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Summary Report: Moose Junction Lounge Site Investigation

Prepared for:

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1.0 INTRODUCTION

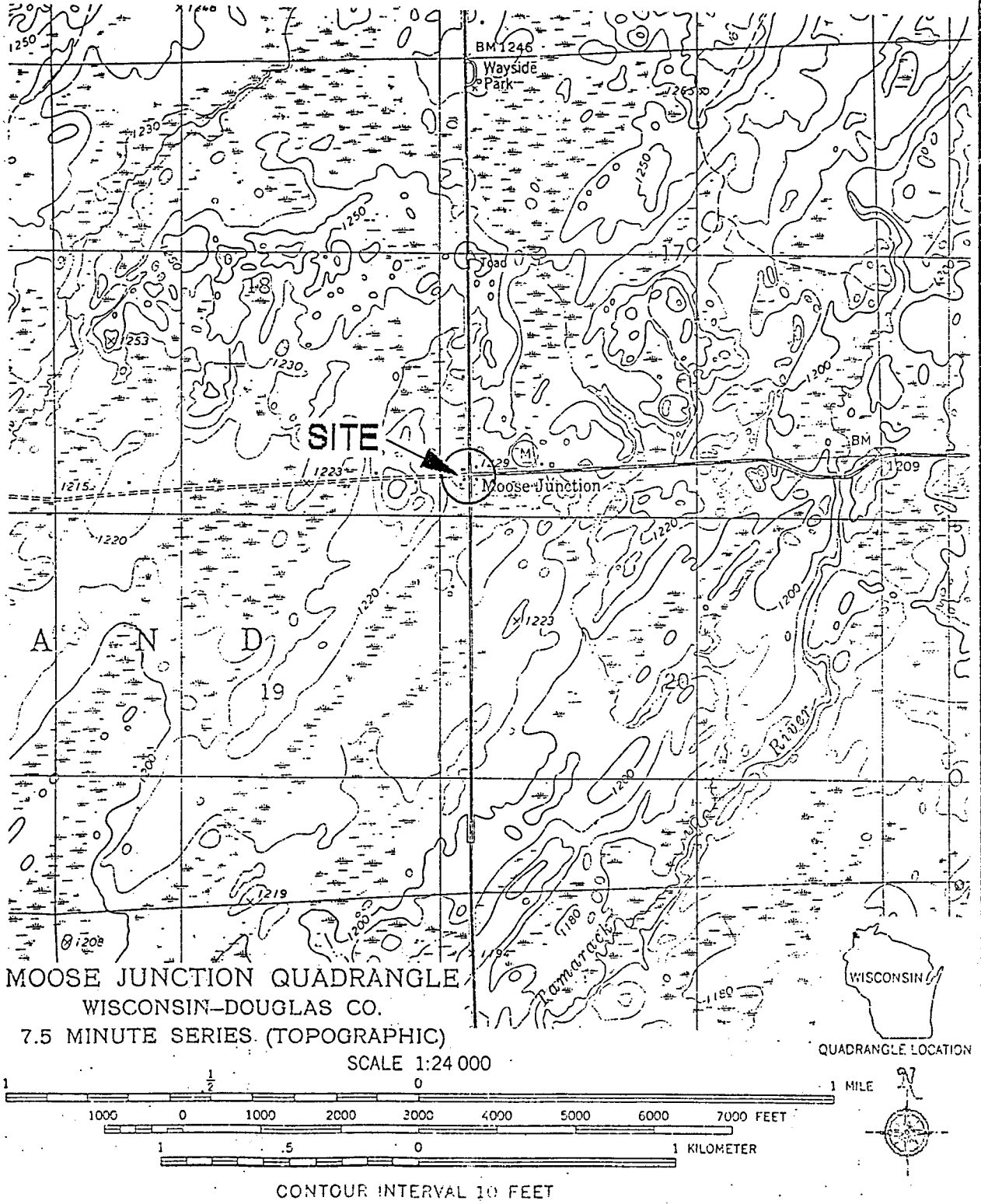
Earth Remediation Services (ERS) presents this summary to update involved parties of the site investigation at a former Underground Storage Tank (UST) site at the present Moose Junction Lounge in Dairyland, Wisconsin (Figure 1). Soil borings and monitoring wells were installed in an attempt to define the horizontal and vertical extent of petroleum fuel contamination. ERS through Earth Burners Inc. (EBI) was contracted by Dale Schultz to accomplish a Site Investigation on his property. Evidence that petroleum contamination had migrated off site prompted ERS to seek access agreements with four surrounding property owners to place environmental borings on their properties. Copies of the access agreements are located in Appendix G of this report. Installation of wells and borings occurred between May 17 and May 19, 1993. Groundwater sampling was performed on May 27, 1993. Groundwater elevations were surveyed and calculated on June 14, 1993. Groundwater flow direction may be influenced by a possible bedrock ridge which strikes southwest and is directly under the Moose Junction Lounge. General groundwater flow direction is towards the south. Petroleum contamination was found in the groundwater in three of the four monitoring wells, however monitoring well MW-4, which has low levels of petroleum groundwater contamination, may have a source other than the Moose Junction Lounge UST.

EBI conducted an interim action on June 15, 1993 by excavating the existing UST and grossly contaminated soils as specified in the workplan. Approximately 560 cubic yards of soils were excavated and stockpiled 100 yards north of the Lounge. Soil volume was larger than ERS had anticipated as evidence of another former UST and associated pump island were found during the excavation. On June 21, 1993 EBI contracted Dean's Trucking of Superior, a licensed solid waste transport company to move the petroleum contaminated soils to EBI's thermal treatment unit located on Hallet Dock #7 in Duluth, Minnesota. Soils were stockpiled awaiting treatment. Analysis results from the soil stockpile have not been received from the laboratory at this time.

560 yd^3

June 21

EARTH REMEDIATION SERVICES



MOOSE JUNCTION QUADRANGLE
WISCONSIN–DOUGLAS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SCALE 1:24 000

CONTOUR INTERVAL 10 FEET

MOOSE JUNCTION SITE LOCATION MAP

FIGURE 1

2.0 BACKGROUND

2.1 Topography/Geology/Hydrology

The Moose Junction Lounge UST site is located in Douglas County as follows: SE ¼ of the SE ¼ of the SE ¼ of Section 18, Township 44N, Range 14W. The local topography is dominated by a hummocky ground moraine overlying igneous bedrock comprised of flood basalts and rhyolites. The glacial till is typically unstratified clay, with boulders, and is often interbedded with sand and gravel lenses or channels. This is indicative of a complex glacial history. According to Hydrologic Atlas HA-451, soil permeability is recorded as occurring between 0.8 to 2.5 inches per hour. Topography is influenced by the Superior glacial lobe which deposited linear glacial features striking northeast to southwest. Topographically the Moose Junction area is dominated by swampy lowland.

Depth to bedrock has been generalized for the area as being less than 100 feet below grade, however, bedrock was encountered approximately 10 to 12 feet below grade during the excavation and in soil borings by the lounge and on the Margaret Dickman residence (Figure 3-1). Soil borings to the east and west of the lounge were drilled to 16 feet without encountering bedrock. Well logs from the Wisconsin Geological And Natural Survey indicate the Moose Junction Lounge may enter bedrock 12 feet below grade. An unused well on the Mary McKelvey property is only 150 feet southeast of the tank basin and is 32 feet in depth below grade, but does not enter bedrock. The Margaret Dickman well log is not included in the well logs in Appendix F, but is reported to enter bedrock at 12 feet below grade.

Regional groundwater flow is in an easterly direction according to Hydrologic Atlas HA-451. Groundwater flow in the Moose Junction Lounge immediate vicinity is determined to be in a southerly direction.

Annual precipitation in the Moose Junction area is 30.5 inches with 65% of the rainfall expended by evapotranspiration and 35% towards surface runoff. Long term groundwater storage change is assumed to be near zero.

2.2 OTHER POSSIBLE SOURCES

Reports from local residents indicate the location of a former tavern/gas station on the present Mary McKelvey property. A gasoline UST was supposedly excavated in the near vicinity of SB-12 during 1985 or 1986. Data collected by ERS supports

this information by the high soil vapor readings and analytical results from SB-12. It is quite possible that a former UST leaked causing a second contaminant plume. MW-4 may be at the southern down gradient boundary of this plume as shown by the very low concentration of Benzene in the soil and groundwater there. The second source may explain the higher benzene concentration at the previous RMI soil boring B-4 which is higher than the concentration of AquaTec's boring MJ-2, even though MJ-2 is closer to the Moose Junction UST.

Another source that either contributed to or is responsible for the contamination is what appeared to be another UST basin on the northeast corner of the Moose Junction Lounge. During the interim action soil excavation, a former pump island was located directly in front of the Lounge. Supply pipes from the former pump island led to a contaminated soil area on the northeast corner of the lounge. Analytical soil sample 9308-B2(4) characterizes the sidewall of this area and B1(12) is indicative of the soils at the bottom of the excavation.

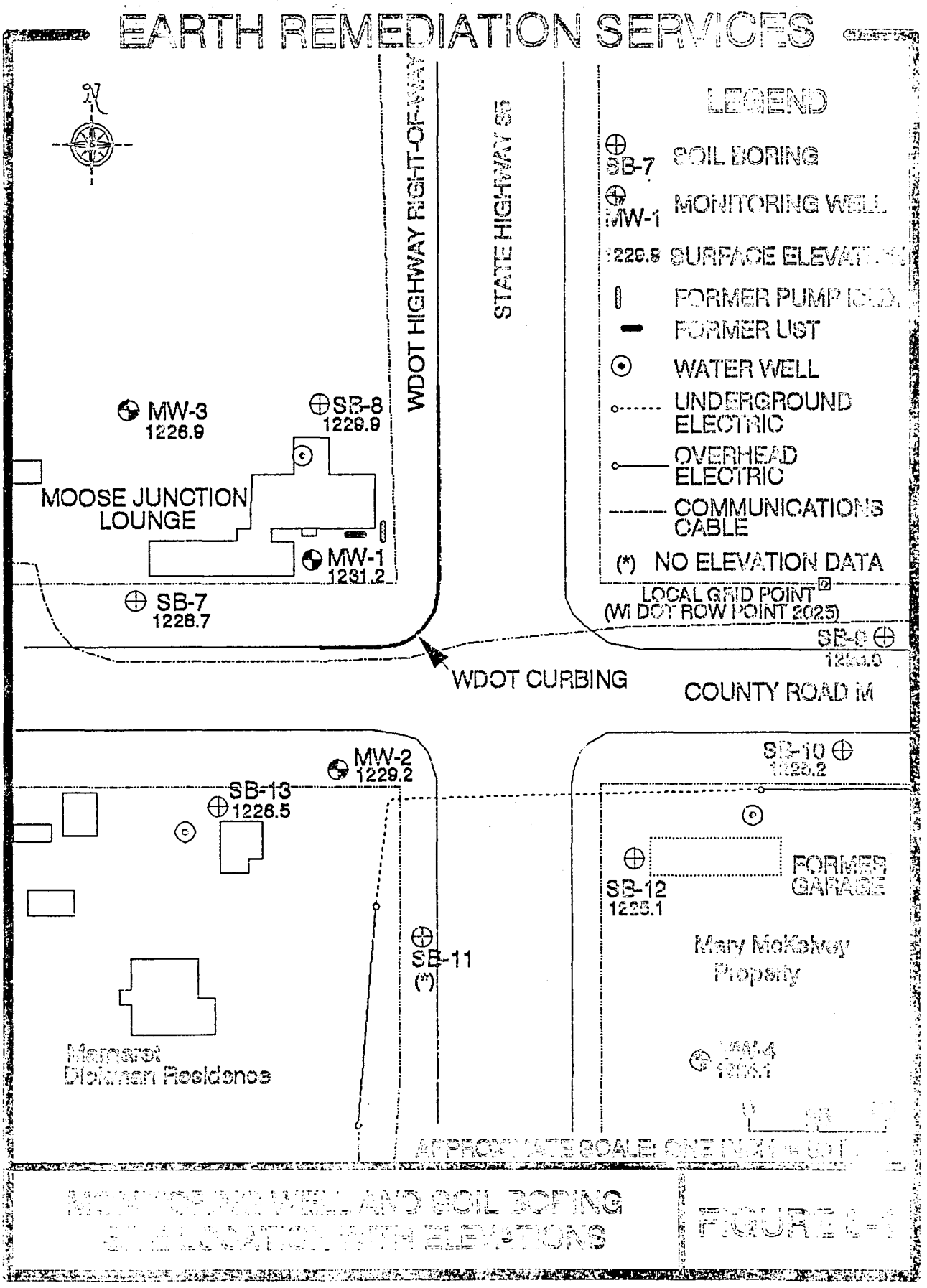
3.0 WORK SUMMARY

3.1 SOIL BORING/MONITORING WELL INSTALLATION

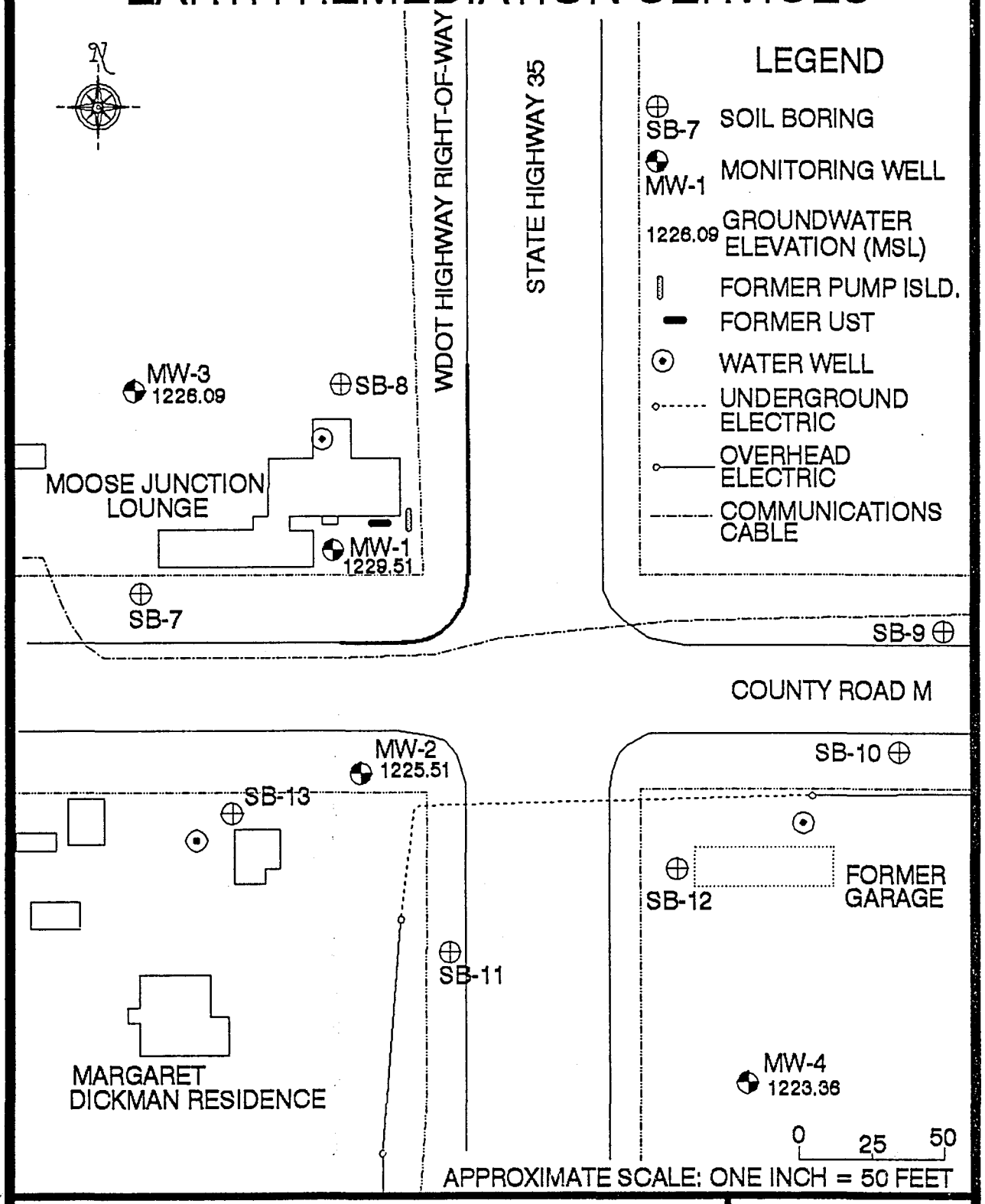
ERS and Stevens Well Drilling were scheduled to begin field work at Moose Junction Lounge on April 16, 1993; however road restrictions on Wisconsin highway 35 delayed the field work to May 17, 1993. Only SB-12 of the seven soil borings had any significant soil contamination. Monitoring wells MW-1, MW-2, MW-3, and MW-4 are water table observation wells. ERS and Stevens Well Drilling completed grouting the monitoring wells on May 19, 1993. Locations and corresponding elevations can be viewed in Figure 3-1. ERS field notes and pictures are available upon request. Soil boring and the appropriate abandonment logs are shown in Appendix A. Monitoring well logs are shown in Appendix B.

