



Corrective Action Report

Junction Food-N-Fuel Site
5493 Miller Trunk Hwy
Hermantown, Minnesota

MSA Project No. 00625001
MPCA Leak No. 3534

September 2013

Corrective Action Report

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September 2013

Prepared by:

Jon Hinkel, P.G.
Senior Project Hydrologist

Reviewed by:

Jeff Anderson, P.E.
Project Manager

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301 West 1st Street, Suite 408
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I. INTRODUCTION

Corrective Action Design Background

The Junction Food-N-Fuel site (Junction site, Figure 1) contains remnant gasoline impacts to its soils and groundwater which have been shown to extend beyond the Junction property boundaries. Specifically, the site's soil contaminant plume extends to the west and southwest of the Junction property boundaries, somewhat beneath the adjoining State Highway 53 right-of-way, and beneath the adjoining Radco / Turbo-Diesel property (Figure 2). The site's groundwater contaminant plume extends northwest of the Junction property boundary, and has impacted the adjacent Radco / Turbo-Diesel property's water supply well (designated as PW-5497) and an additional water supply well (designated as PW-4621) located on the next neighboring property owned by MMT Heating and Cooling (MMT) to the northwest (Figure 3).

Various corrective actions have been applied to the Junction site over its history. Recently however, the final corrective action goal has been established for this project to provide the site's two neighboring properties with safe drinking water. The principal objectives toward this goal have been as follows:

- provide support and assistance for a municipal water main to be extended to the area of the site; and
- provide private connections from the municipal water line extension to the two neighboring property facilities.

A Corrective Action Design for the project was compiled and submitted to the MPCA in July, 2012, with a project budget created and submitted to the Minnesota Department of Commerce's Petrofund (Petrofund) Program in March, 2013. Approvals from the MPCA and the Petrofund were received August 22nd, 2012, and March 21st, 2013, respectively. In addition to providing private connections to the water main, the MPCA requested that a confirmation indoor air sample be collected and analyzed from the Junction property building (now occupied by the Casa Latte Restaurant; see MPCA Correspondence, attached).

Installation of the Municipal Water Main

The city of Hermantown completed the installation of its planned water main extension during the late fall of 2012. Part of the installation required an excavation directed southeastward along the northeast margin of the Highway 53 from the highway's intersection with Lindahl Road, to a planned termination point located at the Junction property's highway entrance. Prior to the project's commencement, the portion of the excavation entering the area of the planned terminus was recognized as having the potential to intercept the western margin of the site's soil contaminant plume. During the excavation, an environmental technician visited the site, documented the progress of the excavation, screened excavated soils for petroleum-related organic vapors, and advised the excavation crew with regard to replacement of the excavated soil as backfill. Results of the excavation's monitoring revealed no excavated soils registering above 10 parts per million petroleum-related organic vapors, the MPCA threshold triggering the requirement for off-site disposal. Installation of the water main was completed, along with three spur lines and junction boxes for private connections. All excavated soils were then returned to the excavation. A full account of the excavation was summarized in: *Excavation Report, City of Hermantown Water Main Excavation* (TPT 96e-604: January, 2013).

Due to the seasonal advance of unfavorable weather conditions, scheduling of the follow-up private water line connections was postponed until the spring of 2013.

II. METHODS AND RESULTS

Private Water Line Connections

The site was revisited on June 20th, 2013 by Shelton Excavating (the excavation contractor) and MSA Professional Services (the environmental consultant). A horizontal boring was initiated near the Radco / Turbo-Diesel property water supply well, approximately 120 feet distant from the nearest mapped extent of the site's soil contaminant plume. The boring was driven using 2-inch diameter rod, and was extended southward, beneath the site's asphalt drive, toward the area of the water main's spur line junction boxes. No drill cuttings were produced during the operation. The municipal excavation was reopened in the area of the spur line junction boxes for the purpose of receiving the leading end of the horizontal boring. Due to rocky soils, the boring's planned course was diverted eastward several degrees, necessitating enlargement of the excavation southward, but remaining within the earlier water main's excavated area. The final reopened excavation measured approximately 6½ feet wide x 20 feet long x 9 feet deep. No groundwater was encountered or accumulated within the excavation during the short duration of its being open. No petroleum odors were observed during the excavation process. The soil stockpile generated adjacent to the excavation was sampled at 10 widely-spaced points, with each sample collected approximately 1 foot beneath the stockpile's surface. Each soil sample was individually sealed in a disposable plastic bag and allowed to generate potential head-space vapors for a minimum period of 10 minutes. The soil samples were then field screened for petroleum-related organic vapors using a portable photoionization detector (PID; equipped with a 10.6 eV lamp and calibrated to an isobutylene standard prior to field activities). PID readings ranged from 0.3 to 1.7 parts per million petroleum-related organic vapors (Table 1). Due to the low PID readings (<10 parts per million throughout the sample suite) the excavation contractor was given approval to use the excavated soil as backfill.

Due to the divergence of the horizontal boring, the appropriate spur line junction box was moved southward from its earlier position. A new 1 inch diameter copper line was then back-fed into the borehole from within the excavation as the drill rod was retracted. The final connections at the water main's spur line junction box and at the Radco / Turbo-Diesel facility were completed on June 21st, 2013. The excavation was backfilled with the excavated material.

The second private line installation (MMT property) was completed on June 25th and 26th, 2013. Prior to commencement, the excavation contractor's understanding of the locations of the site's known impacts was again confirmed. Due to the excessive distance separating the MMT property planned work from the site's known soil contaminant plume (approximately 250 feet), the drilling and excavation work proceeded without environmental monitoring, but with the arrangement that should evidence of petroleum contamination be encountered, the environmental technician would be called to the site immediately. The second water line installation and final connections were completed without evidence of petroleum contamination being encountered. All excavated soils were returned to the excavations as backfill.

As follow-ups to the municipal water line connections, the water supply wells of the Radco / Turbo-Diesel property and of the MMT property were abandoned and sealed on July 29th, 2013 by Denny's Well Drilling (see MDH Well Sealing Records, attached).

Confirmation Indoor Air Sampling

An indoor air sample was collected from the former Junction Food-N-Fuel building during a 24-hour period on July 2nd and 3rd, 2013 using a summa canister and analyzed for TO-15 parameters. Results of the interior air analysis revealed two relatively minor Intrusion Screening Value exceedences for the compounds 1,2-dichloroethane and trichloroethylene. Both of these are halogenated compounds, commonly associated with domestic and commercial cleaning agents, and may not be associated with the site's remnant petroleum contamination.

III. CONCLUSIONS / RECOMMENDATIONS

The final corrective action goal for this project, to provide the site's two neighboring properties with safe drinking water, has been achieved through direct connections to the city of Hermantown's municipal water supply. No contaminated soil or contaminated groundwater was generated during the project requiring special handling and disposal. The site's two impacted water supply wells have been abandoned and sealed to current Minnesota Department of Health (MDH) standards.



MSA Professional Services recommends that the Junction Food-N-Fuel site be reviewed for closure by the MPCA.

Upon receiving site closure, the following tasks will need to be completed:

- abandonment and sealing of the site's eight groundwater monitoring wells; and
- a forwarding of notification to the MPCA of the well abandonments.

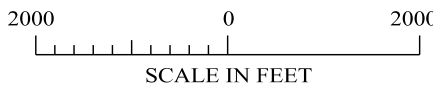
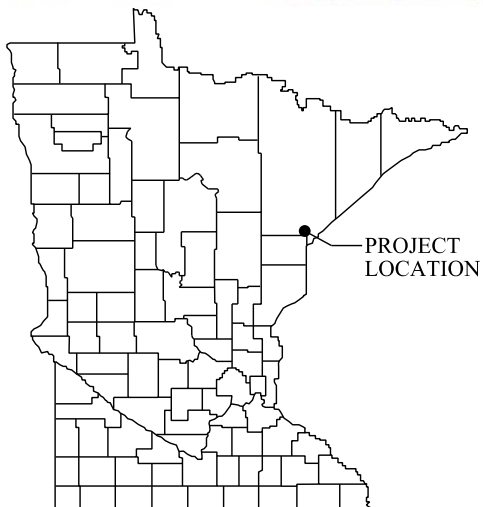
Please feel free to contact us at (218) 722-3915 if you have any questions or require additional information.

This report was completed September 14th, 2013.

	<u>09/12/2013</u>		<u>09/12/2013</u>
Jon Hinkel, P.G.	Date	Jeffrey K. Anderson, P.E.,	Date
Senior Project Hydrologist		Report Reviewer	
Environmental Department		Environmental Department	
MSA Professional Services,		MSA Professional Services, Inc.	
Inc.			

