1. The WDNR may pursue further enforcement actions to require the appropriate remedial response to comply with s. 144.76, Wis. Stats. Violation of s. 144.76, Wis. Stats. may ultimately result in forfeitures of up to \$5,000 per day of violation.
2. The WDNR has the authority, under s.144.76(7), Wis. Stats., to take actions necessary to remediate the site and to seek reimbursement for all actual and necessary expenditures from responsible parties.

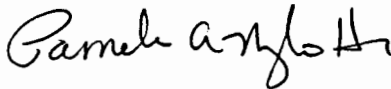
3. The WDNR may recommend that the site be included on the CERCLIS, for evaluation through the federal Superfund program. The EPA has the authority to carry out investigation and remediation at sites which meet the program criteria, and to seek reimbursement for its expenditures from responsible parties.

You should send the information requested in this letter and future submittals to me at the following address:

Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, Wisconsin 53212

Your cooperation in this matter will be appreciated. If you have any questions about this letter, please contact me at (414) 263-8667.

Sincerely,



Pamela A. Mylotta
Hydrogeologist, Environmental Repair Program

Enclosures: Selecting an Environmental Consultant
Consultants Listing
Remedial Investigation Checklist

c: SED Case File



One North Western Center
Chicago, Illinois 60606
312.559.6177

Richard B. Taylor
Vice President -
Real Estate and Office Services

April 21, 1992

Mr. Carl Evert, Director
Bureau of Real Estate
Department of Natural Resources
State of Wisconsin
P.O. Box 7921
Madison, WI 53707

Dear Carl:

Confirming our recent phone conversation, I am enclosing copies of three letters sent to three different DNR field offices concerning environmental issues relating to potential sales by the Transportation Company.

As of this date, we have not received responses to any of these letters.

Anything you can do to help us in this line would be sincerely appreciated.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Rich Taylor", written in a cursive style.

R. B. Taylor
Vice President
Real Estate & Office Services

Enclosures

DEPARTMENT OF
NATURAL RESOURCES
SED

1991 DEC -6 AM 11: 17



December 3, 1991

Ms. Sharon Shaver
Dept. of Natural Resources
P. O. Box 12436
Milwaukee, WI 53212

Safety, Rules and Casualty Prevention
One NorthWestern Center
Chicago, Illinois 60606

Dear Ms. Shaver:

Since you were the recipient of well construction logs for a phase 2 investigation of property in Milwaukee which was undertaken for us by Graef Anhalt Schloemer and Associates, I am relaying a copy of the Phase 2 report as it contains information which is required to be reported to the DNR.

This property is a rail yard used for storage and movement of rail cars. The investigation conducted by GAS concluded that groundwater was not impacted. However, levels of PAH's and TPH's were found in shallow samples at selected locations in the yard, primarily near track areas. Since the levels are in excess of Wisconsin DNR reporting requirements, this report is being forwarded to you for your review and comments.

The property is being proposed for use as a retail and wholesale lumber yard. Before this can be accomplished we need to resolve the issues raised in the phase 2 report.

Since water contamination has not been found, we are proposing to remove those shallow areas where above normal levels of oils and Pah's were found. We do not feel that this property warrants the type of cleanup which would normally be required if single family homes or apartment complexes were to be erected. This site will be a commercial site utilizing lumber products.

Please review the enclosed report and provide your comments regarding our proposed removal of the upper level of contaminated soil.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. R. York", written over the typed name.

D. R. York
Assistant Vice President
Environmental Control

cc: R. B. Taylor
T. E. Greenland



Safety, Rules and Casualty Prevention
One North Western Center
Chicago, Illinois 60606

December 2, 1991

Ms. Gina Keenan
Dept. of Natural Resources
2300 N. M.L. King Drive
Milwaukee, WI 53212

Dear Ms. Keenan:

I am in receipt of a report on a Chicago and North Western Railroad spur in Kenosha which is the subject of a proposed sale to the City of Kenosha.

The investigation, conducted by Gabriel-Midwest for the City of Kenosha, concluded that no hazardous components were present in the borings taken within the former track area. However, levels of TPH ranging between 34 and 451 PPM were found in 3 of the 4 samples tested.

Since the TPH level exceeds the DNR action level of 10 PPM, we are reporting these results to your office. As further information, the City of Kenosha intends to use this property for beautification, and I am told that it has already been seeded and planted for that purpose.

I have briefly discussed the results of the investigation with representatives of Gabriel-Midwest specifically to determine if groundwater may be affected. Based on the results of their report, groundwater was not impacted at 10 feet. While they could not give definitive information regarding possible groundwater impact, based on historical information on the surrounding area, it was estimated that groundwater was not expected to be observed above 30-40 feet.

Based upon the readings obtained, expected depth to groundwater, and the current use of the property, we are requesting approval from DNR to allow passive bioremediation of this area.

I am enclosing a copy of the Gabriel-Midwest report for your review and comments.

Sincerely,

A handwritten signature in cursive script, appearing to read "D. R. Work".

D. R. Work
Assistant Vice President
Environmental Control

cc: Ms. Sherry Krewson, City of Kenosha
R. B. Taylor
T. E. Greenland

December 2, 1991

414-263-8653



Safety, Rules and Casualty Prevention
One North Western Center
Chicago, Illinois 60606

Mr. Frank Fuja
Dept. of Natural Resources
2300 N. M.L. King Drive
Milwaukee, WI 53212

Dear Mr. Fuja:

I am in receipt of a report on a Chicago and North Western Railroad property located in Racine which is the subject of a proposed sale to a railroad salvage contractor.

The investigation, conducted by Environmental Audits, Inc. for the CNW, indicated that Naphthalene was detected in one soil sample and benzene was detected in a water sample at a level of 7.3 ppb which exceeds the enforcement standard of 5 ppb. In addition diesel oil was detected at varying concentrations primarily at depths of 1-6 feet.

Since the TPH, Naphthalene and Benzene levels exceed the DNR action levels, we are reporting these results to your office. As further information, the potential buyer intends to use this property for railroad salvaging operations essentially continuing its use for railroad purposes.

Based upon the intended use of the property and the relatively low levels of Naphthalene and Benzene found it was our intent to allow conditions to remain as is and, if the monitoring well is still operable, to monitor the benzene levels to determine if concentrations have dropped.

I am enclosing a copy of the Environmental Audits report for your review and comments.

Sincerely,

A handwritten signature in cursive script, appearing to read "D. R. York".

D. R. York
Assistant Vice President
Environmental Control

cc: R. B. Taylor
T. E. Greenland