3.2 GROUNDWATER SAMPLING

Groundwater sampling was accomplished on May 27, 1993. Prior to sampling, well volumes and groundwater levels were determined. Groundwater elevations were calculated using WDOT ROW point 2025 near the highway 35/county M intersection. Elevations for the May 27, 1993 sampling event can be viewed in Figure 3-2. At least four well volumes were purged while testing for temperature, conductivity, and pH. After these field parameters stabilized, groundwater samples were collected with a dedicated bailer. No free product was seen in any of the wells, however, a noticeable petroleum odor emanated from MW-1 and MW-2. Groundwater sampling forms can be viewed in Appendix C.


EARTH REMEDIATION SERVICES
LEGEND
SB-7 SOIL BORING
MW-1 MONITORING WELL
1226.9 SURFACE ELEVATION
FORMER PUMP ISLD.
FORMER UST
WATER WELL
UNDERGROUND ELECTRIC
OVERHEAD ELECTRIC
COMMUNICATIONS CABLE
(*) NO ELEVATION DATA
LOCAL GRID POINT
(WI DOT ROW POINT 2025)
WDOT HIGHWAY RIGHT-OF-WAY
STATE HIGHWAY 35
MW-3
1226.9
SB-8
1229.9
MOOSE JUNCTION LOUNGE
MW-1
1231.2
SB-7
1228.7
WDOT CURBING
COUNTY ROAD M
SB-9
1234.0
MW-2
1229.2
SB-13
1226.5
SB-10
1235.2
FORMER GARAGE
SB-12
1233.1
SB-11
(*)
Mary McKelvey Property
Margaret Blakiman Residence
MW-4
1234.1
APPROXIMATE SCALE: ONE INCH = 50 FEET
MONITORING WELL AND SOIL BORING
ELEVATION WITH ELEVATIONS
FIGURE 3-1

EARTH REMEDIATION SERVICES



MOOSE JUNCTION LOUNGE
GROUNDWATER ELEVATIONS

FIGURE 3-2

3.3 VAPOR RISK ASSESSMENT

An initial phase of a vapor risk assessment was completed by ERS to assure potential explosive conditions did not exist. Because of the proximity of the Moose Junction Lounge foundation to the former UST(s), ERS tested the lounge area for petroleum vapors with an HNu DL101-2 photoionizer and a Gas Pro Plus explosimeter. The explosimeter gave no indication of an explosive atmosphere. Vapor readings indicated very low concentrations of vapors in both the lounge and the Schultz residence. Results can be viewed in Figure 3-3.

3.4 INTERIM ACTION EXCAVATION

Contaminated soils were separated from clean soils using jar headspace analysis and an HNu DL-101-2 photoionization detector with a 10.2 electron volt lamp. At least one sample was analyzed for each 10 cubic yards of soil excavated. Soil vapor analysis logs can be viewed in Appendix D. It should be noted that many PID soil vapor readings were lower than the probable actual value. Soils were very contaminated and affected the 10.2 eV lamp. There was no lamp cleaning compound available during the excavation which could be a cause for the low readings. ERS feels the PID values under 100 PPM are accurate based on visual and olfactory evidence.

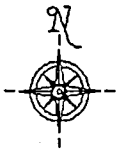
The UST was in good condition, however the supply pipes appeared to have been leaking. Pipes which led to a former tank basin and pump island (shown on figure 3-4) also appeared to have leaked. The former tank basin on the northeast corner of the lounge had contaminated soils to 12 feet below grade which is very near the bedrock surface.

4.0 ANALYTICAL SUMMARY

4.1 SOIL BORING ANALYSIS

Laboratory Analytics of Gasoline Range Organics (GRO's) for all environmental borings ranged from <10.0 to 4,220 PPM. Soil borings SB-12, and Monitoring Wells MW-1, and MW-2 were found to have olfactory and soil vapor evidence of petroleum contamination. Total lead values in the soil ranged from 3.38 to 12.90 PPM and are low enough to not be of a concern. Lead analytics show no spikes in concentrations as did a previous soil boring analytic which may have been either an anomaly or laboratory error. Low levels of Methyl Tertiary Butyl Ether (MTBE) were found in borings MW-1 and MW-2 indicating unleaded gasoline did have a part in the contamination. Soil boring analytics can be viewed in Table 4-1. Laboratory analysis by Twin Ports Testing (TPT) can be found in Appendix

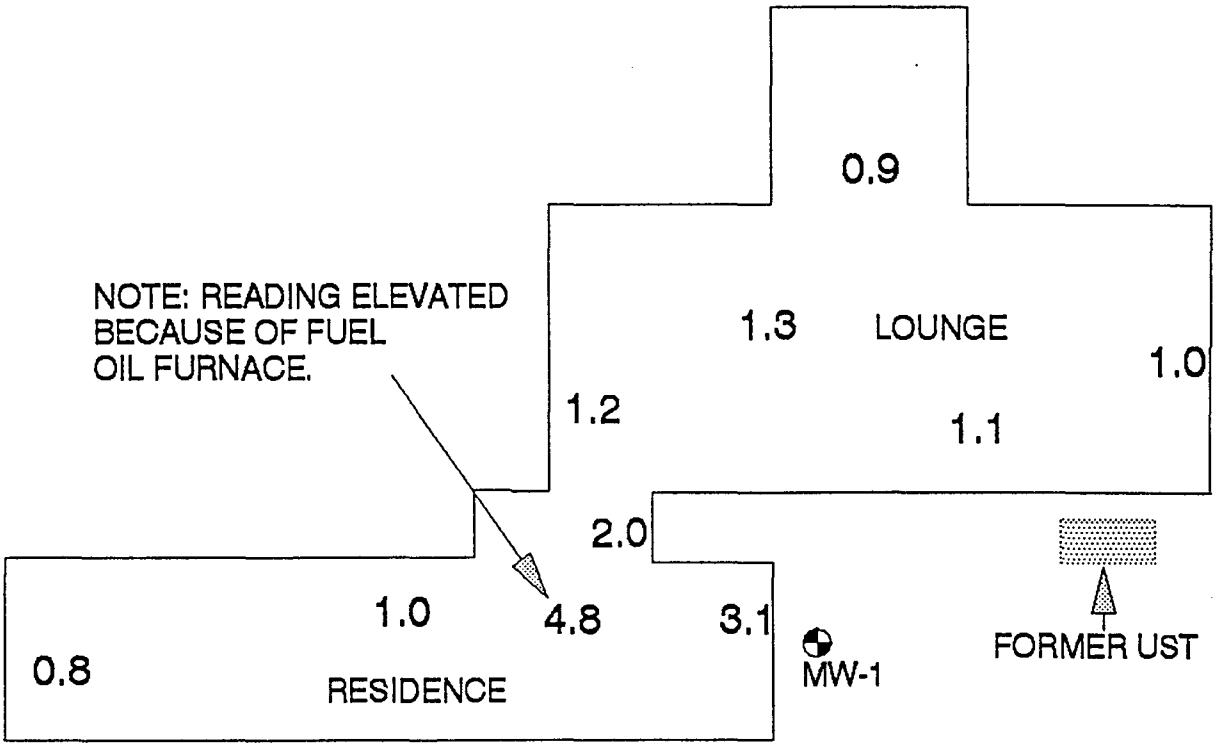
EARTH REMEDIATION SERVICES



LEGEND

MW-1 MONITORING WELL

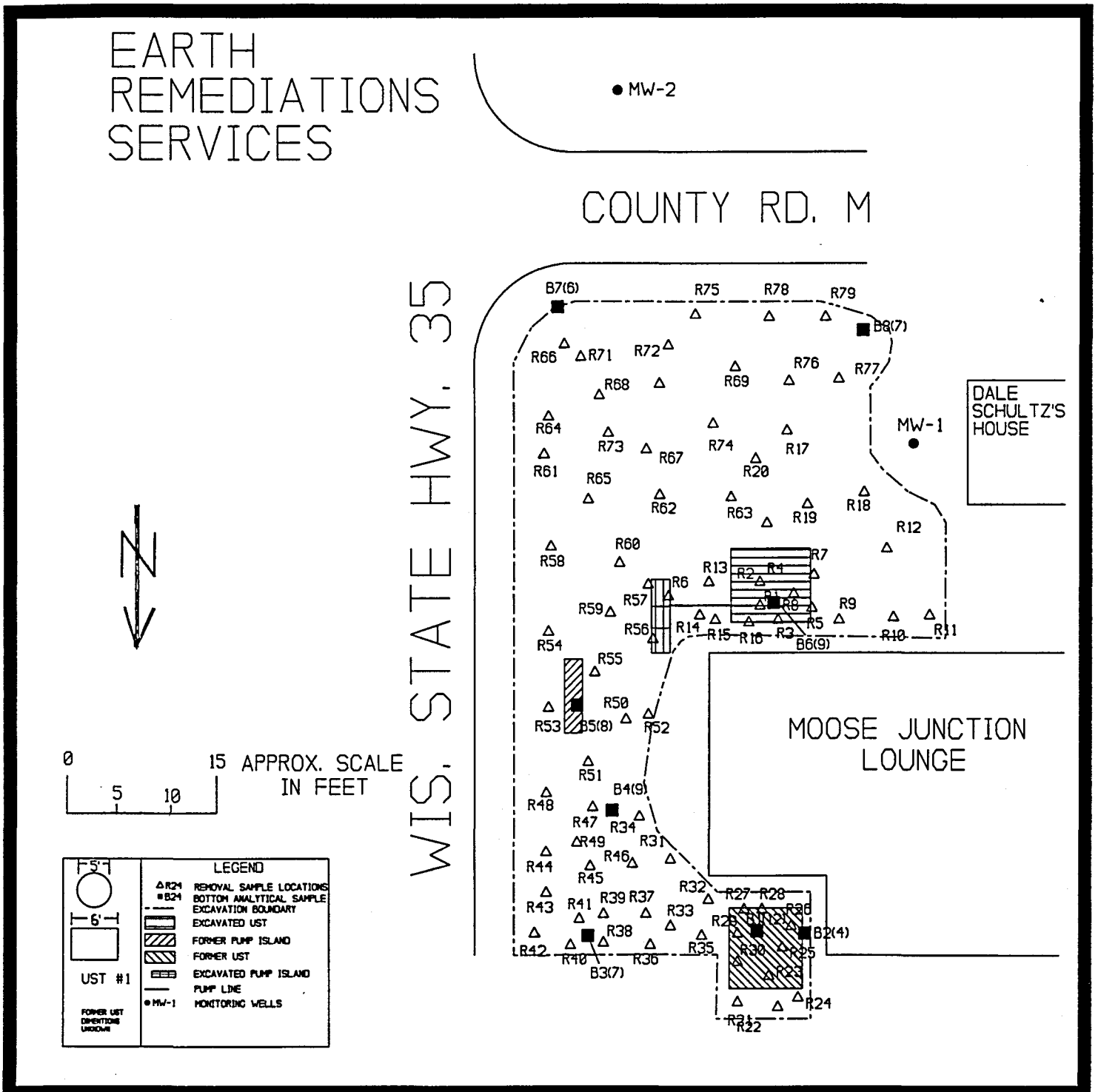
1.3 VAPOR READING (PPM)



All PID Readings Are Above The background of 0.7 ppm.

MOOSE JUNCTION LOUNGE
VAPOR RISK ASSESSMENT

FIGURE 3-3



SOIL VAPOR AND ANALYTICAL SAMPLE LOCATION: UST EXCAVATION, MOOSE JUNCTION

FIGURE 3-4

E. Soil vapor headspace results from the soil borings are recorded on the Soil Boring Logs in Appendix A.

4.2 GROUNDWATER ANALYSIS

Groundwater samples were obtained from the four monitoring wells, the Margaret Dickman residence, and the Moose Junction Lounge. No chemical contaminants were found in the Moose Junction Lounge well indicating it is probably drawing water below the vertical extent of contamination. The Dickman well was sampled for only GRO. No contaminants were found in that range. Benzene and GRO concentrations for each groundwater sample are listed in Figure 4-1. Highest concentrations were found in MW-2 which is a water table observation well installed directly down gradient of the former UST basin. Total lead concentrations ranged from 0.002 to 0.406 PPM and should not be an environmental problem. Selected groundwater laboratory analytics can be viewed in Table 4-2. Complete analysis can be viewed in Appendix E.

4.3 EXCAVATION ANALYSIS

Eight sidewall and bottom samples were collected to characterize the remaining soils. Additionally, three grab samples were collected 18 inches into the contaminated stockpile shortly after the excavation was completed. Laboratory analytical samples were placed in an iced cooler to be preserved at four degrees centigrade before being transported to Lake Superior Labs. The excavation samples were analyzed for GRO, BTEX, and total lead. Soil vapor results from the UST excavation can be viewed in Appendix D. Bottom and sidewall analytics can be seen in Table 4-3 with the laboratory report in Appendix E.

5.0 CONCLUSIONS

ERS believes the high soil vapor readings and the analytical results from the SB-12 location are inconsistent with the concentration gradation from the Moose Junction Lounge. This fact, plus local population reports lead to a possible former UST in the SB-12 vicinity. It is improbable that the concentrations found at the Moose Junction Lounge could be the source of petroleum contamination found at the Mary Mckelvey property. Dispersion, diffusion, advection, and to some degree biodegradation would have reduced the concentrations of petroleum contaminants.