Attachments: Figures 1-4
 Tables 1,2, 17a, 17b
 Laboratory Report
 MDH Well Sealing Records
 MPCA Correspondence

FIGURES



**Adolph & Duluth Heights Quadrangle
Minnesota - St. Louis County
7.5 Minute Series (Topographic)**

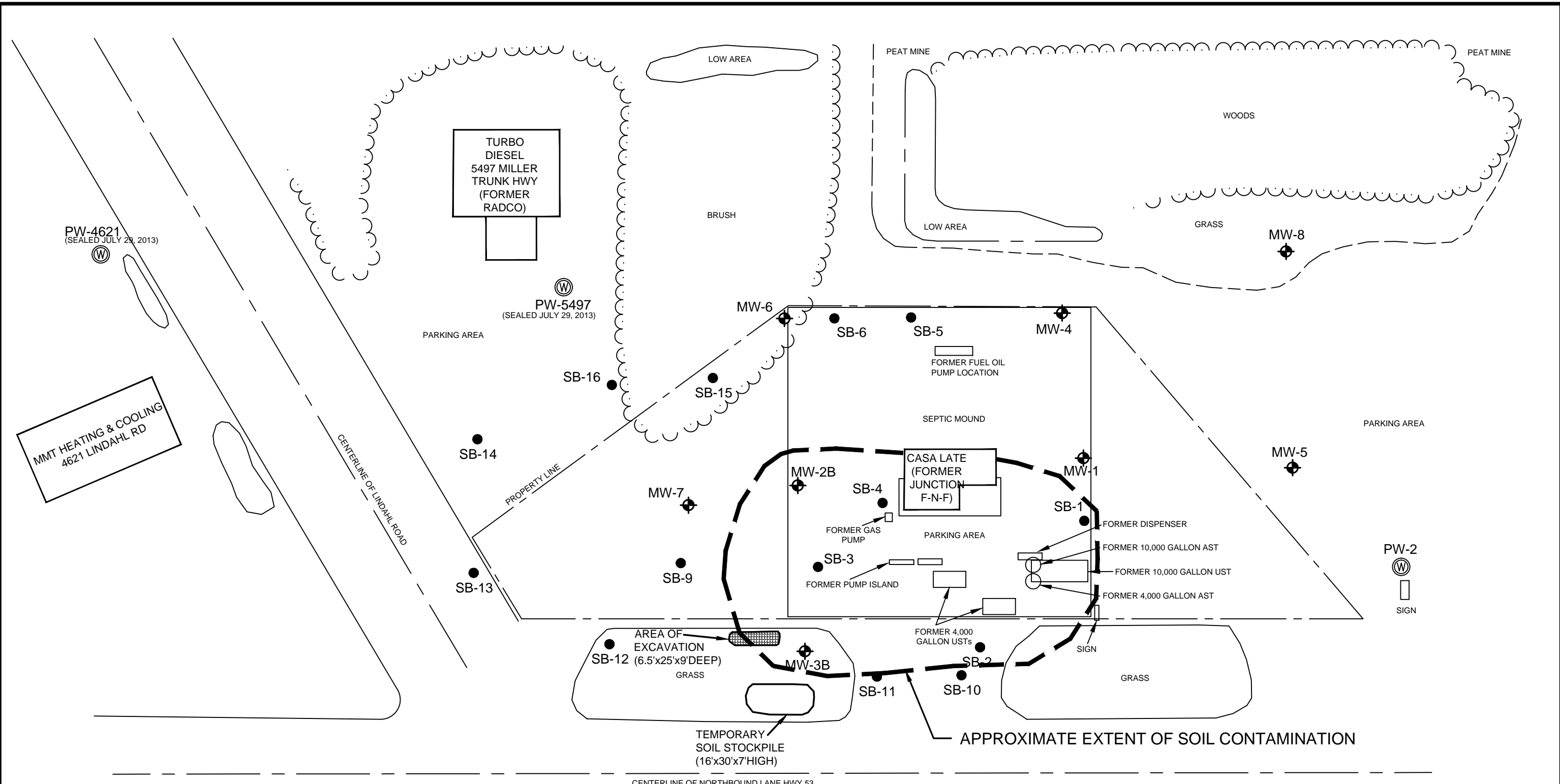
Contour Interval 10 Feet
1953
Photo Revised 1993

**FIGURE 1
SITE LOCATION MAP**

Junction Food N Fuel
5493 Miller Trunk Hwy
Hermantown, MN

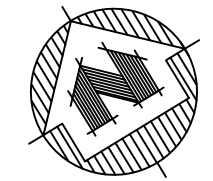
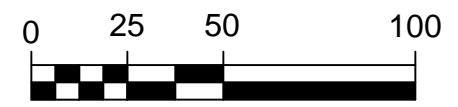


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715-362-3244 1-800-844-7854 Fax: 715-362-4116
Web Address: www.msa-ps.com



LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- PRIVATE DRINKING WATER WELL

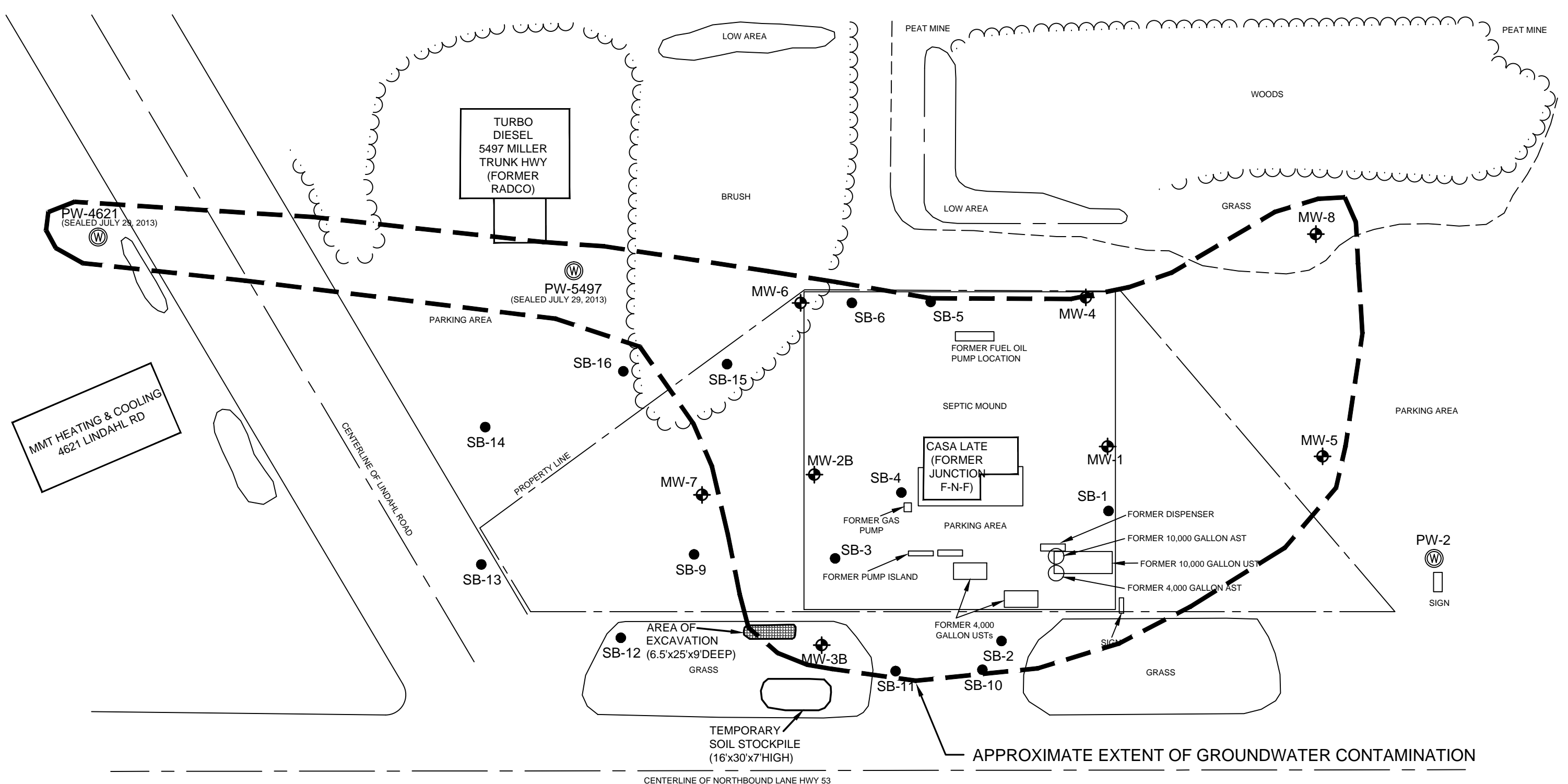


BASE MAP CREATED FROM TWIN PORTS TESTING REPORT DATED 1/97

FIGURE 2
APPROXIMATE EXTENT OF SOIL CONTAMINATION
JUNCTION FOOD N FUEL
5493 MILLER TRUNK HWY
HERMANTOWN, MN

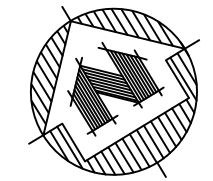
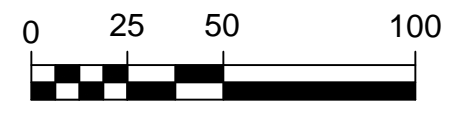
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LEGEND