The contaminants found in MW-2 are impacted to the bedrock but do not seem to have migrated toward the nearby Dickman water

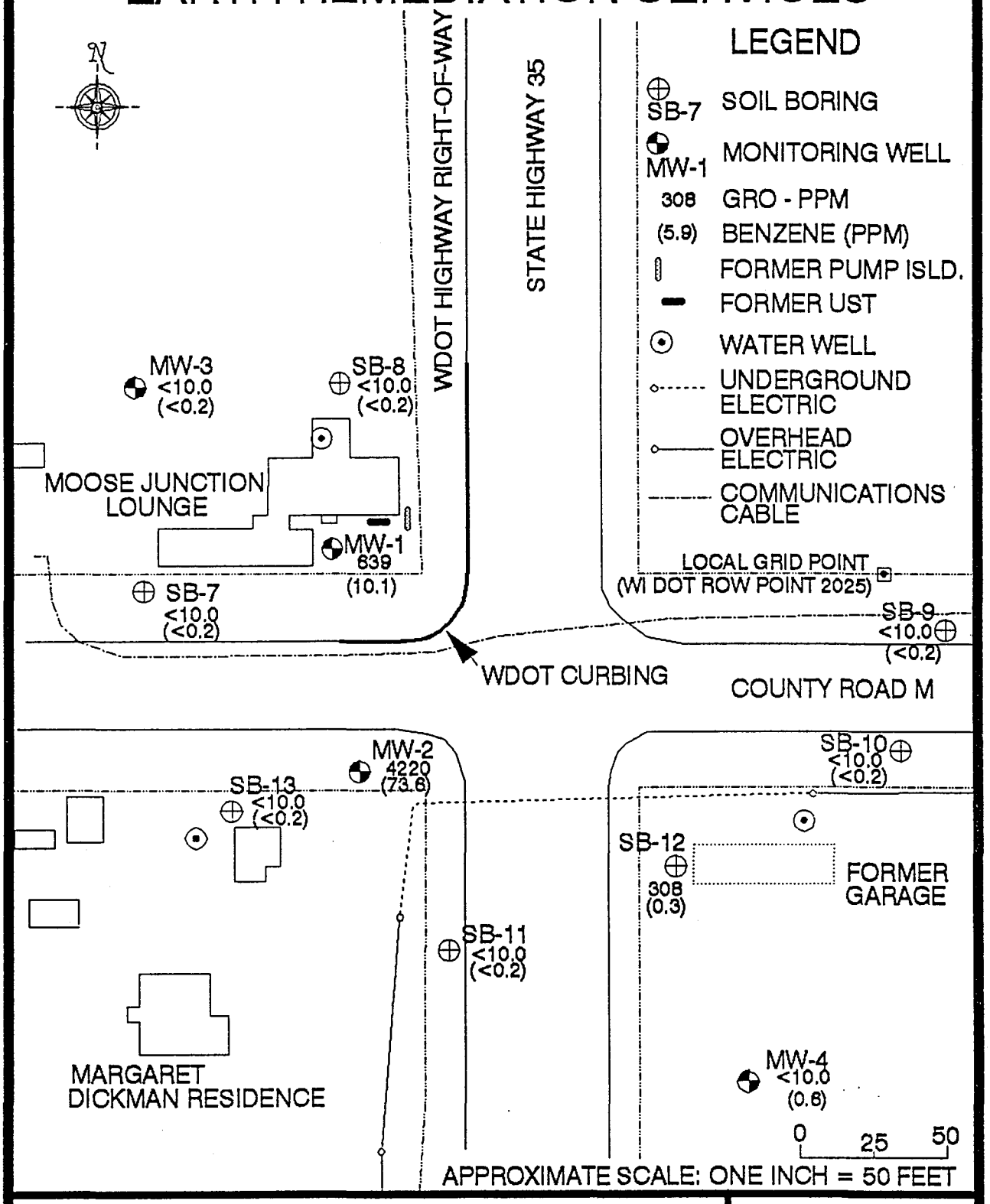
well as proven by SB-13 soil analytics. Coarser soils and possible utility lines may have created a preferential path for the impacted groundwater.

Although lab results indicate some very contaminated soils still remain on the south side of the excavation and under the Moose Junction Lounge, ERS believes the majority of the grossly contaminated soils were excavated. The excavation of soils may serve a double purpose:

1) Eliminate the source of the plume thereby stopping the contamination before it encounters Margaret Dickman's water well.
2) Lower the petroleum vapors which may be entering the Moose Junction Lounge and the Dale Schultz residence.

Groundwater flow may be affected by a probable bedrock ridge underlying the Moose Junction Lounge. Groundwater flow on the east side of the ridge is toward the south. The groundwater flow on the west side of the ridge is inconclusive, however, the flow may follow the glacial lineation to the southwest.

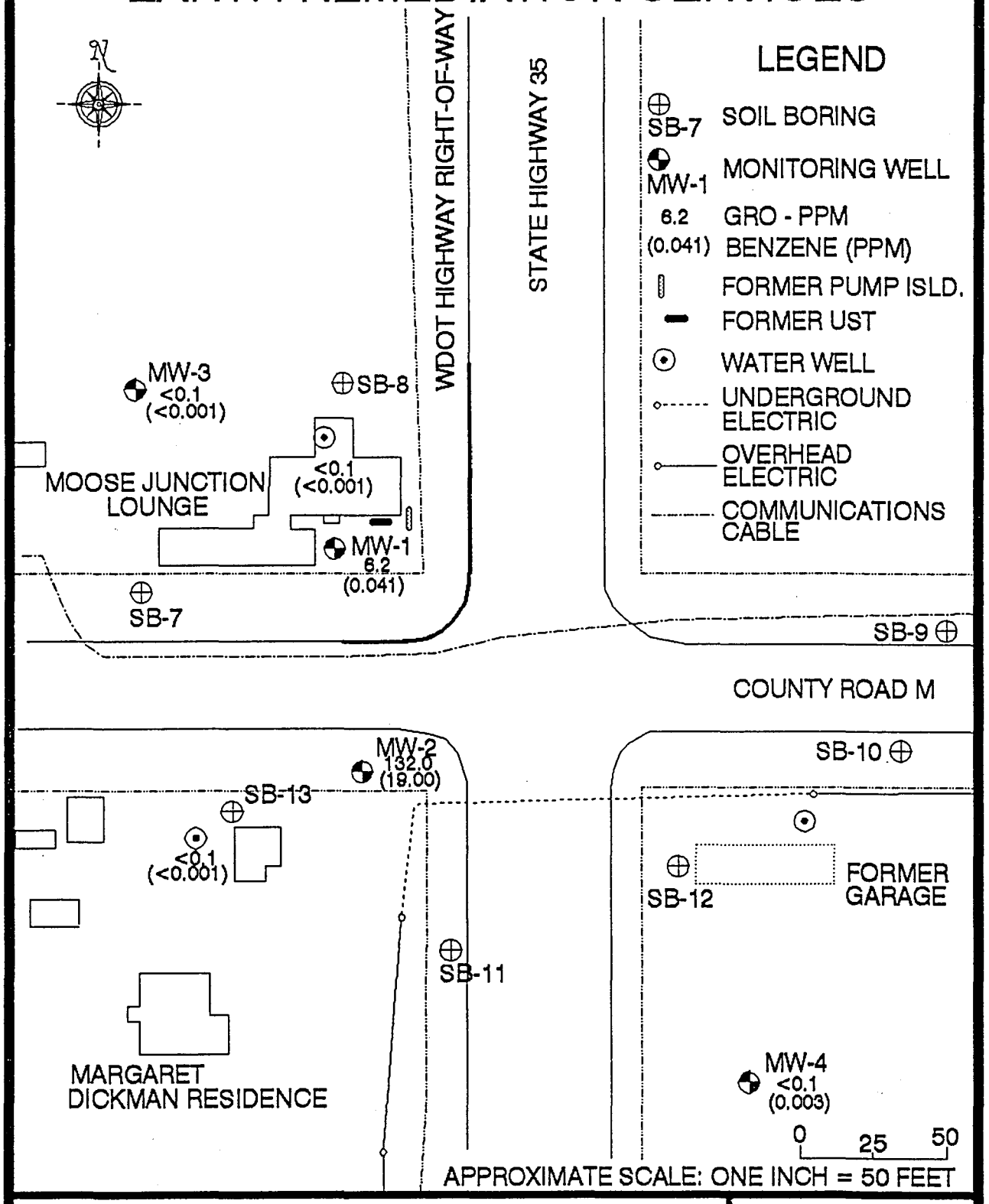
EARTH REMEDIATION SERVICES



GASOLINE RANGE ORGANICS AND BENZENE CONCENTRATIONS IN SOILS

FIGURE 4-1

EARTH REMEDIATION SERVICES



GASOLINE RANGE ORGANICS AND BENZENE CONCENTRATIONS IN WATER

FIGURE 4-2

Moose Junction Lounge
Soil Analytics
Table 4-1

Compounds in PPM	Sample number (Depth in feet below grade)														
	SB-7 (8-10)	SB-8 (6-8)	SB-9 (4-6)	SB-10 (8-10)	SB-11 (6-8)	SB-12 (4-6)	SB-12 (14-16)	SB-13 (2-4)	SB-13 (12-14)	MW-1 (4-6)	MW-2 (4-6)	MW-2 (12-13)	MW-3 (14-16)	MW-4 (8-10)	MW-4 (14-16)
GRO	<10.0	<10.0	<10.0	<10.0	<10.0	308	<10.0	<10.0	<10.0	639	4220	51.5	<10.0	<10.0	<10.0
Benzene	<.200	<.200	<.200	<.200	<.200	0.28	<.200	<.200	<.200	10.1	73.6	5.9	<.200	<.200	0.57
Toluene	<.200	<.200	<.200	<.200	<.200	1.19	<.200	<.200	<.200	12.7	164	5.81	<.200	<.200	0.384
Ethylbenzene	<.200	<.200	<.200	<.200	<.200	2.51	<.200	<.200	<.200	8.77	30.7	0.846	<.200	<.200	<.200
Total Xylenes	<.200	<.200	<.200	<.200	<.200	8.25	<.200	<.200	<.200	39.7	358	3.78	<.200	<.200	0.64
MTBE	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	<.200	5.67	13.9	<.200	<.200	<.200	<.200
1,2,4-Trimethylbenzene	<.200	<.200	<.200	<.200	<.200	3.95	<.200	<.200	<.200	9.57	112	0.472	<.200	<.200	<.200
1,3,5-Trimethylbenzene	<.200	<.200	<.200	<.200	<.200	9.73	<.200	<.200	<.200	23.7	192	1.39	<.200	<.200	0.247
Total Lead	12.8	8.64	10.3	7.18	9.48	12.9	11.1	12	6.81	9.99	3.38	5.72	6.31	5.95	5.93

Moose Junction Lounge
Selected Groundwater Analytics
Table 4-2

Components in PPB	May 1993 MW-1	MW-2	MW-3	MW-4	MD-WW	DS-WW
	Monitoring Well					
GRO	6160	132000	<100	<100	<100	<100
Benzene	41	19000	<1	3	<1	<1
Touluene	210	29000	<1	<1	N/A	<1
Ethylbenzene	22	1600	<1	<1	N/A	<1
m and/or p-Xylene	290	12000	<1	<1	N/A	<1
o-Xylene	530	4500	<1	<1	N/A	<1
Dibromochloromethane	<1	130	<1	<1	N/A	<1
n-Propylbenzene	6	1300	<1	<1	N/A	<1
Isopropylbenzene	3	53	<1	<1	N/A	<1
tert-Butylbenzene	<1	270	<1	<1	N/A	<1
n-Butylbenzene	<1	53	<1	<1	N/A	<1
p-Isopropytoluene	6	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	96	390	<1	<1	N/A	<1
1,3,5-Trimethylbenzene	190	470	<1	<1	N/A	<1
Total Lead	406	131	118	18	7	2

Moose Junction Lounge
Soil Excavation Analysis
Table 4-3

Bottom Soil Sample (feet below grade)

Compounds in PPM	B1(12)	B2(4)	B3(7)	B4(9)	B5(8)	B6(9)	B7(6)	B8(7)
GRO	<10.00	769	<10.00	61.6	577	640	324000	12.1
Benzene	<.200	6.61	<.200	0.644	1.57	11.6	7240	1.39
Ethylbenzene	<.200	7.98	<.200	1.25	5.7	6.72	4200	<.200
Toluene	<.200	12.4	<.200	2.25	5.72	19.8	10500	1.01
Total Xylenes	<.200	9.56	<.200	5.82	24.9	30	18400	0.448
Lead	7.03	9.53	7.62	9.73	7.65	9.55	12.4	7.91

APPENDIX A

SOIL BORING LOGS / Borehole Abandonment Logs

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 5-92

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE	_____	MW-1

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (M M / D D / Y Y)	Date Drilling Completed (M M / D D / Y Y)	Drilling Method
STEVENS WELL DRILLING / RANDY JOHNSON	05 / 18 / 93	05 / 19 / 93	HOLLOW STEM AUGER

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
___	_____	MW-1	1229.5 Feet MSL	1231.2 Feet MSL	8.25 inches

Boring Location
State Plane _____ N, _____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E(W)
Lat 46° 17' 20" Long 92° 09' 20"

Local Grid Location (If applicable)
☒ N ☐ E
5.1 Feet ☐ S 183.6 Feet ☒ W

County: DOUGLAS
DNR County Code: 16
Civil Town/City/ or Village: DAIRYLAND

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1	No Recovery										
		1	2											
	22"		3	Brown to grayish brown (2.5YR 5/2) silty sand, loose, damp (Fill)	SM			278						
		25	4	Strong petroleum odor										
MW-1 (4-6)	24"		5	Same as above	SM			343						
		13	6											
	24"		7	Mottled very dark gray and brown (7.5YR 4/2) silty fine to course grained sand, loose to semi compact, petroleum odor	SM			297						
		46	8											
	12"		9	Same as above.	SM			104						
		114	10	NOTE: Refusal at 10.5 feet below grade. Boring restarted twice with same refusal. Possible bedrock at 10 feet below grade.										

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

Signature: Roger W Bird Firm: Earth Remediation Services

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 5-92

Page 1 of 2

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE		MW-2

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (M M D D Y Y)	Date Drilling Completed (M M D D Y Y)	Drilling Method
STEVENS WELL DRILLING / RANDY JOHNSON	05/19/93	05/19/93	HOLLOW STEM AUGER

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-2	1225.5 Feet MSL	1229.2 Feet MSL	8.25 inches

Boring Location
State Plane _____ N, _____ E S/C/N | Lat 46°17'20" | Long 92°09'20"
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E/W

Local Grid Location (If applicable)
☐ N ☐ E
64.8 Feet ☒ S 177.1 Feet ☒ W

County: DOUGLAS | DNR County Code: 16 | Civil Town/City/ or Village: DAIRYLAND

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	10"	21	1	Reddish brown (5YR 4/4) silty sand, damp, loose (fill)	SM			31						
	19"	15	3	Dark reddish gray (5YR 4/2) fine to medium grained sand, moist to wet, loose, strong petroleum odor	SP			294						
MW-2 (4-6)	19"	17	5	Same as above, coarser sand-poorly graded	SP			357						
	13"	93	7	Dark grayish brown (10YR 4/2) silty gravelly sand, compact, wet, petroleum odor, sheen on water	SM			293						
	12"	111	9	Same as above	SM			237						
	10"	100	11	Same as above	SM			259						

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

Signature: Roger W Biehl | Firm: Earth Remediation Services

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
MW-2 (12-13)	5"	60/1	13	Same as above NOTE: Rock fragments from the bottom of the borehole are a Vesicular rhyolite with microcrystalline quartz amygdules.	SM			178						

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 5-92

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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE		MW-3

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
STEVENS WELL DRILLING / RANDY JOHNSON	05/19/93	05/19/93	HOLLOW STEM AUGER

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-3	1226.1 Feet MSL	1226.9 Feet MSL	8.25 inches

Boring Location
State Plane _____ N, _____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 (E)W
Lat 46° 17' 20" Long 92° 09' 20"

Local Grid Location (If applicable)
67.8 Feet ☒ N ☐ S 251.9 Feet ☐ E ☒ W

County: DOUGLAS
DNR County Code: 16
Civil Town/City/ or Village: DAIRYLAND

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	13"	9	1	Very dark gray (5YR 3/1) organic rich sandy silt, soft damp	OL			0.0						
	14"	24	3	Dark gray (5YR 4/1) sandy silt, soft, moist	ML			0.0						
	14"	9	5	Dark reddish brown (5YR 3/2) silty clay, soft, moist, low-medium plasticity.	CL			0.0						
	22"	22	7	Same as above	CL			0.0						
	20"	60	9	Same as above with some interbeds of a dark reddish gray sandy silt	CL			0.0						
	13"	49	11	Dark reddish brown (5YR 3/3) silty fine to medium grained sand, loose, wet	SM			0.0						

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

Signature: Roger W Bielke
Firm: Earth Remediation Services

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Sample										Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	11"	36	13	Same as above with some gravel	SM			0.0						
MW-3 (14-16)	12"	87	14	Same as above	SM			0.0						
			15											
			16											

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 5-92

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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE		MW-4

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (M M D D Y Y)	Date Drilling Completed (M M D D Y Y)	Drilling Method
STEVENS WELL DRILLING / RANDY JOHNSON	05/18/93	05/18/93	Hollow Stem Auger

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-4	1223.4 Feet MSL	1224.1 Feet MSL	8.25 inches

Boring Location
State Plane _____ N, _____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E (W)
Lat 46°17'20" Long 92°09'20"

Local Grid Location (If applicable)
173.6 Feet ☐ N ☒ S 47.1 Feet ☐ E ☒ W

County	DNR County Code	Civil Town/City/ or (Village)
DOUGLAS	16	DAIRYLAND

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	17"	12	1–2	Brown (7.5YR 4/4) silty fine to medium grained Sand, loose moist, some organic debris	SM			4.0						
	23"	30	3–4	Same as above, sand becomes coarser,	SM			4.0						
	22"	38	5–6	Same as above, wet	SM			5.0						
	20"	12	7–8	Dark brown (7.5YR 3/2) fine to coarse grained sand with interbedded silt layers, loose wet	SP			0.0						
MW-4 (8-10)	19"	26	9–10	Same as above	SP			9.0						
	22"	17	11–12	Same as above	SP			1.0						

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

Signature: Roger W Bidel Firm: Earth Remediation Services

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Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
	24"	54	13	Same as above	SP			8.0						
		-	14											
MW-4 (14-16)	16"	96	15	Same as above, much more gravel	SP			4.0						
		-	16											

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE		SB-7

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
STEVENS WELL DRILLING RANDY JOHNSON	05/17/93	05/17/93	Sample probe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	2.0 inches

Boring Location
State Plane ____ N, ____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E/W
Lat 46° 17' 20" Long 92° 09' 20"

Local Grid Location (If applicable)
21.4 Feet ☐ N ☒ S 252.0 Feet ☐ E ☒ W

County	DNR County Code	Civil Town/City/ or Village
DOUGLAS	16	DAIRYLAND

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	10"	12	1	Reddish brown (5YR 4/4) silty sand with trace gravel, loose damp	SM			0.0						
			2	Same as above, hit boulder	SM			0.0						
	2"	77	3											
			4	Brown (7.5YR 4/3) silty clay interbedded with silty sand soft, moist	CL			0.0						
	8"	23	5		SM									
			6					(0.0)						
	19"	58	7	Mottled brown and reddish brown (2.5YR 4/4) silty sand with some gravel, semi-compact, wet										
			8					(0.0)						
SB-7 (8-10)	10"	113	9	Same as above, more gravel										
			10											

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

Signature: Roger W Biehl
Firm: EARTH REMEDIATION SERVICES

Sample	Number and Type
	Length Att. & Recovered (in)
	Blow Counts
	Depth in Feet
	Soil/Rock Description And Geologic Origin For Each Major Unit
	U S C S
	Graphic Log
	Well Diagram
	PID/FID
Soil Properties	Compressive Strength
	Moisture Content
	Liquid Limit
	Plasticity Index
	P 200
	RQD/ Comments

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE		SB-8

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
STEVENS WELL DRILLING RANDY JOHNSON	05/17/93 (M M D D Y Y)	05/17/93 (M M D D Y Y)	Sample probe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	2.0 inches

Boring Location
State Plane ____ N, ____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E (W)
Lat 46° 17' 20" Long 92° 09' 20"

Local Grid Location (If applicable)
67.2 Feet ☒ N ☐ S ☐ E ☒ W 180.1 Feet

County	DNR County Code	Civil Town/City/ or Village
DOUGLAS	16	DAIRYLAND

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	13"	14	1	Reddish brown (5YR 4/4) silty sand, loose, damp (Fill)	SM			0.0						
	5"	16	3	Black (5YR 2.5/1) sandy silt, loose, moist; organic rich	OL			0.0						
	13"	27	5	Dark reddish gray (5YR 4/2) sandy silt, soft, wet	ML			0.0						
SB-8 (6-8)	14"	23	7	Weak red (2.5YR 4/2) silty sand, loose	SM			0.0						
			8	Refusal at 8 Feet										

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

Signature: Roger W Biehl
Firm: EARTH REMEDIATION SERVICES

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Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Moose Junction Lounge		SB-9

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (M M D D Y Y)	Date Drilling Completed (M M D D Y Y)	Drilling Method
Stevens Well Drilling, Randy Johnson	05/18/93	05/18/93	Sample probe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	2.0 inches

Boring Location
State Plane _____ N, _____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E/W

Lat 46° 17' 20"
Long 92° 09' 20"

Local Grid Location (If applicable)
21.0 Feet ☐ N ☒ S 24.1 Feet ☐ E ☐ W

County	DNR County Code	Civil Town/City/ or Village
Douglas	16	Dairyland

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	14"	8	1-2	Reddish brown (5YR 4/4) silty sand with some gravel, loose moist (fill)	SM	SM		0.0						
	17"	73	3-4	Brown (7.5YR 4/3) silty, gravelly clay, soft, wet	CL	CL		0.0						
SB-9 (4-6)	19"	55	5-6	Reddish brown (5YR 4/4) silty gravelly sand, semi compact, wet	SM	SM		0.0						

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

Signature: Roger W Bielt
Firm: Earth Remediation Services

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Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE	_ _ _ _ _ _ _ _	SB-10

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (M M D D Y Y)	Date Drilling Completed (M M D D Y Y)	Drilling Method
STEVENS WELL DRILLING / RANDY JOHNSON	05/18/93	05/18/93	Sample probe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			_____ Feet MSL	_____ Feet MSL	2.0 inches

Boring Location
State Plane _____ N, _____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E (W)
Lat 46° 17' 20" Long 92° 09' 20"

Local Grid Location (If applicable)
57.4 Feet ☒ S 9.6 Feet ☒ W ☐ N ☐ E

County	DNR County Code	Civil Town/City/ or Village
DOUGLAS	16	DAIRYLAND

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	12"	20	1–2	Dark Brown (7.5YR 3/2) Sandy silt with a trace gravel and some organic debris, loose damp	ML			0.0						
	14"	33	3–4	Brown (7.5YR 4/4) silty sandy clay with a trace gravel, soft, moist	CL			0.0						
	16"	72	5–6	Brown (7.5YR 4/4) silty sand with some gravel, loose, moist to wet	SM			0.0						
	18"	44	7–8	Same as above	SM			0.0						
SB-10 (8-10)	24"	52	9–10	Strong brown (7.5YR 4/6) poorly graded sand with a trace gravel, semi compact, wet.	SP			0.2						

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

Signature: Roger W Biehl
Firm: Earth Remediation Services

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Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE		SB-11

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (MM/DD/YY)	Date Drilling Completed (MM/DD/YY)	Drilling Method
STEVENS WELL DRILLING RANDY JOHNSON	05/18/93	05/18/93	Sample probe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	2.0 inches

Boring Location
State Plane _____ N, _____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E (W)
Lat 46° 17' 20" Long 92° 09' 20"

Local Grid Location (If applicable) (APPROX)
125 Feet ☐ N ☒ S 150 Feet ☐ E ☒ W

County	DNR County Code	Civil Town/City/ or Village
DOUGLAS	16	DAIRYLAND

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	18"	68	1-2	Brown (7.5YR 4/4) silty gravelly sand, compact, damp (Fill, Class 5 roadbase)	SM			0.0						
			2-3	Same as above	SM			0.0						
	19"	159	3-4											
			4-5	Dark brown (7.5YR 3/3) silty sand with some gravel, semi-compact, wet	SM			0.0						
	17"	124	5-6											
B-11 (6-8)	20"	30	6-7	Same as Above, loose	SM			0.0						
			7-8											

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

Signature: Roger W Bielk — Firm: Earth Remediation Services

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Sample		Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION

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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE	_____	SB-12

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (M M D D Y Y)	Date Drilling Completed (M M D D Y Y)	Drilling Method
STEVENS WELL DRILLING / RANDY JOHNSON	05/18/93	05/18/93	Sample probe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
___ ___ ___	___ ___ ___ ___ ___ ___		_____ Feet MSL	_____ Feet MSL	2.0 inches

Boring Location
State Plane _____ N, _____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E(W)
Lat 46° 17' 20" Long 92° 09' 20"

Local Grid Location (If applicable)
98.4 Feet ☐ N ☒ S 67.1 Feet ☐ E ☒ W

County	DNR County Code	Civil Town/City/ or Village
DOUGLAS	16	DAIRYLAND

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	18"	24	1–2	Dark brown (7.5YR 3/3) silty sand with a trace gravel, loose damp (Fill) petroleum odor	SM			466						
	12"	42	3–4	mottled gray and very dark grayish brown (10YR 3/2) clayey sandy silt, soft, wet, petroleum odor	ML			607						
SB-12 (4-6)			5	Same as above										
	14"	49	6–7		ML			634						
				Same as above										
	13"	5	8–9		ML			291						
	10"	75	9–10	Dark brown (7.5YR 3/3) silty fine sand with some gravel, semi-compact, petroleum odor	SM			104						
	5"	51	11–12	Dark gray (7.5YR 4/1) fine to coarse gravelly sand, loose wet, slight petroleum odor	SP			34						

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

Signature: Roger W Bird Firm: Earth Remediation Services

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Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	5"	5 4 1	13 14	Same as Above	SP			41						
SB-12 (14-16)	24"	4 1	15 16	Same as Above	SP			13						

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
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Facility/Project Name	License/Permit/Monitoring Number	Boring Number
MOOSE JUNCTION LOUNGE		SB-13

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started (M M D D Y Y)	Date Drilling Completed (M M D D Y Y)	Drilling Method
STEVENS WELL DRILLING / RANDY JOHNSON	05/19/93	05/19/93	Sample probe

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			____ Feet MSL	____ Feet MSL	2.0 inches

Boring Location
State Plane ____ N, ____ E S/C/N
SE 1/4 of SE 1/4 of Section 18, T 44 N, R 14 E/(W)
Lat 46°17'20" Long 92°09'20"

Local Grid Location (If applicable)
78.2 Feet ☐ N ☒ S 218.8 Feet ☐ E ☒ W

County	DNR County Code	Civil Town/City/ or (Village)
DOUGLAS	16	DAIRYLAND

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
		16	1–2	Brown (7.5YR 4/2) sandy silt with little organic debris, soft damp	ML			2.0						
		27	3–4	Same as above	ML			5.4						
		56	5–6	mottled reddish brown and brown (7.5YR 4/3) sandy gravelly silt, semi-compact, moist	ML			2.3						
		53	7–8	Reddish brown 5YR 4/4 silty gravelly sand, loose, wet	SM			2.7						
		60	9–10	Dark reddish brown (5YR 3/2) silty fine grained sand, semi compact, wet	SM			0.3						
		68	11–12	Same as above	SM			0.0						

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

Signature: Roger W Bird | Firm: Earth Remediation Services

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
SB-13 (12-14)	12"	112	13	Same as above, coarser sand, poorly sorted	SM			0.0						
SB-13A (12-14)			14	NOTE: Refusal at 14' below grade (? bedrock?)										

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

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: SB-7

County: DOUGLAS

SE 1/4 of SE 1/4 of Sec. 18 ; T. 44 N; R. 14 ☐ E ☒ W

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

Grid Location: 21.4 ft. ☐ N. ☒ S., 252.0 ft. ☐ E. ☒ W.

Civil Town Name: DAIRYLAND

Street Address of Well: Route 3 Box 334

City, Village: MOOSE JUNCTION

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: DALE SCHULTZ

Street or Route: Rt. 3 Box 334

City, State, Zip Code: DAIRYLAND, WI 54830

Facility Well No. and/or Name (If Applicable): MOOSE JUNCTION LOUNGE

WI Unique Well No.: _____

Reason For Abandonment: SEAL BOREHOLE

Date of Abandonment: 5/17/93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 5/17/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) — (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

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

(4) Depth to Water (Feet) UNK

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

If No, Explain ____

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

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

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

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

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, (Sacks) Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
3/8 inch chipped bentonite	Surface	10	0.5	

(8) Comments:

(9) Name of Person or Firm Doing Sealing Work: Stevens Well Drilling

Signature of Person Doing Work: Roger W Biehl — Date Signed: 6/30/93

Street or Route: 6240 Hwy 12 west — Telephone Number: (612) 479-2591

City, State, Zip Code: MAPLE PLAIN, MN 55359

(10) FOR DNR OR COUNTY USE ONLY

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

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: SB-8

County: DOUGLAS

SE 1/4 of SE 1/4 of Sec. 18 ; T. 44 N; R. 14 ☐ E ☒ W

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

Grid Location: 67.2 ft. ☒ N. ☐ S., 180.1 ft. ☐ E. ☒ W.

Civil Town Name: DAIRYLAND

Street Address of Well: Route 3 Box 334

City, Village: MOOSE JUNCTION

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: DALE SCHULTZ

Street or Route: Rt. 3 Box 334

City, State, Zip Code: DAIRYLAND, WI 54830

Facility Well No. and/or Name (If Applicable): MOOSE JUNCTION LOUNGE

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

Reason For Abandonment: SEAL BOREHOLE

Date of Abandonment: 5/17/93

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 5/17/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) — (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

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

(4) Depth to Water (Feet) WNK

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

If No, Explain ____

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

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

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

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

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, (Sacks) Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
3/8 inch chipped bentonite	Surface	8	0.5	

(8) Comments: ____

(9) Name of Person or Firm Doing Sealing Work: Stevens Well Drilling

Signature of Person Doing Work: Roger W Biehl — Date Signed: 6/30/93

Street or Route: 6240 Hwy 12 west — Telephone Number: (612) 479-2591

City, State, Zip Code: MAPLE PLAIN, MN 55359

(10) FOR DNR OR COUNTY USE ONLY

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

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

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: SB-9

County: DOUGLAS

SW 1/4 of SW 1/4 of Sec. 17 ; T. 44 N; R. 14 ☐ E ☒ W

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

Grid Location: 21.0 ft. ☐ N. ☒ S., 24.1 ft. ☒ E. ☐ W.