- ⊕ MONITORING WELL LOCATION
- SOIL BORING LOCATION
- Ⓜ PRIVATE DRINKING WATER WELL

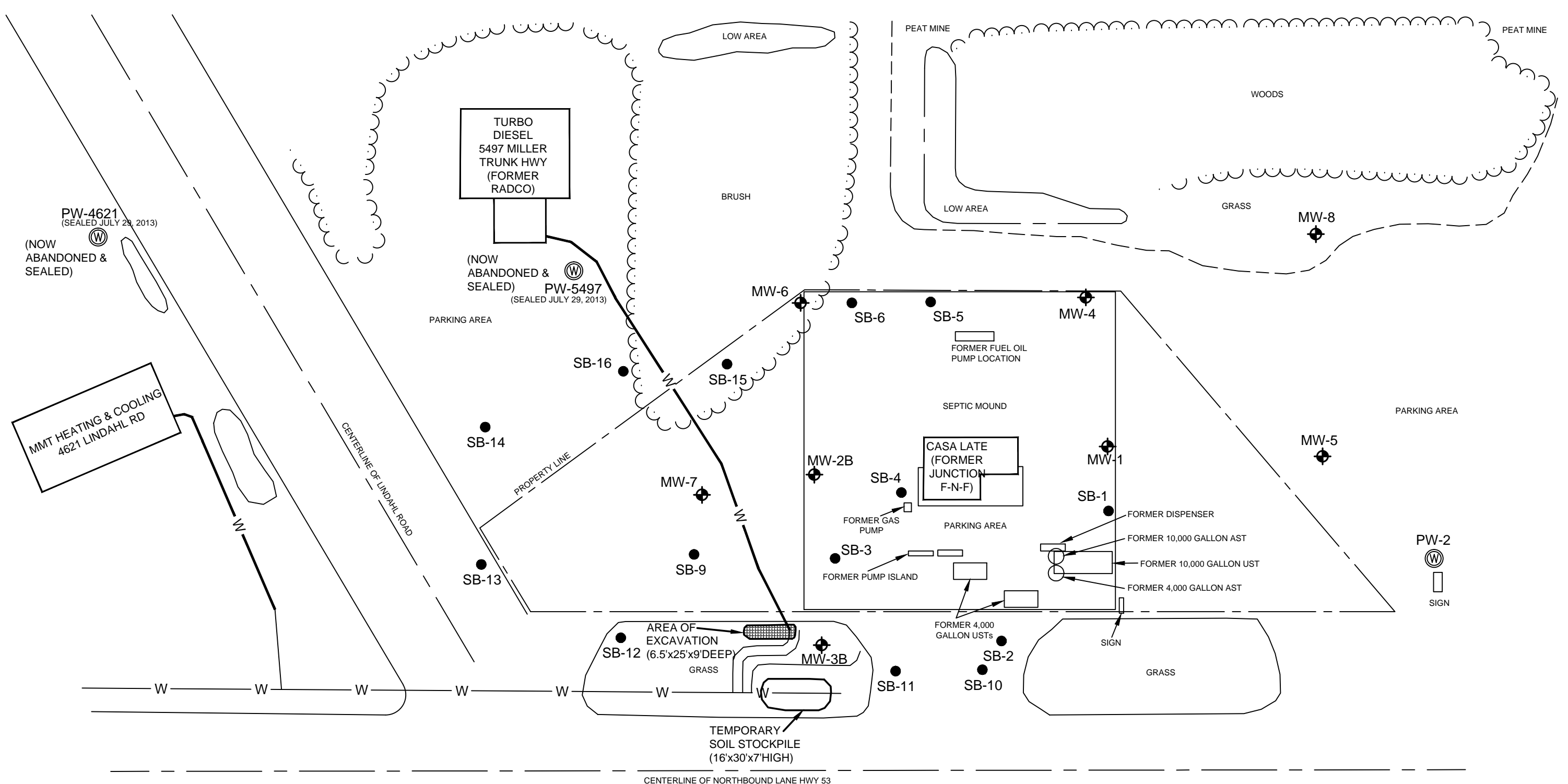


BASE MAP CREATED FROM TWIN PORTS TESTING REPORT DATED 1/97

FIGURE 3
APPROXIMATE EXTENT OF GROUNDWATER CONTAMINATION
JUNCTION FOOD N FUEL
5493 MILLER TRUNK HWY
HERMANTOWN, MN

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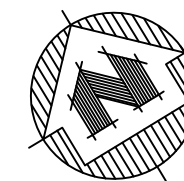
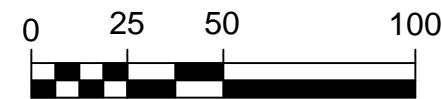
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LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION

- NEWLY INSTALLED PRIVATE WATER LINE
- EXISTING MUNICIPAL WATER MAIN



BASE MAP CREATED FROM TWIN PORTS TESTING REPORT DATED 1/97

FIGURE 4

LOCATIONS OF NEWLY INSTALLED PRIVATE WATER LINES JUNCTION FOOD N FUEL 5493 MILLER TRUNK HWY HERMANTOWN, MN

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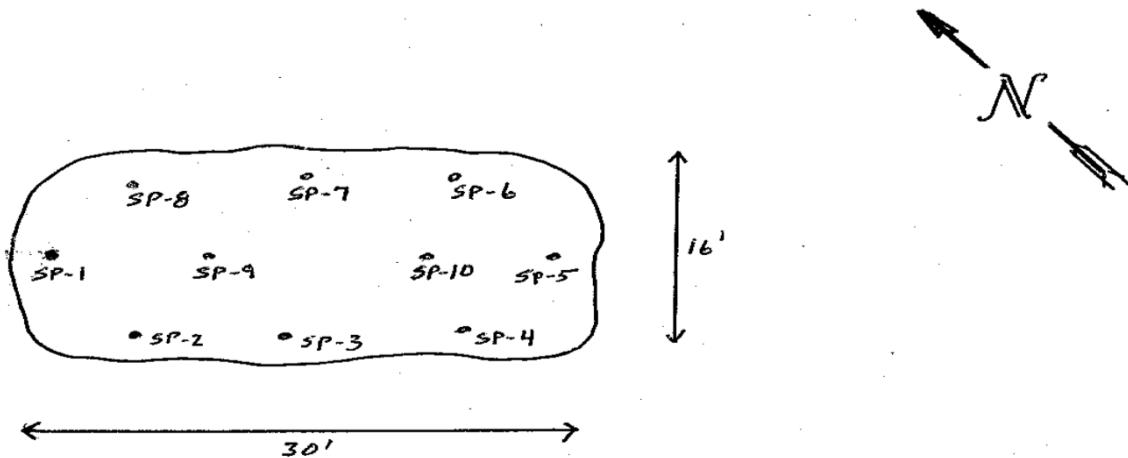
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TABLES

Table 1
Stockpile Sample Field Screening Results
Junction Food-N-Fuel Site
June 20th, 2013

Soil Sample Number		Field Screening Reading
Stockpile Samples	SP-1	0.6
	SP-2	0.7
	SP-3	0.4
	SP-4	0.7
	SP-5	0.5
	SP-6	0.3
	SP-7	0.5
	SP-8	0.8
	SP-9	1.7
	SP-10	0.6

All readings are presented in parts per million petroleum-related organic vapors



DETAIL OF
 STOCKPILE
 FROM FIGURES 2, 3, 4

Table 2

Results of Interior Air Analyses: Casa Latte Restaurant

Junction Food-N-Fuel Site

Parameter	Air Sampling Analyses Results			MPCA Intrusion Screening Value
	concentrations in micrograms per cubic meter			
	April, 2007	October, 2007	July, 2013	
Acetone	82.6	61.2	45	31,000
Benzene	< 0.93	1.5	< 0.64	4.5
2-Butanone (MEK)	8.6	9.5	5.0	5,000
Carbon Disulfide	< 0.9	0.89	0.68	700
Chloroform	--	--	13	100
Chloromethane	1.1	1.1	1.6	90
Dichlorodifluoromethane	2.6	2.5	1.7	200
1,2- Dichloroethane	--	3.7	1.3	0.4
Ethanol	--	1,270	1300	15,000
Ethylbenzene	2.8	< 1.2	< 0.87	1,000
n-Heptane / Heptane	3.3	< 1.1	1.2	--
n-Hexane	5.9	1.9	1.2	2,000
Methylene Chloride	< 1.0	< 0.98	2.0	20
Methyl Tertiary Butyl Ether	--	--	< 0.72	3,000
Naphthalene	--	--	< 3.3	9
2-Propanol	--	92.0	54	7,000
Styrene	17.4	11.3	3.7	1,000
Tetrahydrofuran	< 0.86	< 0.83	0.65	--
Toluene	7.2	4.8	5.3	5,000
Trichloroethylene	< 1.6	< 1.5	19	3
1,2,4-Trimethylbenzene	119	25.5	1.1	7
1,3,5-Trimethylbenzene	48.1	10.0	< 0.98	6
m & p-Xylene	10.8	4.0	< 1.7	100
o-Xylene	6.5	2.3	< 0.87	100

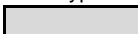
Notes:

Only detected compounds and standard petroleum compounds are included above; see lab report for full list of analyses.

All analyses results are provided in micrograms per cubic meter (ug/m³).

-- = analysis not conducted / regulatory standards not yet established / not included in earlier tables 17a and 17b

Bold type indicates MPCA Intrusion Screening Value exceedence.