Civil Town Name: DAIRYLAND

Street Address of Well: Route 3 Box 334

City, Village: MOOSE JUNCTION

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: DALE SCHULTZ

Street or Route: Rt. 3 Box 334

City, State, Zip Code: DAIRYLAND, WI 54830

Facility Well No. and/or Name (If Applicable): MOOSE JUNCTION LOUNGE

WI Unique Well No.: _____

Reason For Abandonment: SEAL BOREHOLE

Date of Abandonment: 5/18/93

WELL/DRILLHOLE/BOREHOLE INFORMATION

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

(Date) 5/18/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) — (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

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

(4) Depth to Water (Feet) LINK

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

If No, Explain ____

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

(5) Required Method of Placing Sealing Material

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

(6) Sealing Materials

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

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

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, (Sacks) Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
3/8 inch chipped bentonite	Surface	6	0.3	

(8) Comments: SB-

(9) Name of Person or Firm Doing Sealing Work: Stevens Well Drilling

Signature of Person Doing Work: Roger W Bield
Date Signed: 6/30/93
Street or Route: 6240 Hwy 12 west
Telephone Number: (612) 479-2591
City, State, Zip Code: MAPLE PLAIN, MN 55359

(10) FOR DNR OR COUNTY USE ONLY

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

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

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: SB-10

County: DOUGLAS

NW 1/4 of NW 1/4 of Sec. 20 ; T. 44 N; R. 14 ☐ E ☒ W

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

Grid Location: 57.4 ft. ☐ N. ☒ S., 9.6 ft. ☐ E. ☒ W.

Civil Town Name: DAIRYLAND

Street Address of Well: Route 3 Box 334

City, Village: MOOSE JUNCTION

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: DALE SCHULTZ

Street or Route: Rt. 3 Box 334

City, State, Zip Code: DAIRYLAND, WI 54830

Facility Well No. and/or Name (If Applicable): MOOSE JUNCTION LOUNGE

WI Unique Well No.: _____

Reason For Abandonment: SEAL BOREHOLE

Date of Abandonment: 5/18/93

WELL/DRILLHOLE/BOREHOLE INFORMATION

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

(Date) 5/18/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) — (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

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

(4) Depth to Water (Feet) UNK

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

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

(5) Required Method of Placing Sealing Material

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

(6) Sealing Materials

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

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

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, (Sacks) Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
3/8 inch chipped bentonite	Surface	10	0.5	

(8) Comments: 5/18/93

(9) Name of Person or Firm Doing Sealing Work: Stevens Well Drilling

Signature of Person Doing Work: Roger W Biehl
Date Signed: 6/30/93
Street or Route: 6240 Hwy 12 west
Telephone Number: (612) 479-2591
City, State, Zip Code: MAPLE PLAIN, MN 55359

(10) FOR DNR OR COUNTY USE ONLY

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

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

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: SB-11

County: DOUGLAS

NE 1/4 of NE 1/4 of Sec. 19 ; T. 44 N; R. 14 ☐ E ☒ W

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

Grid Location: 125 ft. ☐ N. ☒ S., 150 ft. ☐ E. ☒ W.

Civil Town Name: DAIRYLAND

Street Address of Well: Route 3 Box 334

City, Village: MOOSE JUNCTION

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: DALE SCHULTZ

Street or Route: Rt. 3 Box 334

City, State, Zip Code: DAIRYLAND, WI 54830

Facility Well No. and/or Name (If Applicable): MOOSE JUNCTION LOUNGE

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: SEAL BOREHOLE

Date of Abandonment: 5/18/93

WELL/DRILLHOLE/BOREHOLE INFORMATION

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

(Date) 5/18/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

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

Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

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

If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) UNK

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

If No, Explain ____

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

(5) Required Method of Placing Sealing Material

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

(6) Sealing Materials

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

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

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, (Sacks) Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
3/8 inch chipped bentonite	Surface	8	0.5	

(8) Comments: 2.5 -

(9) Name of Person or Firm Doing Sealing Work: Stevens Well Drilling

Signature of Person Doing Work: Roger W Bield

Date Signed: 6/30/93

Street or Route: 6240 Hwy 12 west

Telephone Number: (612) 479-2591

City, State, Zip Code: MAPLE PLAIN, MN 55359

(10) FOR DNR OR COUNTY USE ONLY

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

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

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: SB-12 | County: DOUGLAS

NW 1/4 of NW 1/4 of Sec. 20 ; T. 44 N; R. 14 ☐ E ☒ W

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

Grid Location: 98.4 ft. ☐ N. ☒ S., 67.1 ft. ☐ E. ☒ W.

Civil Town Name: DAIRYLAND

Street Address of Well: Route 3 Box 334

City, Village: MOOSE JUNCTION

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: DALE SCHULTZ

Street or Route: Rt. 3 Box 334

City, State, Zip Code: DAIRYLAND, WI 54830

Facility Well No. and/or Name (If Applicable): MOOSE JUNCTION LOUNGE | WI Unique Well No.: _____

Reason For Abandonment: SEAL BOREHOLE

Date of Abandonment: 5/18/93

WELL/DRILLHOLE/BOREHOLE INFORMATION

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

(Date) 5/18/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) — (From groundsurface) Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

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

(4) Depth to Water (Feet) UNK

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

If No, Explain ____

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

(5) Required Method of Placing Sealing Material

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

(6) Sealing Materials

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

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

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, (Sacks) Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
3/8 inch chipped bentonite	Surface	16	1.0	

(8) Comments: 3/8"

(9) Name of Person or Firm Doing Sealing Work: Stevens Well Drilling

Signature of Person Doing Work: Roger W Bield | Date Signed: 6/30/93

Street or Route: 6240 Hwy 12 west | Telephone Number: (612) 479-2591

City, State, Zip Code: MAPLE PLAIN, 55359

(10) FOR DNR OR COUNTY USE ONLY

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

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

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

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: SB-13

County: DOUGLAS

NE 1/4 of NE 1/4 of Sec. 19 ; T. 44 N; R. 14 ☐ E ☒ W

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

Grid Location: 78.2 ft. ☐ N. ☒ S., 218.8 ft. ☐ E. ☒ W.

Civil Town Name: DAIRYLAND

Street Address of Well: Route 3 Box 334

City, Village: MOOSE JUNCTION

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: DALE SCHULTZ

Street or Route: Rt. 3 Box 334

City, State, Zip Code: DAIRYLAND, WI 54830

Facility Well No. and/or Name (If Applicable): MOOSE JUNCTION LOUNGE

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: SEAL BOREHOLE

Date of Abandonment: 5/19/93

WELL/DRILLHOLE/BOREHOLE INFORMATION

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

(Date): 5/19/93

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

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

Casing Diameter (ins.) N/A

Casing Depth (ft.) N/A

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

(4) Depth to Water (Feet) UNK

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

If No, Explain ____

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

(5) Required Method of Placing Sealing Material

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

(6) Sealing Materials

For monitoring wells and monitoring well boreholes only

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

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, (Sacks) Sealant or Volume (Circle One)	Mix Ratio or Mud Weight
3/8 inch chipped bentonite	Surface	14	1.0	

(8) Comments: SB-13

(9) Name of Person or Firm Doing Sealing Work: Stevens Well Drilling

Signature of Person Doing Work: Roger W Biehl

Date Signed: 6/30/93

Street or Route: 6240 Hwy 12 west

Telephone Number: (612) 479-2591

City, State, Zip Code: MAPLE PLAIN 55359

(10) FOR DNR OR COUNTY USE ONLY

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

APPENDIX B

MONITORING WELL LOGS

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

Facility/Project Name: MOOSE JUNCTION LOUNGE	Local Grid Location of Well: 5.1 ft. ☒N ☐S 183.6 ft. ☐E ☒W	Well Name: MW-1
Facility License, Permit or Monitoring Number: _____	Grid Origin Location: Lat. 46° 17' 20" Long. 92° 09' 20" or	Wis. Unique Well Number / DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	St. Plane _____ ft. N, _____ ft. E.	Date Well Installed: 05/18/93 (m m d d y y)
Distance Well Is From Waste/Source Boundary: 13 ft.	Section Location of Waste/Source: SE 1/4 of SE 1/4 of Sec. 18, T. 44N, R. 14 ☐E ☒W	Well Installed By: (Person's Name and Firm): RANDY JOHNSON / STEVENS WELL DRILLING
Is Well A Point of Enforcement Std. Application? ☐ Yes ☒ No	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient; d ☒ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation 1233.38 ft. MSL
B. Well casing, top elevation 1233.23 ft. MSL
C. Land surface elevation 1231.2 ft. MSL
D. Surface seal, bottom 1231.0 ft. MSL or ____ ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

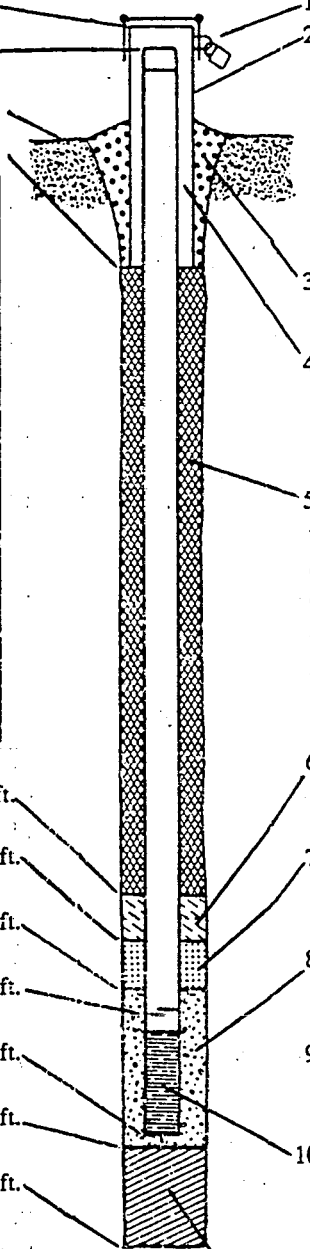
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ __ _____

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

16. Drilling additives used? ☐ Yes ☐ No
Describe _____

17. Source of water (attach analysis):
_____

E. Bentonite seal, top 1231.0 ft. MSL or ____ ft.
F. Fine sand, top _____ ft. MSL or ____ ft.
G. Filter pack, top 1229.0 ft. MSL or ____ ft.
H. Screen joint, top 1228.5 ft. MSL or ____ ft.
I. Well bottom 1220.5 ft. MSL or ____ ft.
J. Filter pack, bottom 1220.7 ft. MSL or ____ ft.
K. Borehole, bottom 1220.7 ft. MSL or ____ ft.
L. Borehole, diameter 8.2 in.
M. O.D. well casing 2 3/8 in.
N. I.D. well casing 2.00 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ 04; Other ☐ __ _____
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bumper Posts
3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ __ _____
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☒ __; Other ☐ __ _____
5. Annular space seal: a. Granular Bentonite ☒ 33
b. _____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
d. _____ % Bentonite ..... Bentonite-cement grout ☐ 50
e. 1 Ft³ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite pellets ☐ 32
c. _____ Other ☐ __
7. Fine sand material: Manufacturer, product name & mesh size
a. — _____
b. Volume added — ft³
8. Filter pack material: Manufacturer, product name and mesh size
a. American Materials Corp. 45/55 Red Flint
b. Volume added 3 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ __ _____
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ __ _____
b. Manufacturer TIMCO
c. Slot size: 0.010 in.
d. Slotted length: 8.0 ft.
11. Backfill material (below filter pack): None ☒ 14; Other ☐ __ _____

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

Signature: Roger W Biehl | Firm: Earth Remediation Services

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch.144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 4-90

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

Facility/Project Name	County Name	Well Name
MOOSE JUNCTION LOUNGE	DOUGLAS	MW-1

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
_____	16	_____	_____

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☐ 41
surged with bailer and pumped	☐ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☒ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐

3. Time spent developing well 30 min.

4. Depth of well (from top of well casisng) 12.4 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 6.7 gal.

7. Volume of water removed from well 21.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 3.72 ft.	12.40 ft.
Date	b. 05/18/93 (m m d d y y)	05/18/93 (m m d d y y)
Time	c. 17:30 ☐ a.m. ☐ p.m.	18:00 ☐ a.m. ☐ p.m.
12. Sediment in well bottom	0.1 inches	0.0 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15	Clear ☐ 20 Turbid ☒ 25
(Describe)	Brown	Brown
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

16. Additional comments on development:

$V_1 = (3.14)\left(\frac{0.17'}{2}\right)^2(8.7)$

$V_2 = (.30)(3.14)(8.7)\left[\left(\frac{0.69'}{2}\right)^2 - \left(\frac{.20'}{2}\right)^2\right]$

$.2 + .9 = 1.1\ ft^3 \times 7.48 = 6.7$ gal.

Well developed by: Person's Name and Firm

Name: Randy Johnson

Firm: Stevens Well Drilling

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

Signature: Roger W Biehl

Print Initials: RWB

Firm: Earth Remediation Services

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

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

Facility/Project Name: MOOSE JUNCTION LOUNGE	Local Grid Location of Well: 64.8 ft. ☐N ☒S, 177.1 ft. ☐E ☒W	Well Name: MW-2
Facility License, Permit or Monitoring Number: _____	Grid Origin Location: Lat. 46° 17' 20" Long. 92° 09' 20" or	Wis. Unique Well Number / DNR Well Number: _____ / _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	St. Plane _____ ft. N, _____ ft. E.	Date Well Installed: 05/19/93 (m m d d y y)
Distance Well Is From Waste/Source Boundary: 80 ft.	Section Location of Waste/Source: NE 1/4 of NE 1/4 of Sec. 19, T. 44 N, R. 14 ☐E ☒W	Well Installed By: (Person's Name and Firm): RANDY JOHNSON / STEVENS WELL DRILLING
Is Well A Point of Enforcement Std. Application? ☒ Yes ☐ No	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient; d ☒ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation 1231.29 ft. MSL
B. Well casing, top elevation 1231.19 ft. MSL
C. Land surface elevation 1229.2 ft. MSL
D. Surface seal, bottom 1229.0 ft. MSL or ____ ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

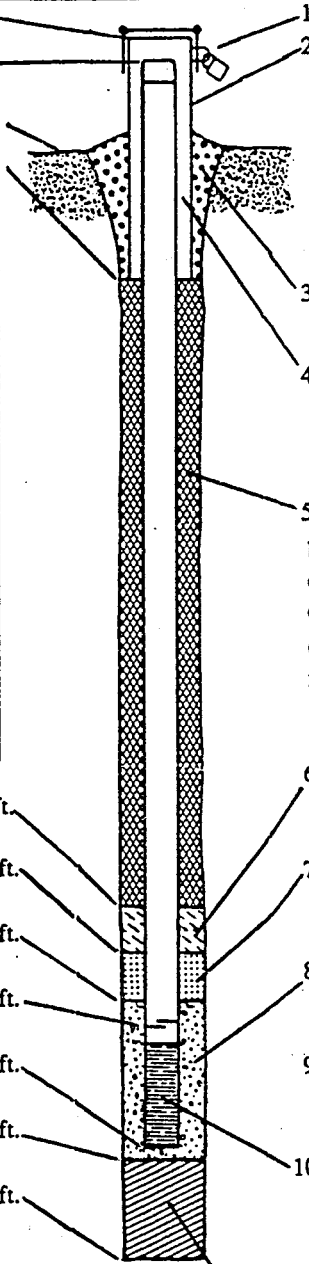
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ __

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

16. Drilling additives used? ☐ Yes ☐ No
Describe _____

17. Source of water (attach analysis):

E. Bentonite seal, top 1229.0 ft. MSL or ____ ft.
F. Fine sand, top _____ ft. MSL or ____ ft.
G. Filter pack, top 1227.0 ft. MSL or ____ ft.
H. Screen joint, top 1226.5 ft. MSL or ____ ft.
I. Well bottom 1216.1 ft. MSL or ____ ft.
J. Filter pack, bottom 1216.0 ft. MSL or ____ ft.
K. Borehole, bottom 1216.0 ft. MSL or ____ ft.
L. Borehole, diameter 8.2 in.
M. O.D. well casing 2 3/8 in.
N. I.D. well casing 2.00 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ 04; Other ☐ __
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bumper posts
3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ __
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☒ __; Other ☐ __
5. Annular space seal: a. Granular Bentonite ☒ 33
b. ____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight .... Bentonite slurry ☐ 31
d. ____ % Bentonite ..... Bentonite-cement grout ☐ 50
e. 1 ft³ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite pellets ☐ 32
c. _____ Other ☐ __
7. Fine sand material: Manufacturer, product name & mesh size
a. —
b. Volume added — ft³
8. Filter pack material: Manufacturer, product name and mesh size
a. American Materials Corp. 45/55 Red Flint
b. Volume added 4 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ __
10. Screen material: PVC
a. Screen type: Factory cut ☐ 11; Continuous slot ☐ 01; Other ☐ __
b. Manufacturer TIMCO
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ 14; Other ☐ __

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

Signature: Roger W Biehl | Firm: Earth Remediation Services

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch.144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each da of violation. NOTE: Shaded areas are for DNR use onl . See instructions for more information including where the com leted form should be sent.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 4-90

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

Facility/Project Name	County Name	Well Name
MOOSE JUNCTION LOUNGE	DOUGLAS	MW-2

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
_____	16	_____	_____

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☐ 41
surged with bailer and pumped	☐ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☒ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐ __

3. Time spent developing well 30 min.

4. Depth of well (from top of well casisng) 15.1 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 8.8 gal.

7. Volume of water removed from well 21.2 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 5.67 ft.	9.40 ft.
Date	b. 05/19/93 (m m d d y y)	05/19/93 (m m d d y y)
Time	c. 14:30 ☐ a.m. ☐ p.m.	15:00 ☐ a.m. ☐ p.m.
12. Sediment in well bottom	0.1 inches	0.0 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe) yellowish brown	Clear ☐ 20 Turbid ☒ 25 (Describe) yellowish brown

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

16. Additional comments on development:

$V_1 = (3.14)\left(\frac{0.17'}{2}\right)^2(9.4)$ .21 + 97 = 1.18 ft^3 × 7.48 gal/ft^3 = 8.8 gal

$V_2 = (.30)(3.14)(9.4)\left[\left(\frac{0.69'}{2}\right)^2 - \left(\frac{.20}{2}\right)^2\right]$

Well developed by: Person's Name and Firm

Name: RANDY JOHNSON

Firm: Stevens Well Drilling

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

Signature: Roger W Bielby

Print Initials: R W B

Firm: Earth Remediation Services

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

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

Facility/Project Name: MOOSE JUNCTION LOUNGE	Local Grid Location of Well: 67.8 ft. ☒N ☐S, 251.9 ft. ☐E ☒W	Well Name: MW-3
Facility License, Permit or Monitoring Number: _____	Grid Origin Location: Lat. 46° 17' 20" Long. 92° 09' 20" or	Wis. Unique Well Number / DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	St. Plane _____ ft. N, _____ ft. E.	Date Well Installed: 05/17/93 (m m d d y y)
Distance Well Is From Waste/Source Boundary: 100 ft.	Section Location of Waste/Source: SE 1/4 of SE 1/4 of Sec. 18, T. 44 N, R. 14 ☐E ☒W	Well Installed By: (Person's Name and Firm) RANDY JOHNSON / STEVENS WELL DRILLING
Is Well A Point of Enforcement Std. Application? ☐ Yes ☒ No	Location of Well Relative to Waste/Source: u ☒ Upgradient s ☐ Sidegradient; d ☐ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation 1229.14 ft. MSL
B. Well casing, top elevation 1228.93 ft. MSL
C. Land surface elevation 1226.9 ft. MSL
D. Surface seal, bottom 1226.3 ft. MSL or ____ ft.

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

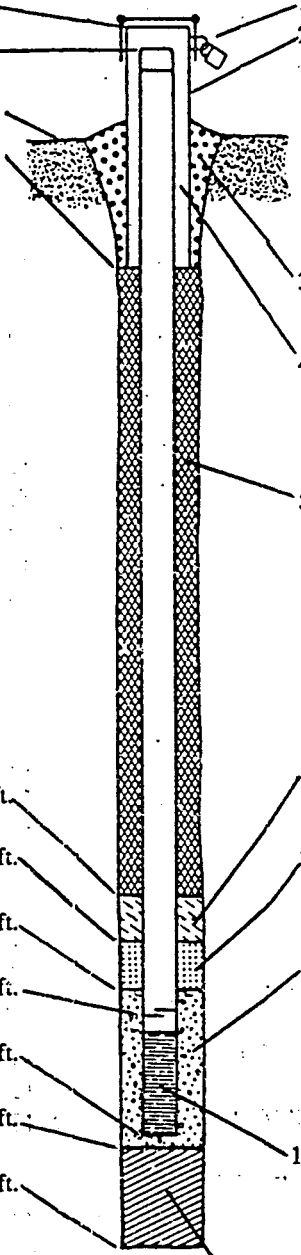
13. Sieve analysis attached? ☐ Yes ☒ No

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

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

16. Drilling additives used? ☐ Yes ☐ No
Describe _____

17. Source of water (attach analysis):



E. Bentonite seal, top 1226.3 ft. MSL or ____ ft.
F. Fine sand, top _____ ft. MSL or ____ ft.
G. Filter pack, top 1224.3 ft. MSL or ____ ft.
H. Screen joint, top 1224.1 ft. MSL or ____ ft.
I. Well bottom 1214.1 ft. MSL or ____ ft.
J. Filter pack, bottom 1213.6 ft. MSL or ____ ft.
K. Borehole, bottom 1210.9 ft. MSL or ____ ft.
L. Borehole, diameter 8 in.
M. O.D. well casing 2 3/8 in.
N. I.D. well casing 2.00 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ 04; Other ☐ __
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bumper Posts
3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ __
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☒ __; Other ☐ __
5. Annular space seal: a. Granular Bentonite ☒ 33
b. ____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
d. ____ % Bentonite ..... Bentonite-cement grout ☐ 50
e. 1 Ft³ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
c. _____ Other ☐ __
7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft³
8. Filter pack material: Manufacturer, product name and mesh size
a. American Material Coop 45/55 Red Flint
b. Volume added 4 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; _____ Other ☐ __
10. Screen material: PVC
a. Screen type: Factory cut ☐ 11; Continuous slot ☐ 01; _____ Other ☐ __
b. Manufacturer Timco
c. Slot size: .010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ 14
Caved Native Soils Other ☒ __

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

Signature: Roger W Biehl | Firm: Earth Remediation Services

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats. and ch. NR 141, Wis. Ad. Code. In accordance with ch.144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each s r more o udin where

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 4-90

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

Facility/Project Name	County Name	Well Name
MOOSE JUNCTION	DOUGLAS	MW-3
Facility License, Permit or Monitoring Number	**County Code**	**Wis. Unique Well Number**	**DNR Well Number**
_____	16	_____	___

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

surged with bailer and bailed	☐ 41
surged with bailer and pumped	☐ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☒ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐

3. Time spent developing well 60 min.

4. Depth of well (from top of well casisng) 14.8 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 11.2 gal.

7. Volume of water removed from well 140.0 gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 2.84 ft.	12.20 ft.
Date	b. 05/19/93 (m m d d y y)	05/19/93 (m m d d y y)
Time	c. 17:00 ☐ a.m. ☐ p.m.	18:00 ☐ a.m. ☐ p.m.
12. Sediment in well bottom	1.0 inches	0.0 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15	Clear ☐ 20 Turbid ☒ 25
(Describe)	Reddish Brown	Reddish Brown
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	___.__ mg/l	___.__ mg/l
15. COD	___.__ mg/l	___.__ mg/l

16. Additional comments on development:

$V_1 = (3.14)\left(\frac{0.17}{2}\right)^2(12.0)$ .27 + 1.23 = 1.50 ft³ x 7.48 gal/ft³ = 11.2

$V_2 = (.30)(3.14)(12.0)\left[\left(\frac{0.69}{2}\right)^2 - \left(\frac{.20}{2}\right)^2\right]$

Well developed by: Person's Name and Firm

Name: Randy Johnson

Firm: Stevens Well Drilling

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

Signature: Roger W Biehl

Print Initials: RWB

Firm: Earth Remediation Services

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

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

Facility/Project Name: MOOSE JUNCTION LOUNGE	Local Grid Location of Well: 173.6 ft. ☐N. ☒S. 47.1 ft. ☐E. ☒W.	Well Name: MW-4
Facility License, Permit or Monitoring Number: _____	Grid Origin Location: Lat. 46° 17' 20" Long. 92° 09' 20" or	Wis. Unique Well Number / DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	St. Plane _____ ft. N, _____ ft. E.	Date Well Installed: 05/18/93 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: 150 ft.	Section Location of Waste/Source: NW 1/4 of NW 1/4 of Sec. 20, T. 44 N, R. 14 ☐E. ☒W.	Well Installed By: (Person's Name and Firm) RANDY JOHNSON; STEVENS WELL DRILLING
Is Well A Point of Enforcement Std. Application? ☒ Yes ☐ No	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☒ Sidegradient; d ☐ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation 1226.25 ft. MSL
B. Well casing, top elevation 1226.11 ft. MSL
C. Land surface elevation 1224.1 ft. MSL
D. Surface seal, bottom 1223.9 ft. MSL or ____ ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

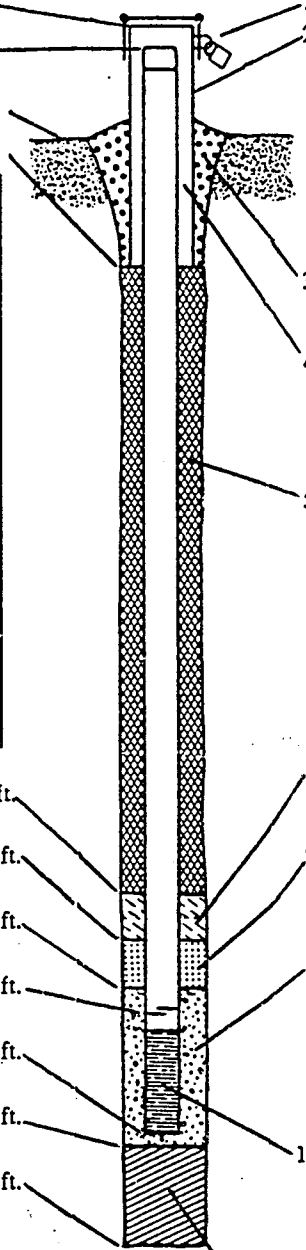
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Other ☐ __

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

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis):

E. Bentonite seal, top 1223.9 ft. MSL or ____ ft.
F. Fine sand, top ____ ft. MSL or ____ ft.
G. Filter pack, top 1221.9 ft. MSL or ____ ft.
H. Screen joint, top 1221.3 ft. MSL or ____ ft.
I. Well bottom 1211.3 ft. MSL or ____ ft.
J. Filter pack, bottom 1210.8 ft. MSL or ____ ft.
K. Borehole, bottom 1208.1 ft. MSL or ____ ft.
L. Borehole, diameter 8.2 in.
M. O.D. well casing 2 3/8 in.
N. I.D. well casing 2.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ 04; Other ☐ __
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Bumper Posts
3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; Other ☐ __
4. Material between well casing and protective pipe: Bentonite ☐ 30; Annular space seal ☒ __; Other ☐ __
5. Annular space seal: a. Granular Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft³ volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
c. _____ Other ☐ __
7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft³
8. Filter pack material: Manufacturer, product name and mesh size
a. American Material Corp. 45/55 Red Flint
b. Volume added 4 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐ __
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ __
b. Manufacturer TIMCO
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): Caved Native Material None ☐ 14; Other ☐ __

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

Signature: Roger W Bielt | Firm: Earth Remediation Services

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Ad. Code. In accordance with ch.144, Wis Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each
eas are for DNR use onl . See instructions for more information includin where the com leted form should be sent.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B Rev. 4-90

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

Facility/Project Name	County Name	Well Name
MOOSE JUNCTION LOUNGE	DOUGLAS	MW-4

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
_____	16	_____	_____

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☐	41
surged with bailer and pumped	☐	61
surged with block and bailed	☐	42
surged with block and pumped	☐	62
surged with block, bailed and pumped	☐	70
compressed air	☒	20
bailed only	☐	10
pumped only	☐	51
pumped slowly	☐	50
Other _____	☐	

3. Time spent developing well 30 min.

4. Depth of well (from top of well casing) 14.8 ft.

5. Inside diameter of well 2.00 in.

6. Volume of water in filter pack and well casing 11.3 gal.

7. Volume of water removed from well 37.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added _____

10. Analysis performed on water added? ☐ Yes ☐ No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 2.75 ft.	14.70 ft.
Date	b. 05/18/9 (m m d d y y)	__/__/__ (m m d d y y)
Time	c. 15:30 ☐ a.m. ☐ p.m.	16:00 ☐ a.m. ☐ p.m.
12. Sediment in well bottom	0.5 inches	0.0 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15	Clear ☐ 20 Turbid ☒ 25
(Describe)	Yellowish Brown	Yellowish Brown
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

16. Additional comments on development:

$V_1 = (3.14)\left(\frac{0.17}{2}\right)^2(12.1)$

$V_2 = (.30)(3.14)(12.1)\left[\left(\frac{0.69}{2}\right)^2 - \left(\frac{.20}{2}\right)^2\right]$

$.27 + 1.24 = 1.51\ ft^3 \times 7.48\ gal/ft^3 = 11.3\ gal$

Well developed by: Person's Name and Firm

Name: Randy Johnson

Firm: Stevens Well Drilling

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

Signature: Roger W Biehl

Print Initials: RWB

Firm: Earth Remediation Service

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

State of Wisconsin
Department of Natural Resources

GROUNDWATER MONITORING WELL INFORMATION FORM
Chapter 144, Wis. Stats.
Form 4400-89
Rev. 1-90

Facility Name: MOOSE JUNCTION LOUNGE | Facility ID Number: | Date: 6/30/93 | Completed By (Name and Firm): ROGER W BIEBL EARTH REMEDIATION SERVICES

Well Name	DNR Well ID Number	Well Location	N	S	E	W	Date Established	Well Casing Diam.	Well Casing Type	Elevations Top of Well Casing	Elevations Ground Surface	Reference MSL (√)	Reference Site Datum (√)	Screen Length	Well Depth	Type of Well (√) PIEZ	OW	PW	LYS	Other	Abandoned	Enf. Stds Apply	Gradient U, S, D or N
MW-1		5.1'	X				5/18/93	2.0"	PVC	1233.23	1231.2	✓		8.0	10.5		✓						D
		183.6'				X																	
MW-2		64.8		X			5/19/93	2.0"	PVC	1231.18	1229.2	✓		10.0	13.0		✓						D
		177.1				X																	
MW-3		67.8	X				5/19/93	2.0"	PVC	1228.93	1226.9	✓		10.0	13.0		✓						U
		251.9				X																	
MW-4		173.6		X			5/18/93	2.0"	PVC	1226.11	1224.1	✓		10.0	13.0		✓						S
		47.1				X																	

Location Coordinates Are:

☒ Local Grid System (preferred) ☐ State Plane Coordinate ☐ Northern ☐ Central

Remarks:

PSS Use:

File Maint. Completed: _____

Other: _____

INSTRUCTIONS FOR GROUNDWATER MONITORING
WELL INFORMATION - FORM 4400-89

This form, when completed provides a record of information for each well that is part of a facility's groundwater monitoring program. It provides the facility or consultant with a means of presenting in a consistent format the well data which the department requires during a site review process. It should be updated as new wells are added to the monitoring program.