 = shading indicates data previously reported in Tables 17a and 17b

< = below laboratory detection limits

Table 17a - Results of Soil Gas Sampling for Vapor Intrusion Screening
Junction Food-N-Fuel, MPCA Leak #3534

Sample Location	ACTION LEVEL				VS-1	VS-2	VS-3	VS-4	1	SS-2	JFNF.OUT001
Sampling Date					8/17/2005	8/17/2005	8/17/2005	8/17/2005	10/10/2006	10/23/2007	10/10/2006
Depth	MDH		EPA		4.5'	4'	3.25'	3.5'	18-20"	12"	-
COMPOUNDS	HRVs		ISC	RfC							
	Acute	Chronic									
compounds related to gasoline/diesel contamination											
Benzene	1000	1.3-4.5	-	-	<11.8	4,550	<1.0	<9.0	3.4	1.4	<0.87
Ethylbenzene	10,000	-	-	1,000	<15.9	<660	4.6	57.1	10	<1.7	<1.2
Toluene	37,000	400	-	-	<13.9	<570	10.9	112	96.6	14.1	<1.0
1,2,4-Trimethylbenzene	-	-	-	6	<45.2	4,850	9.8	96.8	134	<4.9	<3.4
1,3,5-Trimethylbenzene	-	-	-	6	<45.2	1,100	4.8	170	43.2	<4.9	<3.4
m & p-xylene	43,000 total	-	-	700 total	75.9	10,600	14.1	466	35.5	<3.5	<2.4
o-xylene	-	-	-	-	<15.9	<660	4.5	211	13.8	<1.7	<1.2
other compounds detected											
Acetone	-	-	-	-	104	-	90.5	<6.6	252	8.8	4.8
n-Hexane	-	2,000	-	-	42	-	43.3	242	40.2	6.2	<0.96
4-Ethyltoluene	-	-	-	-	<45.2	-	5.8	139	25	<4.9	<3.4
2-Butanone (MEK)	10,000	-	-	-	54.5	-	16.2	<8.3	81.9	2.5	<0.8
Dichlorodifluoromethane	-	-	-	-	<30.7	<750	5.1	<23.5	5.5	6.0	2.5
Methylene chloride	-	-	-	-	14.3	<530	<1.1	<9.8	2.9	5.5	<0.95
Trichloroethene	-	-	-	-	40.1	<820	3.6	<15.2	2.9	7.2	<1.5
Cyclohexane	-	-	-	6,000	<12.3	-	7	<9.4	<0.91	2.8	<0.91
2-Propanol	-	-	-	-	-	-	-	-	-	14.3	-
Propylene	-	-	-	-	<6.3	-	11.2	<4.8	<0.47	<0.69	<0.47
Carbon disulfide	6,000	700	-	700	<11.4	-	<0.97	<8.7	2.8	<1.2	<0.84
Carbon tetrachloride	-	-	-	-	<23.5	<960	<2.0	<17.9	1.9	<2.6	<1.7
n-Heptane	-	-	-	-	<15.0	-	<1.3	<11.5	5.5	<1.6	<1.1
4-Methyl-2-pentanone	-	-	-	-	<15.0	-	<1.3	<11.5	2.4	<1.6	<1.1
Tetrahydrofuran	-	-	-	-	<10.8	-	<0.92	<8.3	471	<1.2	<0.8
Chloromethane	-	-	-	-	<7.6	<310	<0.65	<5.8	<0.56	<0.83	<0.56
Styrene	21,000	1,000	-	1,000	<15.7	<650	<1.3	<12.0	<1.2	<1.7	<1.2

Notes:

All units are in ug/m3.

Only laboratory detected compounds are

Analytical results in ug/m3

- = No established limits

MDH= Minnesota Department of Health

HRVs= Health Risk Values for Air

Bold result indicates analytical result above standards

VS-2 was analyzed using method TO-14 due to elevated levels of organic compounds.

[Shaded Box] = Not analyzed

**Table 17b - Indoor Air Analytical Results of Vapor Monitoring
Junction Food-N-Fuel, MPCA Leak #3534**

Sample Location	ACTION LEVEL			Indoor Air Sampling		Outdoor Air Sampling		
	MDH	EPA		IA-1	IA-2	OA-1	JFNF.OUT001	OA-2
Sampling Date	HRVs			4/23/2007	10/22/2007	4/23/2007	10/10/2006	10/22/2007
COMPOUNDS	Acute	Chronic	RfC					
<i>compounds related to gasoline/diesel contamination</i>								
Benzene	1000	1.3-4.5	-	<0.93	1.5	<1.0	<0.87	<0.87
Ethylbenzene	10,000	-	1,000	2.8	<1.2	<1.4	<1.2	<1.2
Toluene	37,000	400	-	7.2	4.8	<1.2	<1.0	6.5
1,2,4-Trimethylbenzene	-	-	6	119	25.5	<4.0	<3.4	<3.4
1,3,5-Trimethylbenzene	-	-	6	48.1	10.0	<4.0	<3.4	<3.4
m & p-xylene	43,000 total	-	700 total	10.8	4.0	<2.8	<2.4	<2.4
o-xylene	-	-	-	6.5	2.3	<1.4	<1.2	<1.2
<i>other compounds detected</i>								
Acetone	-	-	-	82.6	61.2	8.6	4.8	12.4
n-Hexane	-	2,000	-	5.9	1.9	<1.1	<0.96	11.4
Ethanol	-	-	-	-	1,270	-	-	8.7
4-Ethyltoluene	-	-	-	20.9	4.7	<4.0	<3.4	<3.4
2-Butanone (MEK)	10,000	-	-	8.6	9.5	<0.95	<0.8	1.2
Dichlorodifluoromethane	-	-	-	2.6	2.5	2.1	2.5	2.6
1,2-Dichloroethane	-	-	-	-	3.7	-	-	<1.1
Methylene chloride	-	-	-	<1.0	<0.98	<1.1	<0.95	247
Trichloroethene	-	-	-	<1.6	<1.5	<1.7	<1.5	<1.5
Cyclohexane	-	-	6,000	13.7	<0.94	<1.1	<0.91	<0.91
2-Propanol	-	-	-	-	92.0	-	-	<3.4
Propylene	-	-	-	<0.5	<0.48	<0.56	<0.47	<0.47
Carbon disulfide	6,000	700	700	<0.9	0.89	<1.0	<0.84	<0.84
Carbon tetrachloride	-	-	-	<1.9	<1.8	<2.1	<1.7	<1.7
n-Heptane	-	-	-	3.3	<1.1	<1.3	<1.1	<1.1
4-Methyl-2-pentanone	-	-	-	<1.2	1.6	<1.3	<1.1	<1.1
Tetrahydrofuran	-	-	-	<0.86	<0.83	<0.95	<0.8	<0.80
Chloromethane	-	-	-	1.1	1.1	<0.67	<0.56	0.78
Styrene	21,000	1,000	1,000	17.4	11.3	<1.4	<1.2	<1.2
Vinyl acetate	-	-	200	-	18.3	-	-	<0.95

Notes:

Only laboratory detected compounds are listed in this table

Analytical results in ug/m3

- = No established limits

MDH= Minnesota Department of Health

HRVs= Health Risk Values for Air

Bold result indicates analytical result above standards

LABORATORY REPORT

MSA Professional Services

301 West First St. Ste 408
Duluth, MN 55802

Billing information:
MSA Professionals
Accounts Payable
301 West First St. Ste 408
Duluth, MN 55802

Analysis/Container/Preservative

Chain of Custody
Page ___ of ___



L.A.B S.C.I.E.N.C.E.S

12065 Lebanon Road
Mt. Juliet, TN 37122

Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

Report to: **Jon Hinkel** Email: **jhinkel@msa-ps.com**

Project Description: **Junction Food-N-Fuel Site** City/State Collected: **Hermantown, Minnesota**

Phone: (218) 722-3915 Client Project #: **MSA # R00625001** Lab Project #: **MSAPRODMN-JUNCTION**
FAX: (218) 722-4548

Collected by (print): **Jon Hinkel** Site/Facility ID#: **HERMANTOWN, MN** P.O.#:

Collected by (signature): *[Signature]* **Rush?** (Lab MUST Be Notified)
 Immediately Packed on Ice N Y
 ___ Same Day 200% Date Results Needed: **Standard**
 ___ Next Day 100% Email? ___ No Yes
 ___ Two Day 50% FAX? ___ No ___ Yes
 ___ Three Day 25% No. of Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs
Casa Latte Interior Air Sample 7/3/13		Air		See Below		1

TO-15 TIC Summa

Acctnum: **MSAPRODMN** (lab use only)
 Template/Prelogin: **T87613/P434715**
 Cooler #: **6/25/13 8.6**
 Shipped Via: **FedEX Ground**

Remarks/Contaminant Sample # (lab only)
2645048.01

*Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other

Remarks: **Test Begin: 7/2/13 - 7:24am - 28.2 in. Hg vacuum**
Test End: 7/3/13 - 8:09am - 8.4 in. Hg vacuum

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: Amb Bottles Received: 1+FC	COC Seal Intact: ___ Y ___ N ___ NA pH Checked: _____ NCF: _____
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 7-5-13 Time: 0945	



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Jon Hinkel
MSA Professional Services
301 West First St. Ste 408
Duluth, MN 55802

Report Summary

Thursday July 11, 2013

Report Number: L645048

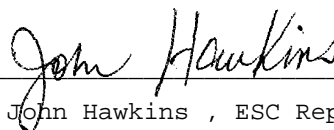
Samples Received: 07/05/13

Client Project: MSA R00625001

Description: Junction Food-N-Fuel Site

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


John Hawkins , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Jon Hinkel
 MSA Professional Services
 301 West First St. Ste 408
 Duluth, MN 55802

July 11, 2013

Date Received : July 05, 2013
 Description : Junction Food-N-Fuel Site
 Sample ID : CASA LATTE INTERIOR AIR SAMPLE 7/3/13
 Collected By : Jon Hinkel
 Collection Date : 07/03/13 08:09