Each element of the form is described below. Complete the form with the necessary information, using the description of the elements as a guide.

Facility ID Number: The license number or identification number of the facility, asssigned by the Department.
Date: The date on which the form is filled out.
Completed By: The name and firm of person completing the form.
Facility Name: The name of the site or landfill.

Well Name: The name given to the well by the facility or consultant; e.g. MW-2, OW-5.
DNR Number: The number assigned to the well by the Department, for use by the Department.

Well Location: The location of the well, measured in feet, in relation to a grid system origin established for the site or state plane coordinate system. (A local grid system is preferred.)

Date Established: The installation date of the well.

Well Casing Diam.: The inside diameter of the pipe used in the well construction, in inches.
Well Casing Type: The type of pipe used: plastic (P), steel (S), or other (O).

Elevations:

Top of Well Casing: The measurement, in feet, of the top of the well casing (not top of protective casing), in feet.

Ground Surface: The measurement, in feet, of the ground surface adjacant to the well.

Reference: Are elevations in reference to Mean Sea Level (MSL) or to a particular site datum established b consultant or facility? Check one or the other.

Screen Length: The length of the screen measured in feet.

Well Depth: The depth of the well from the top of well casing, measured in feet.

Type of Well:

PIEZ:	piezometer (sealed below water table)	Abandoned:	Check this box if the well has been abandoned.
OW:	water table observation well		
PVT	private well	Enf. Stds. Apply:	Check this box if enforcement standards apply (well is outside DMZ or property line).
LYS:	lysimeter		
OTHER:	not any of the above. e.g. head well.		

Gradient: The location of the well in the groundwater flow system relative to the disposal site, spill, etc. Use one of the four letters designated below:

U = up gradient D = down gradient
S = side gradient N = not known

Location Coordinates Are:

Local grid system, established by consultant and submitted to the Department; or State Plane Coordinate System, an established location system for Wisconsin.

Comments.

Add any comments to help clarify items listed above; e.g. MW-17 was abandoned on 1/24/90 and replaced by MW-17R. LHW-1 and LHW-2 are leachate head wells.

APPENDIX C

GROUNDWATER SAMPLING FORMS

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

Groundwater Sampling Form

SITE: MOOSE JUNCTION
DATE: 5/27/93
WELL#: MW-1
PROJECT#: 9308-0301

WELL CONDITION: CAPPED & LOCKED
WEATHER CONDITIONS: DRIZZLE, 45 DEGREES F
SAMPLED BY: ROGER BIEBL

WATER LEVEL MEASUREMENT AND WELL PURGING

Location of measuring point: TOP OF CASING

Height of measuring point above ground surface: 2.0 feet

Total depth of well below measuring point: 12.44 feet

Depth of water table from measuring point: 3.72 feet

Length of water column: 8.72 feet

Purge method: DEDICATED BAILER

Required purge volume: 1.42 GALLONS

Volume Removed/	pH /	Cond.(um/cm) /	T(F) /	Color
1.5 Gallons	6.9	2000	45.1	BROWN
3.0 Gallons	7.1	1940	45.0	BROWN
4.5 Gallons	7.2	1990	44.8	BROWN
5.0 Gallons	7.3	1980	44.8	BROWN

SAMPLE COLLECTION

Collection method: DEDICATED BAILER Time 17:00

Analysis	Containers	Sample Prep./Preservation
VOC'S	3-40 ML GLASS	HCL
GRO	3-40 ML GLASS	HCL
TOTAL Pb	1-250 ML PLASTIC	HNO_3

Chain of Custody Form: [ ] No [X] Yes, #10487

COC Tape: [X] No [ ] Yes,

Shipping Container: COOLER WITH ICE

NOTES: Petroleum sheen on the groundwater while purging the well.

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

Groundwater Sampling Form

SITE: MOOSE JUNCTION
DATE: 5/27/93
WELL#: MW-1A
PROJECT#: 9308-0301

WELL CONDITION: CAPPED & LOCKED
WEATHER CONDITIONS: DRIZZLE, 45 DEGREES F
SAMPLED BY: ROGER BIEBL

WATER LEVEL MEASUREMENT AND WELL PURGING

Location of measuring point: TOP OF CASING

Height of measuring point above ground surface: _____ feet

Total depth of well below measuring point: _____ feet

Depth of water table from measuring point: _____ feet

Length of water column: _____ feet

Purge method: DEDICATED BAILER

Required purge volume: _____

Volume Removed/ pH / Cond.(um/cm) / T(F) / Color

_____ Gallons

_____ Gallons

_____ Gallons

_____ Gallons

SAMPLE COLLECTION

Collection method: DEDICATED BAILER Time 17:10

Analysis	Containers	Sample Prep./Preservation
GRO	3-40 ML GLASS	HCL

Chain of Custody Form: [ ] No [X] Yes, #10487

COC Tape: [X] No [ ] Yes, _____

Shipping Container: COOLER WITH ICE

NOTES: DUPLICATE SAMPLE OF MW-1.

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
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Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

Groundwater Sampling Form

SITE: MOOSE JUNCTION
DATE: 5/27/93
WELL#: MW-2
PROJECT#: 9308-0301

WELL CONDITION: CAPPED & LOCKED
WEATHER CONDITIONS: DRIZZLE, 45 DEGREES F
SAMPLED BY: ROGER BIEBL

WATER LEVEL MEASUREMENT AND WELL PURGING

Location of measuring point: TOP OF CASING

Height of measuring point above ground surface: 2.0 feet

Total depth of well below measuring point: 15.10 feet

Depth of water table from measuring point: 5.67 feet

Length of water column: 9.43 feet

Purge method: DEDICATED BAILER

Required purge volume: 1.54 GALLONS

Volume Removed	pH	Cond. (um/cm)	T(F)	Color
1.6 Gallons	6.7	1250	44.6	YELL/BRN
3.2 Gallons	6.8	1300	44.7	YELL/BRN
4.8 Gallons	6.9	1300	44.4	YELL/BRN
6.4 Gallons	6.9	1300	44.3	YELL/BRN

SAMPLE COLLECTION

Collection method: DEDICATED BAILER Time 16:00

Analysis	Containers	Sample Prep./Preservation
VOC'S	3-40 ML GLASS	HCL
GRO	3-40 ML GLASS	HCL
TOTAL Pb	1-250 ML PLASTIC	HNO_3

Chain of Custody Form: [ ] No [X] Yes, #10487

COC Tape: [X] No [ ] Yes,

Shipping Container: COOLER WITH ICE

NOTES: Strong petroleum odor noticed while purging the well.

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

Groundwater Sampling Form

SITE: MOOSE JUNCTION
DATE: 5/27/93
WELL#: MW-3
PROJECT#: 9308-0301

WELL CONDITION: CAPPED & LOCKED
WEATHER CONDITIONS: DRIZZLE, 45 DEGREES F
SAMPLED BY: ROGER BIEBL

WATER LEVEL MEASUREMENT AND WELL PURGING

Location of measuring point: TOP OF CASING

Height of measuring point above ground surface: 2.0 feet

Total depth of well below measuring point: 14.80 feet

Depth of water table from measuring point: 2.84 feet

Length of water column: 11.96 feet

Purge method: DEDICATED BAILER

Required purge volume: 1.95 GALLONS

Volume Removed	pH	Cond. (um/cm)	T(F)	Color
2.0 Gallons	6.7	680	51.6	RED/BRN
4.0 Gallons	6.9	608	49.2	RED/BRN
6.0 Gallons	6.9	600	47.8	RED/BRN
8.0 Gallons	6.9	590	47.5	RED/BRN

SAMPLE COLLECTION

Collection method: DEDICATED BAILER Time 14:00

Analysis	Containers	Sample Prep./Preservation
VOC'S	3-40 ML GLASS	HCL
GRO	3-40 ML GLASS	HCL
TOTAL Pb	1-250 ML PLASTIC	HNO_3

Chain of Custody Form: [ ] No [X] Yes, #10487

COC Tape: [X] No [ ] Yes,

Shipping Container: COOLER WITH ICE

NOTES: Static groundwater level is above the top of the well screen. Water can be drawn down below the top of the screen.

EARTH REMEDIATION SERVICES
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Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

Groundwater Sampling Form

SITE: MOOSE JUNCTION
DATE: 5/27/93
WELL#: MW-4
PROJECT#: 9308-0301

WELL CONDITION: CAPPED & LOCKED
WEATHER CONDITIONS: DRIZZLE, 45 DEGREES F
SAMPLED BY: ROGER BIEBL

WATER LEVEL MEASUREMENT AND WELL PURGING

Location of measuring point: TOP OF CASING

Height of measuring point above ground surface: 2.0 feet

Total depth of well below measuring point: 14.80 feet

Depth of water table from measuring point: 2.75 feet

Length of water column: 12.05 feet

Purge method: DEDICATED BAILER

Required purge volume: 1.96 GALLONS

Volume Removed	pH	Cond. (um/cm)	T(F)	Color
2.0 Gallons	7.1	500	46.7	YELL/BRN
4.0 Gallons	7.1	480	46.3	YELL/BRN
6.0 Gallons	7.1	480	46.1	YELL/BRN
8.0 Gallons	7.1	480	46.1	YELL/BRN

SAMPLE COLLECTION

Collection method: DEDICATED BAILER Time 15:00

Analysis	Containers	Sample Prep./Preservation
VOC'S	3-40 ML GLASS	HCL
GRO	3-40 ML GLASS	HCL
TOTAL Pb	1-250 ML PLASTIC	HNO_3

Chain of Custody Form: [ ] No [X] Yes, #10487

COC Tape: [X] No [ ] Yes,

Shipping Container: COOLER WITH ICE

NOTES: WELL WENT DRY BETWEEN 3RD AND 4TH PURGE VOLUMES.

APPENDIX D

EXCAVATION SOIL VAPOR LOGS

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

SOIL VAPOR ANALYSIS

Location: Moose Junction Lounge

Job #: 9308-0301

Sample Code	Date Time	Soil Type	PID Reading	Comments
R1(1)	12:00	FILL GRAVEL/SAND	100	
R2(1)	12:00	" "	200	
R3(1)	12:00	" "	200	
R4(2)	12:00	" "	400*	
R5(1)	12:00	" "	220*	
R6(1)	1:30	" "	57	
R7(1)	1:50	" "	482	
R8(2.5)	2:00	" "	44.3	
R9(2.5)	2:13	" "	446	
R10(2.5)	2:16	" "	17.2	
R11(3)	2:25	" "	344	
R12(8)	2:28	SILT	385	
R13(2.5)	2:32	FILL/SAND	240*	
R14(11)	2:38	SILT	284	
R15(2)	2:32	"	427	
R16(5)	3:10	"	500*	
R17(4)	06/15/93 10:25AM	DARK BROWN SILTY SAND WITH SOME GRAVEL	565*	
R18(5)	10:30	" " "	588*	
R19(8)	10:45	" " "	55	
R20(2)	10:50	" " "	5	TANK BASIN, NORTH SIDE OF LOUNGE

Notes: All readings are above the background level of 1.0 ppm.

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

SOIL VAPOR ANALYSIS

Location: Moose Junction Lounge

Job #: 9308-0301

Sample Code	Date Time	Soil Type	PID Reading	Comments
R21(4)	10:55	DARK GREY SAND-CLAY	55	
R22(3)	11:00	" "	5	SIDEWALL OF BUILDING
R23(4)	11:00	" "	9	
R24(3)	11:05	RED-BROWN SAND	518	UNDER PIPE JOINT
R25(8)	11:30	" "	570	
R26(9)	11:40	" "	391	CENTER OF TANK BASIN
R27(4)	11:42	GREY-BROWN SANDY SILT	278	
R28(12)	11:45	RED-BROWN SILTY-SAND	141	CENTER OF TANK BASIN
R29(5)	11:55	" "	13	
R30(5)	12:00	" "	145	
R31(6)	12:10	" "	250	
R32(5)	12:20	" "	290	
R33(4)	12:25	GREY-BROWN SANDY-SILT	158	
R34(4)	12:35	BROWN SILT-SAND	31	
R35(5)	12:40	" " "	303	
R36(2)	12:45	" " "	572	
R37(7)	12:55	" " "	201	
R38(6)	1:00	" " "	385	
R39(7)	1:05	" " "	532*	
R40(9)	1:10	" " "	490	BEDROCK ENCOUNTERED

Notes: All readings are above the background level of 1.0 ppm.

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a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

SOIL VAPOR ANALYSIS

Location: MOOSE JUNCTION LOUNGE

Job #: 9308-0301

Sample Code	Date Time	Soil Type	PID Reading	Comments
R41(6)	1:20	BROWN SILTY SAND	27	
R42(6)	1:25	" " "	278	
R43(6)	1:30	" " "	92	
R44(4)	2:00	" " "	428	
R45(4)	2:00	" " "	238*	UNDER PUMP ISL.
R46(3)	2:05	" " "	410	UNDER CONCRETE IN FRONT OF LOUNGE
R47(4)	2:10	" " "	543	
R48(3)	2:15	" " "	529	
R49(7)	2:20	" " "	300*	
R50(3)	2:25	" " "	249*	
R51(9)	2:35	" " "	579	9308-B4(9) UNDER OLD PUMP DISPENC.
R52(3)	2:40	" " "	253*	
R53(4)	2:45	" " "	424	
R54(5)	2:55	REDDISH-BROWN SAND	289*	SAND LAYER WITH WATER FLOWING OUT
R55(5)	3:00	" " "	285*	ESTIMATED 300 YARDS EXCAVATED
R56(7)	3:10	BROWN SILTY SAND	298*	
R57(6)	3:15	" " "	319*	
R58(14)	06/15/93 3:20	" " "	258*	
R59(6)	3:25	" " "	472	
R60(8)	3:35	" " "	485	

Notes: All readings are above the background level of 1.0 ppm.