ESC Sample # : L645048-01
 Site ID : HERMANTOWN, MN
 Project # : MSA R00625001

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	1.25	3.00	19.	45.	TO-15	07/10/13	1
Allyl chloride	107-05-1	76.53	0.200	0.630	< 0.20	< 0.63	TO-15	07/10/13	1
Benzene	71-43-2	78.1	0.200	0.640	< 0.20	< 0.64	TO-15	07/10/13	1
Benzyl Chloride	100-44-7	127	0.200	1.00	< 0.20	< 1.0	TO-15	07/10/13	1
Bromodichloromethane	75-27-4	164	0.200	1.30	< 0.20	< 1.3	TO-15	07/10/13	1
Bromoform	75-25-2	253	0.600	6.20	< 0.60	< 6.2	TO-15	07/10/13	1
Bromomethane	74-83-9	94.9	0.200	0.780	< 0.20	< 0.78	TO-15	07/10/13	1
1,3-Butadiene	106-99-0	54.1	2.00	4.40	< 2.0	< 4.4	TO-15	07/10/13	1
Carbon disulfide	75-15-0	76.1	0.200	0.620	0.22	0.68	TO-15	07/10/13	1
Carbon tetrachloride	56-23-5	154	0.200	1.30	< 0.20	< 1.3	TO-15	07/10/13	1
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	TO-15	07/10/13	1
Chloroethane	75-00-3	64.5	0.200	0.530	< 0.20	< 0.53	TO-15	07/10/13	1
Chloroform	67-66-3	119	0.200	0.970	2.7	13.	TO-15	07/10/13	1
Chloromethane	74-87-3	50.5	0.200	0.410	0.78	1.6	TO-15	07/10/13	1
2-Chlorotoluene	95-49-8	126	0.200	1.00	< 0.20	< 1.0	TO-15	07/10/13	1
Cyclohexane	110-82-7	84.2	0.200	0.690	< 0.20	< 0.69	TO-15	07/10/13	1
Dibromochloromethane	124-48-1	208	0.200	1.70	< 0.20	< 1.7	TO-15	07/10/13	1
1,2-Dibromoethane	106-93-4	188	0.200	1.50	< 0.20	< 1.5	TO-15	07/10/13	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	TO-15	07/10/13	1
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	< 0.20	< 1.2	TO-15	07/10/13	1
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	< 0.20	< 1.2	TO-15	07/10/13	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	0.31	1.3	TO-15	07/10/13	1
1,1-Dichloroethane	75-34-3	98	0.200	0.800	< 0.20	< 0.80	TO-15	07/10/13	1
1,1-Dichloroethene	75-35-4	96.9	0.200	0.790	< 0.20	< 0.79	TO-15	07/10/13	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.200	0.790	< 0.20	< 0.79	TO-15	07/10/13	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.200	0.790	< 0.20	< 0.79	TO-15	07/10/13	1
1,2-Dichloropropane	78-87-5	113	0.200	0.920	< 0.20	< 0.92	TO-15	07/10/13	1
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.910	< 0.20	< 0.91	TO-15	07/10/13	1
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.910	< 0.20	< 0.91	TO-15	07/10/13	1
1,4-Dioxane	123-91-1	88.1	0.200	0.720	< 0.20	< 0.72	TO-15	07/10/13	1
Ethanol	64-17-5	46.1	50.4	95.0	710	1300	TO-15	07/11/13	80
Ethylbenzene	100-41-4	106	0.200	0.870	< 0.20	< 0.87	TO-15	07/10/13	1
4-Ethyltoluene	622-96-8	120	0.200	0.980	< 0.20	< 0.98	TO-15	07/10/13	1
Trichlorofluoromethane	75-69-4	137.4	0.200	1.10	< 0.20	< 1.1	TO-15	07/10/13	1
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.990	0.34	1.7	TO-15	07/10/13	1
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.200	1.50	< 0.20	< 1.5	TO-15	07/10/13	1
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	< 0.20	< 1.4	TO-15	07/10/13	1
Heptane	142-82-5	100	0.200	0.820	0.30	1.2	TO-15	07/10/13	1
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.70	< 0.63	< 6.7	TO-15	07/10/13	1
n-Hexane	110-54-3	86.2	0.200	0.710	0.35	1.2	TO-15	07/10/13	1
Isopropylbenzene	98-82-8	120.2	0.200	0.980	< 0.20	< 0.98	TO-15	07/10/13	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	0.58	2.0	TO-15	07/10/13	1
Methyl Butyl Ketone	591-78-6	100	1.25	5.10	< 1.3	< 5.1	TO-15	07/10/13	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

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Reported: 07/11/13 17:03 Printed: 07/11/13 17:04



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REPORT OF ANALYSIS

Jon Hinkel
 MSA Professional Services
 301 West First St. Ste 408
 Duluth, MN 55802

July 11, 2013

Date Received : July 05, 2013
 Description : Junction Food-N-Fuel Site
 Sample ID : CASA LATTE INTERIOR AIR SAMPLE 7/3/13
 Collected By : Jon Hinkel
 Collection Date : 07/03/13 08:09

ESC Sample # : L645048-01
 Site ID : HERMANTOWN, MN
 Project # : MSA R00625001

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	1.25	3.70	1.7	5.0	TO-15	07/10/13	1
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	1.25	5.10	< 1.3	< 5.1	TO-15	07/10/13	1
Methyl methacrylate	80-62-6	100.12	0.200	0.820	< 0.20	< 0.82	TO-15	07/10/13	1
MTBE	1634-04-4	88.1	0.200	0.720	< 0.20	< 0.72	TO-15	07/10/13	1
Naphthalene	91-20-3	128	0.630	3.30	< 0.63	< 3.3	TO-15	07/10/13	1
2-Propanol	67-63-0	60.1	20.0	49.0	22.	54.	TO-15	07/10/13	16
Propene	115-07-1	42.1	0.400	0.690	< 0.40	< 0.69	TO-15	07/10/13	1
Styrene	100-42-5	104	0.200	0.850	0.88	3.7	TO-15	07/10/13	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.40	< 0.20	< 1.4	TO-15	07/10/13	1
Tetrachloroethylene	127-18-4	166	0.200	1.40	< 0.20	< 1.4	TO-15	07/10/13	1
Tetrahydrofuran	109-99-9	72.1	0.200	0.590	0.22	0.65	TO-15	07/10/13	1
Toluene	108-88-3	92.1	0.200	0.750	1.4	5.3	TO-15	07/10/13	1
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.70	< 0.63	< 4.7	TO-15	07/10/13	1
1,1,1-Trichloroethane	71-55-6	133	0.200	1.10	< 0.20	< 1.1	TO-15	07/10/13	1
1,1,2-Trichloroethane	79-00-5	133	0.200	1.10	< 0.20	< 1.1	TO-15	07/10/13	1
Trichloroethylene	79-01-6	131	0.200	1.10	3.5	19.	TO-15	07/10/13	1
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.980	0.22	1.1	TO-15	07/10/13	1
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.980	< 0.20	< 0.98	TO-15	07/10/13	1
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.930	< 0.20	< 0.93	TO-15	07/10/13	1
Vinyl chloride	75-01-4	62.5	0.200	0.510	< 0.20	< 0.51	TO-15	07/10/13	1
Vinyl Bromide	593-60-2	106.95	0.200	0.870	< 0.20	< 0.87	TO-15	07/10/13	1
Vinyl acetate	108-05-4	86.1	0.200	0.700	< 0.20	< 0.70	TO-15	07/10/13	1
m&p-Xylene	1330-20-7	106	0.400	1.70	< 0.40	< 1.7	TO-15	07/10/13	1
o-Xylene	95-47-6	106	0.200	0.870	< 0.20	< 0.87	TO-15	07/10/13	1
TPH (GC/MS) Low Fraction	8006-61-9	101	50.0	210.	< 50.	< 210	TO-15	07/10/13	1
1,4-Bromofluorobenzene	460-00-4				97.13	% Rec.	TO-15	07/10/13	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

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Reported: 07/11/13 17:03 Printed: 07/11/13 17:04

Summary of Remarks For Samples Printed
07/11/13 at 17:04:07

TSR Signing Reports: 341
R5 - Desired TAT

Sample: L645048-01 Account: MSAPRODMN Received: 07/05/13 09:45 Due Date: 07/12/13 00:00 RPT Date: 07/11/13 17:03



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Quality Assurance Report
Level II

L645048

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Tax I.D. 62-0814289

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July 11, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
1,1,1-Trichloroethane	< .2	ppb			WG671017	07/09/13 14:29
1,1,2,2-Tetrachloroethane	< .2	ppb			WG671017	07/09/13 14:29
1,1,2-Trichloroethane	< .2	ppb			WG671017	07/09/13 14:29
1,1,2-Trichlorotrifluoroethane	< .2	ppb			WG671017	07/09/13 14:29
1,1-Dichloroethane	< .2	ppb			WG671017	07/09/13 14:29
1,1-Dichloroethene	< .2	ppb			WG671017	07/09/13 14:29
1,2,4-Trichlorobenzene	< .63	ppb			WG671017	07/09/13 14:29
1,2,4-Trimethylbenzene	< .2	ppb			WG671017	07/09/13 14:29
1,2-Dibromoethane	< .2	ppb			WG671017	07/09/13 14:29
1,2-Dichlorobenzene	< .2	ppb			WG671017	07/09/13 14:29
1,2-Dichloroethane	< .2	ppb			WG671017	07/09/13 14:29
1,2-Dichloropropane	< .2	ppb			WG671017	07/09/13 14:29
1,2-Dichlorotetrafluoroethane	< .2	ppb			WG671017	07/09/13 14:29
1,3,5-Trimethylbenzene	< .2	ppb			WG671017	07/09/13 14:29
1,3-Butadiene	< 2	ppb			WG671017	07/09/13 14:29
1,3-Dichlorobenzene	< .2	ppb			WG671017	07/09/13 14:29
1,4-Dichlorobenzene	< .2	ppb			WG671017	07/09/13 14:29
1,4-Dioxane	< .2	ppb			WG671017	07/09/13 14:29
2,2,4-Trimethylpentane	< .2	ppb			WG671017	07/09/13 14:29
2-Butanone (MEK)	< 1.25	ppb			WG671017	07/09/13 14:29
2-Chlorotoluene	< .2	ppb			WG671017	07/09/13 14:29
4-Ethyltoluene	< .2	ppb			WG671017	07/09/13 14:29
4-Methyl-2-pentanone (MIBK)	< 1.25	ppb			WG671017	07/09/13 14:29
Acetone	< 1.25	ppb			WG671017	07/09/13 14:29
Allyl chloride	< .2	ppb			WG671017	07/09/13 14:29
Benzene	< .2	ppb			WG671017	07/09/13 14:29
Benzyl Chloride	< .2	ppb			WG671017	07/09/13 14:29
Bromodichloromethane	< .2	ppb			WG671017	07/09/13 14:29
Bromoform	< .6	ppb			WG671017	07/09/13 14:29
Bromomethane	< .2	ppb			WG671017	07/09/13 14:29
Carbon disulfide	< .2	ppb			WG671017	07/09/13 14:29
Carbon tetrachloride	< .2	ppb			WG671017	07/09/13 14:29
Chlorobenzene	< .2	ppb			WG671017	07/09/13 14:29
Dibromochloromethane	< .2	ppb			WG671017	07/09/13 14:29
Chloroethane	< .2	ppb			WG671017	07/09/13 14:29
Chloroform	< .2	ppb			WG671017	07/09/13 14:29
Chloromethane	< .2	ppb			WG671017	07/09/13 14:29
cis-1,2-Dichloroethene	< .2	ppb			WG671017	07/09/13 14:29
cis-1,3-Dichloropropene	< .2	ppb			WG671017	07/09/13 14:29
Cyclohexane	< .2	ppb			WG671017	07/09/13 14:29
Dichlorodifluoromethane	< .2	ppb			WG671017	07/09/13 14:29
Ethylbenzene	< .2	ppb			WG671017	07/09/13 14:29
Heptane	< .2	ppb			WG671017	07/09/13 14:29
Hexachloro-1,3-butadiene	< .63	ppb			WG671017	07/09/13 14:29
Isopropylbenzene	< .2	ppb			WG671017	07/09/13 14:29
m&p-Xylene	< .4	ppb			WG671017	07/09/13 14:29
Methyl Butyl Ketone	< 1.25	ppb			WG671017	07/09/13 14:29
Methyl methacrylate	< .2	ppb			WG671017	07/09/13 14:29
MTBE	< .2	ppb			WG671017	07/09/13 14:29
Methylene Chloride	< .2	ppb			WG671017	07/09/13 14:29
n-Hexane	< .2	ppb			WG671017	07/09/13 14:29
Naphthalene	< .63	ppb			WG671017	07/09/13 14:29
o-Xylene	< .2	ppb			WG671017	07/09/13 14:29
Propene	< .4	ppb			WG671017	07/09/13 14:29
Styrene	< .2	ppb			WG671017	07/09/13 14:29
Tetrachloroethylene	< .2	ppb			WG671017	07/09/13 14:29
Tetrahydrofuran	< .2	ppb			WG671017	07/09/13 14:29
Toluene	< .2	ppb			WG671017	07/09/13 14:29
TPH (GC/MS) Low Fraction	< 50	ppb			WG671017	07/09/13 14:29

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Quality Assurance Report
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July 11, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
trans-1,2-Dichloroethene	< .2	ppb			WG671017	07/09/13 14:29
trans-1,3-Dichloropropene	< .2	ppb			WG671017	07/09/13 14:29
Trichloroethylene	< .2	ppb			WG671017	07/09/13 14:29
Trichlorofluoromethane	< .2	ppb			WG671017	07/09/13 14:29
Vinyl acetate	< .2	ppb			WG671017	07/09/13 14:29
Vinyl Bromide	< .2	ppb			WG671017	07/09/13 14:29
Vinyl chloride	< .2	ppb			WG671017	07/09/13 14:29
1,4-Bromofluorobenzene		% Rec.	96.43	60-140	WG671017	07/09/13 14:29
2-Propanol	< 1.25	ppb			WG671203	07/10/13 13:07
Ethanol	< .63	ppb			WG671203	07/10/13 13:07
1,4-Bromofluorobenzene		% Rec.	96.91	60-140	WG671203	07/10/13 13:07

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
1,1,1-Trichloroethane	ppb	3.75	3.73	99.5	70-130	WG671017
1,1,2,2-Tetrachloroethane	ppb	3.75	3.65	97.4	70-130	WG671017
1,1,2-Trichloroethane	ppb	3.75	3.81	102.	70-130	WG671017
1,1,2-Trichlorotrifluoroethane	ppb	3.75	3.70	98.6	70-130	WG671017
1,1-Dichloroethane	ppb	3.75	3.83	102.	70-130	WG671017
1,1-Dichloroethene	ppb	3.75	3.82	102.	70-130	WG671017
1,2,4-Trichlorobenzene	ppb	3.75	3.93	105.	54-153	WG671017
1,2,4-Trimethylbenzene	ppb	3.75	3.84	102.	70-130	WG671017
1,2-Dibromoethane	ppb	3.75	3.93	105.	70-130	WG671017
1,2-Dichlorobenzene	ppb	3.75	3.58	95.5	70-130	WG671017
1,2-Dichloroethane	ppb	3.75	3.59	95.7	70-130	WG671017
1,2-Dichloropropane	ppb	3.75	3.91	104.	70-130	WG671017
1,2-Dichlorotetrafluoroethane	ppb	3.75	3.59	95.7	70-130	WG671017
1,3,5-Trimethylbenzene	ppb	3.75	3.79	101.	70-130	WG671017
1,3-Butadiene	ppb	3.75	4.22	113.	70-130	WG671017
1,3-Dichlorobenzene	ppb	3.75	3.69	98.4	70-130	WG671017
1,4-Dichlorobenzene	ppb	3.75	3.67	97.9	70-130	WG671017
1,4-Dioxane	ppb	3.75	3.81	102.	70-130	WG671017
2,2,4-Trimethylpentane	ppb	3.75	4.08	109.	70-130	WG671017
2-Butanone (MEK)	ppb	3.75	3.94	105.	70-130	WG671017
2-Chlorotoluene	ppb	3.75	3.68	98.1	70-130	WG671017
4-Ethyltoluene	ppb	3.75	3.75	99.9	70-130	WG671017
4-Methyl-2-pentanone (MIBK)	ppb	3.75	3.69	98.3	36-158	WG671017
Acetone	ppb	3.75	3.60	95.9	70-130	WG671017
Allyl chloride	ppb	3.75	4.19	112.	70-130	WG671017
Benzene	ppb	3.75	3.84	102.	70-130	WG671017
Benzyl Chloride	ppb	3.75	4.37	117.	70-130	WG671017
Bromodichloromethane	ppb	3.75	3.94	105.	70-130	WG671017
Bromoform	ppb	3.75	4.15	111.	70-130	WG671017
Bromomethane	ppb	3.75	3.66	97.6	70-130	WG671017
Carbon disulfide	ppb	3.75	4.15	111.	70-130	WG671017
Carbon tetrachloride	ppb	3.75	3.77	101.	70-130	WG671017
Chlorobenzene	ppb	3.75	3.71	98.8	70-130	WG671017
Dibromochloromethane	ppb	3.75	4.18	112.	70-130	WG671017
Chloroethane	ppb	3.75	3.80	101.	70-130	WG671017
Chloroform	ppb	3.75	3.66	97.6	70-130	WG671017
Chloromethane	ppb	3.75	3.79	101.	70-130	WG671017
cis-1,2-Dichloroethene	ppb	3.75	3.92	105.	70-130	WG671017
cis-1,3-Dichloropropene	ppb	3.75	4.34	116.	70-130	WG671017
Cyclohexane	ppb	3.75	4.09	109.	70-130	WG671017
Dichlorodifluoromethane	ppb	3.75	2.93	78.2	70-130	WG671017
Ethylbenzene	ppb	3.75	3.87	103.	70-130	WG671017

* Performance of this Analyte is outside of established criteria.
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Level II

L645048

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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 11, 2013

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Heptane	ppb	3.75	4.14	111.	70-130	WG671017
Hexachloro-1,3-butadiene	ppb	3.75	3.59	95.7	50-149	WG671017
Isopropylbenzene	ppb	3.75	3.99	106.	70-130	WG671017
m&p-Xylene	ppb	7.5	7.44	99.2	70-130	WG671017
Methyl Butyl Ketone	ppb	3.75	3.70	98.6	38-153	WG671017
Methyl methacrylate	ppb	3.75	3.96	106.	70-130	WG671017
MTBE	ppb	3.75	3.93	105.	70-130	WG671017
Methylene Chloride	ppb	3.75	3.46	92.3	70-130	WG671017
n-Hexane	ppb	3.75	4.14	110.	70-130	WG671017
Naphthalene	ppb	3.75	4.09	109.	54-154	WG671017
o-Xylene	ppb	3.75	4.06	108.	70-130	WG671017
Propene	ppb	3.75	3.96	106.	70-130	WG671017
Styrene	ppb	3.75	4.19	112.	70-130	WG671017
Tetrachloroethylene	ppb	3.75	3.86	103.	70-130	WG671017
Tetrahydrofuran	ppb	3.75	3.95	105.	70-130	WG671017
Toluene	ppb	3.75	3.96	106.	70-130	WG671017
TPH (GC/MS) Low Fraction	ppb	150	149.	99.0	70-130	WG671017
trans-1,2-Dichloroethene	ppb	3.75	3.78	101.	70-130	WG671017
trans-1,3-Dichloropropene	ppb	3.75	4.32	115.	70-130	WG671017
Trichloroethylene	ppb	3.75	3.79	101.	70-130	WG671017
Trichlorofluoromethane	ppb	3.75	3.57	95.3	70-130	WG671017
Vinyl acetate	ppb	3.75	4.55	121.	70-130	WG671017
Vinyl Bromide	ppb	3.75	3.81	102.	70-130	WG671017
Vinyl chloride	ppb	3.75	3.90	104.	70-130	WG671017
1,4-Bromofluorobenzene				97.01	60-140	WG671017
2-Propanol	ppb	3.75	3.95	105.	70-130	WG671203
Ethanol	ppb	3.75	4.00	107.	70-130	WG671203
1,4-Bromofluorobenzene				95.33	60-140	WG671203

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1,1,1-Trichloroethane	ppb	3.72	3.73	99.0	70-130	0.390	25	WG671017
1,1,2,2-Tetrachloroethane	ppb	3.60	3.65	96.0	70-130	1.39	25	WG671017
1,1,2-Trichloroethane	ppb	3.72	3.81	99.0	70-130	2.28	25	WG671017
1,1,2-Trichlorotrifluoroethane	ppb	3.75	3.70	100.	70-130	1.26	25	WG671017
1,1-Dichloroethane	ppb	3.80	3.83	101.	70-130	0.850	25	WG671017
1,1-Dichloroethene	ppb	3.77	3.82	101.	70-130	1.25	25	WG671017
1,2,4-Trichlorobenzene	ppb	3.97	3.93	106.	54-153	1.06	25	WG671017
1,2,4-Trimethylbenzene	ppb	3.75	3.84	100.	70-130	2.40	25	WG671017
1,2-Dibromoethane	ppb	3.84	3.93	102.	70-130	2.47	25	WG671017
1,2-Dichlorobenzene	ppb	3.51	3.58	94.0	70-130	1.95	25	WG671017
1,2-Dichloroethane	ppb	3.53	3.59	94.0	70-130	1.71	25	WG671017
1,2-Dichloropropane	ppb	3.81	3.91	102.	70-130	2.68	25	WG671017
1,2-Dichlorotetrafluoroethane	ppb	3.48	3.59	93.0	70-130	3.19	25	WG671017
1,3,5-Trimethylbenzene	ppb	3.73	3.79	99.0	70-130	1.64	25	WG671017
1,3-Butadiene	ppb	4.03	4.22	107.	70-130	4.67	25	WG671017
1,3-Dichlorobenzene	ppb	3.63	3.69	97.0	70-130	1.60	25	WG671017
1,4-Dichlorobenzene	ppb	3.61	3.67	96.0	70-130	1.74	25	WG671017
1,4-Dioxane	ppb	3.73	3.81	99.0	70-130	2.14	25	WG671017
2,2,4-Trimethylpentane	ppb	4.04	4.08	108.	70-130	0.960	25	WG671017
2-Butanone (MEK)	ppb	3.89	3.94	104.	70-130	1.27	25	WG671017
2-Chlorotoluene	ppb	3.62	3.68	96.0	70-130	1.68	25	WG671017
4-Ethyltoluene	ppb	3.68	3.75	98.0	70-130	1.88	25	WG671017
4-Methyl-2-pentanone (MIBK)	ppb	3.59	3.69	96.0	36-158	2.71	25	WG671017
Acetone	ppb	3.58	3.60	95.0	70-130	0.440	25	WG671017
Allyl chloride	ppb	4.08	4.19	109.	70-130	2.69	25	WG671017

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	ppb	3.79	3.84	101.	70-130	1.48	25	WG671017
Benzyl Chloride	ppb	4.48	4.37	119.	70-130	2.44	25	WG671017
Bromodichloromethane	ppb	3.87	3.94	103.	70-130	1.67	25	WG671017
Bromoform	ppb	4.07	4.15	108.	70-130	2.10	25	WG671017
Bromomethane	ppb	3.67	3.66	98.0	70-130	0.250	25	WG671017
Carbon disulfide	ppb	4.23	4.15	113.	70-130	1.69	25	WG671017
Carbon tetrachloride	ppb	3.77	3.77	100.	70-130	0.240	25	WG671017
Chlorobenzene	ppb	3.65	3.71	97.0	70-130	1.61	25	WG671017
Dibromochloromethane	ppb	4.08	4.18	109.	70-130	2.52	25	WG671017
Chloroethane	ppb	3.87	3.80	103.	70-130	1.90	25	WG671017
Chloroform	ppb	3.64	3.66	97.0	70-130	0.700	25	WG671017
Chloromethane	ppb	3.61	3.79	96.0	70-130	4.87	25	WG671017
cis-1,2-Dichloroethene	ppb	3.86	3.92	103.	70-130	1.65	25	WG671017
cis-1,3-Dichloropropene	ppb	4.25	4.34	113.	70-130	2.25	25	WG671017
Cyclohexane	ppb	4.08	4.09	109.	70-130	0.430	25	WG671017
Dichlorodifluoromethane	ppb	2.73	2.93	73.0	70-130	7.13	25	WG671017
Ethylbenzene	ppb	3.78	3.87	101.	70-130	2.33	25	WG671017
Heptane	ppb	4.04	4.14	108.	70-130	2.42	25	WG671017
Hexachloro-1,3-butadiene	ppb	3.54	3.59	94.0	50-149	1.32	25	WG671017
Isopropylbenzene	ppb	3.92	3.99	104.	70-130	1.84	25	WG671017
m&p-Xylene	ppb	7.33	7.44	98.0	70-130	1.40	25	WG671017
Methyl Butyl Ketone	ppb	3.76	3.70	100.	38-153	1.71	25	WG671017
Methyl methacrylate	ppb	3.85	3.96	103.	70-130	2.85	25	WG671017
MTBE	ppb	3.93	3.93	105.	70-130	0.130	25	WG671017
Methylene Chloride	ppb	3.42	3.46	91.0	70-130	1.22	25	WG671017
n-Hexane	ppb	4.11	4.14	109.	70-130	0.900	25	WG671017
Naphthalene	ppb	4.18	4.09	112.	54-154	2.19	26	WG671017
o-Xylene	ppb	3.99	4.06	106.	70-130	1.70	25	WG671017
Propene	ppb	3.72	3.96	99.0	70-130	6.29	25	WG671017
Styrene	ppb	4.10	4.19	109.	70-130	2.05	25	WG671017
Tetrachloroethylene	ppb	3.77	3.86	100.	70-130	2.31	25	WG671017
Tetrahydrofuran	ppb	3.81	3.95	101.	70-130	3.67	25	WG671017
Toluene	ppb	3.89	3.96	104.	70-130	1.92	25	WG671017
TPH (GC/MS) Low Fraction	ppb	146.	149.	97.0	70-130	1.57	25	WG671017
trans-1,2-Dichloroethene	ppb	3.73	3.78	100.	70-130	1.32	25	WG671017
trans-1,3-Dichloropropene	ppb	4.22	4.32	113.	70-130	2.19	25	WG671017
Trichloroethylene	ppb	3.76	3.79	100.	70-130	0.810	25	WG671017
Trichlorofluoromethane	ppb	3.63	3.57	97.0	70-130	1.54	25	WG671017
Vinyl acetate	ppb	4.42	4.55	118.	70-130	2.79	25	WG671017
Vinyl Bromide	ppb	3.90	3.81	104.	70-130	2.19	25	WG671017
Vinyl chloride	ppb	3.75	3.90	100.	70-130	3.79	25	WG671017
1,4-Bromofluorobenzene				96.39	60-140			WG671017
2-Propanol	ppb	4.01	3.95	107.	70-130	1.52	25	WG671203
Ethanol	ppb	4.04	4.00	108.	70-130	0.840	25	WG671203
1,4-Bromofluorobenzene				97.24	60-140			WG671203

Batch number /Run number / Sample number cross reference

WG671017: R2739004: L645048-01
WG671203: R2741021: L645048-01

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

MDH WELL SEALING RECORDS

**MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD**
Minnesota Statutes, Chapter 103I

Minnesota Well and Boring Sealing No.
Minnesota Unique Well No. or W-series No.
(Leave blank if not known)

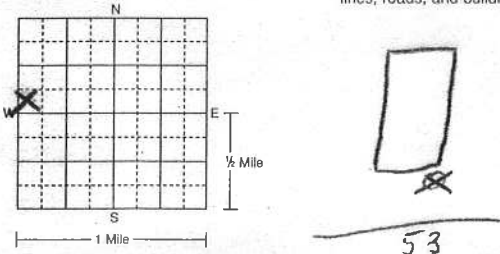
H 309077

WELL OR BORING LOCATION
County Name
St. Louis

Township Name *Hermantown* Township No. *50* Range No. *15* Section No. *4* Fraction (sm. → lg.) *SW. SW. 1/4* Date Sealed *July 29-2013* Date Well or Boring Constructed *unknown*

GPS LOCATION: Latitude _____ degrees _____ minutes _____ seconds Longitude _____ degrees _____ minutes _____ seconds
Depth Before Sealing *40* ft. Original Depth *unknown*

Numerical Street Address or Fire Number and City of Well or Boring Location
5497 Miller Trunk Hwy

Show exact location of well or boring in section grid with "X." Sketch map of well or boring location, showing property lines, roads, and buildings.


AQUIFER(S)
 Single Aquifer Multiaquifer
WELL/BORING
 Water-Supply Well Monit. Well
 Env. Bore Hole Other _____
CASING TYPE(S)
 Steel Plastic Tile Other _____

STATIC WATER LEVEL
 Measured Estimated Date Measured _____
8.5 ft. below above land surface
WELLHEAD COMPLETION
Outside: Well House At Grade Pitless Adapter/Unit Buried
Well Pit Other _____
Inside: Basement Offset Well Pit Buried Other _____

PROPERTY OWNER'S NAME/COMPANY NAME
Jim Kieper
Property owner's mailing address if different than well location address indicated above
*5497 Miller Trunk Hwy
Hermantown Mn. 55811*

WELL OWNER'S NAME/COMPANY NAME
Well owner's mailing address if different than property owner's address indicated above

CASING(S)
Diameter *6* in. from *0* to *40* ft. Set in oversize hole? Yes No Annular space initially grouted?
 Yes No Unknown
_____ in. from _____ to _____ ft. Yes No Yes No Unknown
_____ in. from _____ to _____ ft. Yes No Yes No Unknown

SCREEN/OPEN HOLE
Screen from _____ to _____ ft. Open Hole from _____ to _____ ft.

OBSTRUCTIONS
 Rods/Drop Pipe Check Valve(s) Debris Fill No Obstruction
Type of Obstructions (Describe) _____
Obstructions removed? Yes No Describe _____

PUMP
Type *Submersible*
 Removed Not Present Other _____
METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
 No Annular Space Exists Annular Space Grouted with Tremie Pipe Casing Perforation/Removal
_____ in. from _____ to _____ ft. Perforated Removed
_____ in. from _____ to _____ ft. Perforated Removed
Type of Perforator _____
 Other _____

GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
Grouting Material *Cement* from *0* to *40* ft. _____ yards *7* bags
_____ from _____ to _____ ft. _____ yards _____ bags
_____ from _____ to _____ ft. _____ yards _____ bags

OTHER WELLS AND BORINGS
Other unsealed and unused well or boring on property? Yes No How many? _____

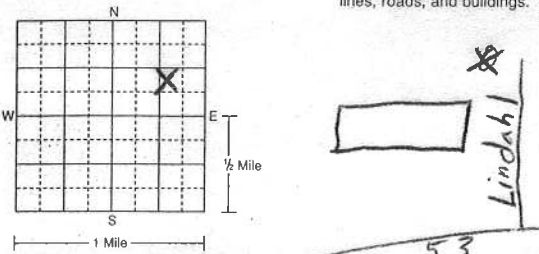
REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION
This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.
Dennis Drilling Inc. Licensee Business Name *1779* License or Registration No.
Dennis Koepf Certified Representative Signature *292* Certified Rep. No. *July 31, 2013* Date
Dennis Koepf Name of Person Sealing Well or Boring

**MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD**
Minnesota Statutes, Chapter 103I

Minnesota Well and Boring Sealing No.
Minnesota Unique Well No. or W-series No.
(Leave blank if not known)

H 309078

WELL OR BORING LOCATION					MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING SEALING RECORD Minnesota Statutes, Chapter 103I					H 309078				
County Name St. Louis					Township Name Hermantown					Township No. 50				
Range No. 15					Section No. 5					Fraction (sm. → lg.) NE 1/4 SE 1/4				
Date Sealed July 29 2013					Date Well or Boring Constructed unknown					GPS LOCATION: Latitude _____ degrees _____ minutes _____ seconds Longitude _____ degrees _____ minutes _____ seconds				
Numerical Street Address or Fire Number and City of Well or Boring Location 4621 Lindahl Rd.					Depth Before Sealing 86 ft.					Original Depth unknown				
Show exact location of well or boring in section grid with "X". 					<input checked="" type="checkbox"/> Single Aquifer <input type="checkbox"/> Multiaquifer					STATIC WATER LEVEL <input checked="" type="checkbox"/> Measured <input type="checkbox"/> Estimated Date Measured July 29				
Sketch map of well or boring location, showing property lines, roads, and buildings.					<input checked="" type="checkbox"/> Water-Supply Well <input type="checkbox"/> Monit. Well					Date Measured July 29				
					<input type="checkbox"/> Env. Bore Hole <input type="checkbox"/> Other _____					8 ft. <input checked="" type="checkbox"/> below <input type="checkbox"/> above land surface				
					CASING TYPE(S) <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Plastic <input type="checkbox"/> Tile <input type="checkbox"/> Other _____									
					WELLHEAD COMPLETION									
PROPERTY OWNER'S NAME/COMPANY NAME Steve Pelto					Outside: <input type="checkbox"/> Well House <input type="checkbox"/> At Grade <input checked="" type="checkbox"/> Pitless Adapter/Unit <input type="checkbox"/> Well Pit <input type="checkbox"/> Other _____					Inside: <input type="checkbox"/> Basement Offset <input type="checkbox"/> Well Pit <input type="checkbox"/> Buried <input type="checkbox"/> Other _____				
Property owner's mailing address if different than well location address indicated above 4621 Lindahl Rd Hermantown Mn 55811					CASING(S) Diameter/Depth 4 in. from 0 to 48 ft.					Set in oversize hole? <input type="checkbox"/> Yes <input type="checkbox"/> No				
					Annular space initially grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown									
					_____ in. from _____ to _____ ft. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown									
					_____ in. from _____ to _____ ft. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown									
WELL OWNER'S NAME/COMPANY NAME					SCREEN/OPEN HOLE Screen from _____ to _____ ft. Open Hole from 48 to 86 ft.									
Well owner's mailing address if different than property owner's address indicated above					OBSTRUCTIONS <input type="checkbox"/> Rods/Drop Pipe <input type="checkbox"/> Check Valve(s) <input type="checkbox"/> Debris <input type="checkbox"/> Fill <input checked="" type="checkbox"/> No Obstruction									
					Type of Obstructions (Describe) _____									
GEOLOGICAL MATERIAL					Obstructions removed? <input type="checkbox"/> Yes <input type="checkbox"/> No Describe _____									
COLOR					PUMP Type _____ <input type="checkbox"/> Removed <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> Other _____									
HARDNESS OR FORMATION					METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: <input checked="" type="checkbox"/> No Annular Space Exists <input type="checkbox"/> Annular Space Grouted with Tremie Pipe <input type="checkbox"/> Casing Perforation/Removal									
FROM					_____ in. from _____ to _____ ft. <input type="checkbox"/> Perforated <input type="checkbox"/> Removed									
TO					_____ in. from _____ to _____ ft. <input type="checkbox"/> Perforated <input type="checkbox"/> Removed									
TO					Type of Perforator _____									
TO					<input type="checkbox"/> Other _____									
TO					GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)									
TO					Grouting Material Cement from 0 to 86 ft. _____ yards 19 bags									
TO					_____ from _____ to _____ ft. _____ yards _____ bags									
TO					_____ from _____ to _____ ft. _____ yards _____ bags									
REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING					OTHER WELLS AND BORINGS Other unsealed and unused well or boring on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No How many? _____									
					LICENSED OR REGISTERED CONTRACTOR CERTIFICATION This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.									
					Denny's Drilling Inc Licensee Business Name					1779 License or Registration No.				
					Dennis Koopp Certified Representative Signature					292 Certified Rep. No.				
					Dennis Koopp Name of Person Sealing Well or Boring					July 31, 2013 Date				
IMPORTANT-FILE WITH PROPERTY PAPERS-WELL OWNER COPY					H 309078									

MPCA CORRESPONDENCE



Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us

REC'D AUG 24
August 22, 2012

Mr. Jack Curtis
Curtis Oil Company
4997 Miller Trunk Highway
Duluth, MN 55811

RE: Corrective Action Design Approval
Site: Junction Food N Fuel, 5493 Miller Trunk Highway, Hermantown
Site ID#: LEAK0003534

Dear Mr. Curtis:

The Minnesota Pollution Control Agency (MPCA) Petroleum Remediation Program staff has reviewed your proposed corrective action design dated July, 2012, outlining a plan to mitigate the petroleum tank release at the above-referenced site. MPCA staff approves the plan as proposed with the following modifications:

- Please consider depth to groundwater while completing the work, as groundwater may fill in the excavation.

MPCA staff also requests a confirmation indoor air sample collected in the on-site building.

MPCA staff request that the approved corrective action be completed within 6 months of the date of this letter. Please keep the MPCA informed if the work cannot be performed within this deadline.

If subsequently obtained information indicates that the approved corrective actions are inappropriate or inadequate, the MPCA may require additional work or modifications in the approved work.

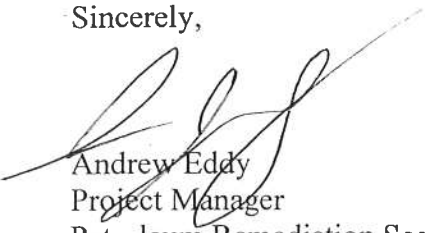
Approval of this corrective action design is based on its environmental merits for addressing the petroleum contamination only. This letter does not apply to other types of contamination that may be present on the subject property. You are responsible for insuring that this remedial system complies with all applicable building, electrical and fire codes and health department rules, and that all necessary state and local approvals are obtained. You are also responsible for ascertaining the need for and for obtaining any patents, licenses, or other permits, approvals or intellectual property rights which may be necessary.

This approval qualifies you for reimbursement of eligible costs from the Petroleum Tank Release Compensation Fund (Petrofund) under Minn. Stat. § 115C.09, subd. 2a. (a)(2) (2002). Applications for reimbursement must be made directly to the Petrofund staff at the Minnesota Department of Commerce. Reimbursement decisions are made by the Petro Board and are based on factors such as the adequacy of the investigation and/or cleanup, the reasonableness of costs, compliance with applicable laws, and cooperation with the MPCA. Please contact Petrofund staff at 651-297-1119 or 1-800-638-0418 for application forms and specific information regarding the reimbursement process.

Mr. Jack Curtis
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August 22, 2012

If you have questions regarding the investigation of ground water at this site, please contact MPCA staff hydrogeologist Jim Pennino at 651-757-2648. If you have any other questions, please call me at 651-757-2331.

Sincerely,



Andrew Eddy
Project Manager
Petroleum Remediation Section
Remediation Division

AJE:tf

cc: Jon Hinkel, Twin Ports Testing
Minnesota Department of Commerce Petrofund Staff