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

SOIL VAPOR ANALYSIS

Location: MOOSE JUNCTION LOUNGE

Job #: 9308-0301

Sample Code	Date Time	Soil Type	PID Reading	Comments
R61(5)	3:43	REDDISH-BROWN SAND	540*	
R62(6)	3:50	BROWN SILTY SAND	309*	
R63(6)	3:55	" " "	489	
R64(4)	4:00	" " "	460	
R65(5)	4:00	" " "	370*	
R66(6)	4:10	" " "	362*	
R67(7)	4:20	" " "	378*	
R68(4)	4:25	REDDISH BROWN SAND	288*	
R69(8)	4:30	BROWN SILTY SAND	656	
R70(3)	4:45	" " "	263*	
R71(6)	5:00	REDDISH BROWN SAND	321*	SIDEWALL CHARACTERIZATION ANALYTICAL SAMPLE B7(6)
R72(5)	5:10	BROWN SILTY SAND	287*	
R73(9)	5:25	" " "	486	UST BOTTOM SAMPLE B6(9)
R74(8)	5:35	REDDISH-BROWN SAND	297*	
R75(6)	5:45	" " "	521	
R76(6)	5:55	BROWN SILTY SAND	411	
R77(6)	6:05	" " "	15	
R78(6)	6:10	" " "	278	
R79(7)	6:15	" " "	51	SIDEWALL CHARACTERIZATION ANALYTICAL SAMPLE B8(7)

Notes: All readings are above the background level of 1.0 ppm.

* PID readings are higher than indicated

APPENDIX E

TWIN PORTS TESTING LABORATORY RESULTS

LAKE SUPERIOR LABORATORIES

LABORATORY ANALYSIS REPORT
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295

A DIVISION OF TWIN PORTS TESTING, INC.

Client
Earth Burners, Inc.
500 Leisure St.
PO Box 16083
Duluth, MN 55816

Project Moose Junction Lounge
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1926-93LS	1927-93LS	1928-93LS	1929-93LS
Sample Type	Soil	Soil	Soil	Soil
Collected	06/15/93	06/15/93	06/15/93	06/15/93
Received	06/16/93	06/16/93	06/16/93	06/16/93
Analyzed	06/28/93	06/28/93	06/28/93	06/28/93
Reported	07/01/93	07/01/93	07/01/93	07/01/93
Sample Description	9308-B1 (12)	9308-B2 (4)	9308-B3 (7)	9308-B4 (9)
Analysis				
Gasoline Range Organics	<10.000 mg/kg	769 mg/kg	<10.000 mg/kg	61.6 mg/kg
Moisture	18.0%	11.7%	11.4%	10.5%
Benzene	<0.200 mg/kg	6.61 mg/kg	<0.200 mg/kg	0.644 mg/kg
Ethylbenzene	<0.200 mg/kg	7.98 mg/kg	<0.200 mg/kg	1.25 mg/kg
Lead	7.03 mg/kg	9.53 mg/kg	7.62 mg/kg	9.73 mg/kg
Toluene	<0.200 mg/kg	12.4 mg/kg	<0.200 mg/kg	2.25 mg/kg
Total Xylenes	<0.200 mg/kg	9.56 mg/kg	<0.200 mg/kg	5.82 mg/kg

Remarks

Sara Arthur 7-1-93
Analyzed By **Date**

Loretta Peterson 7/1/93
Reviewed By **Date**

LAKE SUPERIOR LABORATORIES

LABORATORY ANALYSIS REPORT
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295

A DIVISION OF TWIN PORTS TESTING, INC.

Client
Earth Burners, Inc.
500 Leisure St.
PO Box 16083
Duluth, MN 55816

Project Moose Junction Lounge
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1930-93LS	1931-93LS	1932-93LS	1933-93LS
Sample Type	Soil	Soil	Soil	Soil
Collected	06/15/93	06/15/93	06/15/93	06/15/93
Received	06/16/93	06/16/93	06/16/93	06/16/93
Analyzed	06/28/93	06/28/93	06/28/93	06/28/93
Reported	07/01/93	07/01/93	07/01/93	07/01/93
Sample Description	9308-B5 (8)	9308-B6 (9)	9308-B7 (6)	9308-B8 (7)
Analysis				
Gasoline Range Organics	577 mg/kg	640 mg/kg	324000 mg/kg	12.1 mg/kg
Moisture	10.8%	9.81%	12.5%	12.0%
Benzene	1.57 mg/kg	11.6 mg/kg	7240 mg/kg	1.39 mg/kg
Ethylbenzene	5.70 mg/kg	6.72 mg/kg	4200 mg/kg	<0.200 mg/kg
Lead	7.65 mg/kg	9.55 mg/kg	12.4 mg/kg	7.91 mg/kg
Toluene	5.72 mg/kg	19.8 mg/kg	10500 mg/kg	1.01 mg/kg
Total Xylenes	24.9 mg/kg	30.0 mg/kg	18400 mg/kg	0.448 mg/kg

Remarks

Sarah Arthur 7-1-93
Analyzed By **Date**

Loretta Peterson 7/1/93
Reviewed By **Date**

LAKE SUPERIOR LABORATORIES
A DIVISION OF TWIN PORTS TESTING, INC.
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295

LABORATORY ANALYSIS REPORT

Client
Earth Burners, Inc.
500 Leisure St.
PO Box 16083
Duluth, MN 55816

Project Moose Junction Lounge
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1934-93LS			
Sample Type	Soil			
Collected	06/15/93			
Received	06/16/93			
Analyzed	06/28/93			
Reported	07/01/93			
Sample Description	FB			
Analysis				
Gasoline Range Organics	<10.000 mg/kg			
Moisture	-			
Benzene	-			
Ethylbenzene	-			
Lead	-			
Toluene	-			
Total Xylenes	-			

Remarks
- Not tested for.

Sarah Arthur 7-1-93
Analyzed By **Date**

Barb Peterson 7/1/93
Reviewed By **Date**

LAKE SUPERIOR LABORATORIES

SAMPLE CONDITION UPON RECEIPT CHECKLIST

Client: Earth Berners

Project: Moose Junction Lounge

Date Received: 6/16/93

COC # 10574

Samples Received By: Loretta Peterson

Loretta Peterson
(Signature)

		Yes	No
1.	Is there a chain of custody (COC) or letter stating information contained on a COC?	X	
2.	Is the date and time relinquished in agreement with that written on the letter or COC?	X	
3.	Do the samples received agree with the COC or accompanying paperwork (i.e. number of samples, matrices, sample tags, sample containers, analyses, etc.)?	X	
4.	Are all the samples within the holding times for requested analyses? Communicate any lapse of greater than 4 days beyond date of collection for VOA analysis.	X	
5.	Are all the sample containers intact (i.e., not broken, leaking, etc.)?	X	
6.	Did the samples arrive on ice? a) Are the samples at the proper temperature?	X	
7.	Is there enough sample to do all the analyses?	X	
8.	Are the samples preserved correctly?	X	
9.	Are the VOA vials head-space free?	N/A	

'NO' Items Explained:

NA = Not Applicable.

SERIAL NUMBER

№ 10574

LAKE SUPERIOR LABORATORIES

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

A DIVISION OF TWIN PORTS TESTING, INC.

LABORATORY REQUEST AND CHAIN OF CUSTODY RECORD

Project Name/No. Moose Junction Lounge 9308-030) P.O. # _____

Client Earth Burners, Inc. Report To Roger Bieb)

Address P.O. Box 16083

Duluth MN, 55816 Bill To EBI

Phone (218) 628-0454

Sampler Signature Roger W Bieb

Sampler (Print) Roger W Bieb)

Remarks

Analyze Field Blank for GRO only. 1934-935

Sample No./Location	Date	Time	Matrix: Air	Matrix: Liquid	Matrix: Solid	Number Of Containers	Preservative	Analyses: GRO / BTEX / MOISTURE / TOTAL PB											LSL No.
9308-B1 (12)	6/15/93	11:45			✓	2	MeOH	1	1										1926
9308-B2 (4)		12:00			✓			1	1										1927
9308-B3 (7)		14:00			✓			1	1										1928
9308-B4 (9)		14:30			✓			1	1										1929
9308-B5 (8)		15:30			✓			1	1										1930
9308-B6 (9)		17:30			✓			1	1										1931
9308-B7 (6)		16:30			✓			1	1										1932
9308-B8 (7)		18:00			✓			1	1										1933
~~9308-P1~~		~~18:30~~			✓			1	1										
~~9308-P2~~		~~18:45~~			✓			1	1										
~~9308-P3~~	↓	~~19:00~~			✓	↓	↓	1	1										

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
Roger W Bieb	6/16/93 14:30	Martha Peterson			
Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By

Turnaround Time: 24 Hour Rush _____ 2-5 Day X 2 Week _____

5-6 day

LAKE SUPERIOR LABORATORIES

LABORATORY ANALYSIS REPORT
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295
A DIVISION OF TWIN PORTS TESTING, INC.

Client
Earth Remediation Services
500 Leisure Street
Duluth, MN 55816
(218) 628-0248

Project Moose Junction, WI
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1628-93LS	1629-93LS	1630-93LS	1631-93LS
Sample Type	Soil	Soil	Soil	Soil
Collected	05/17/93	05/17/93	05/18/93	05/18/93
Received	05/20/93	05/20/93	05/20/93	05/20/93
Analyzed	05/28/93	05/28/93	06/01/93	06/01/93
Reported	06/03/93	06/03/93	06/03/93	06/03/93
Sample Description	SB-8 (6-8)	SB-7 (8-10)	SB-11 (6-8)	SB-9 (4-6)
Analysis				
Gasoline Range Organics	<10.000 mg/kg	<10.000 mg/kg	<10.000 mg/kg	<10.000 mg/kg
Methyl Tertiary Butyl Ether	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Moisture	16.8%	10.4%	13.4%	11.7%
1,2,4-Trimethylbenzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
1,3,5-Trimethylbenzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Benzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Ethylbenzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Lead	8.64 mg/kg	12.8 mg/kg	9.48 mg/kg	10.3 mg/kg
Toluene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Total Xylenes	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg

Remarks
MTBE QC recovery for samples MW-1 (4-6)-MW-3 (14-16) was 69.8%

Sarah Dothur 6/9/93
Analyzed By **Date**

Loretta Peterson 6/9/93
Reviewed By **Date**

Wisconsin DNR Certification Number 816057440

LAKE SUPERIOR LABORATORIES
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295
A DIVISION OF TWIN PORTS TESTING, INC.

Client
Earth Remediation Services
500 Leisure Street
Duluth, MN 55816
(218) 628-0248

Project Moose Junction, WI
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1632-93LS	1633-93LS	1634-93LS	1635-93LS
Sample Type	Soil	Soil	Soil	Soil
Collected	05/18/93	05/18/93	05/18/93	05/18/93
Received	05/20/93	05/20/93	05/20/93	05/20/93
Analyzed	06/01/93	06/01/93	06/01/93	06/01/93
Reported	06/03/93	06/03/93	06/03/93	06/03/93
Sample Description	SB-10 (8-10)	SB-12 (4-6)	SB-12 (14-16)	MW-4 (8-10)
Analysis				
Gasoline Range Organics	<10.000 mg/kg	308 mg/kg	<10.000 mg/kg	<10.000 mg/kg
Methyl Tertiary Butyl Ether	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Moisture	13.4%	18.4%	10.6%	17.5%
1,2,4-Trimethylbenzene	<0.200 mg/kg	3.95 mg/kg	<0.200 mg/kg	<0.200 mg/kg
1,3,5-Trimethylbenzene	<0.200 mg/kg	9.73 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Benzene	<0.200 mg/kg	0.277 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Ethylbenzene	<0.200 mg/kg	2.51 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Lead	7.18 mg/kg	12.9 mg/kg	11.1 mg/kg	5.95 mg/kg
Toluene	<0.200 mg/kg	1.19 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Total Xylenes	<0.200 mg/kg	8.25 mg/kg	<0.200 mg/kg	<0.200 mg/kg

Remarks
MTBE QC recovery for samples MW-1 (4-6)-MW-3 (14-16) was 69.8%

Sarah Arthur 6/9/93
Analyzed By **Date**

Loretta Peterson 6/9/93
Reviewed By **Date**

Wisconsin DNR Certification Number 816057440

LAKE SUPERIOR LABORATORIES

LABORATORY ANALYSIS REPORT
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295

A DIVISION OF TWIN PORTS TESTING, INC.

Client
Earth Remediation Services
500 Leisure Street
Duluth, MN 55816
(218) 628-0248

Project Moose Junction, WI
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1636-93LS	1637-93LS	1638-93LS	1639-93LS
Sample Type	Soil	Soil	Soil	Soil
Collected	05/18/93	05/18/93	05/19/93	05/19/93
Received	05/20/93	05/20/93	05/20/93	05/20/93
Analyzed	06/01/93	06/01/93	06/01/93	06/01/93
Reported	06/03/93	06/03/93	06/03/93	06/03/93
Sample Description	MW-4 (14-16)	MW-1 (4-6)	MW-2 (4-6)	MW-2 (12-13)
Analysis				
Gasoline Range Organics	<10.000 mg/kg	639 mg/kg	4220 mg/kg	51.5 mg/kg
Methyl Tertiary Butyl Ether	<0.200 mg/kg	5.67 mg/kg	13.9 mg/kg	<0.200 mg/kg
Moisture	15.2%	14.9%	17.9%	16.9%
1,2,4-Trimethylbenzene	<0.200 mg/kg	9.57 mg/kg	112 mg/kg	0.472 mg/kg
1,3,5-Trimethylbenzene	0.247 mg/kg	23.7 mg/kg	192 mg/kg	1.39 mg/kg
Benzene	0.570 mg/kg	10.1 mg/kg	73.6 mg/kg	5.90 mg/kg
Ethylbenzene	<0.200 mg/kg	8.77 mg/kg	30.7 mg/kg	0.846 mg/kg
Lead	5.93 mg/kg	9.99 mg/kg	3.38 mg/kg	5.72 mg/kg
Toluene	0.384 mg/kg	12.7 mg/kg	164 mg/kg	5.81 mg/kg
Total Xylenes	0.640 mg/kg	39.7 mg/kg	358 mg/kg	3.78 mg/kg

Remarks
MTBE QC recovery for samples MW-1 (4-6)-MW-3 (14-16) was 69.8%

Sarah Arthur 6/9/93
Analyzed By **Date**

Loretta Peterson 6/9/93
Reviewed By **Date**

LAKE SUPERIOR LABORATORIES

LABORATORY ANALYSIS REPORT
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
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Client
Earth Remediation Services
500 Leisure Street
Duluth, MN 55816
(218) 628-0248

Project Moose Junction, WI
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1640-93LS	1641-93LS	1642-93LS	1643-93LS
Sample Type	Soil	Soil	Soil	Soil
Collected	05/19/93	05/19/93	05/19/93	05/19/93
Received	05/20/93	05/20/93	05/20/93	05/20/93
Analyzed	06/01/93	06/01/93	06/01/93	06/01/93
Reported	06/03/93	06/03/93	06/03/93	06/03/93
Sample Description	Field Blank	SB-13 (2-4)	SB-13A (12-14)	SB-13 (12-14)
Analysis				
Gasoline Range Organics	<10.000 mg/kg	<10.000 mg/kg	<10.000 mg/kg	<10.000 mg/kg
Methyl Tertiary Butyl Ether	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Moisture	-	14.2%	13.7%	14.4%
1,2,4-Trimethylbenzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
1,3,5-Trimethylbenzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Benzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Ethylbenzene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Lead	-	12.0 mg/kg	12.6 mg/kg	6.81 mg/kg
Toluene	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg
Total Xylenes	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg	<0.200 mg/kg

Remarks
- Not tested for.

MTBE QC recovery for samples MW-1 (4-6)-MW-3 (14-16) was 69.8%

Sara Arthur 6/9/93
Analyzed By **Date**

Loretta Peterson 6/9/93
Reviewed By **Date**

LAKE SUPERIOR LABORATORIES

LABORATORY ANALYSIS REPORT
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295

A DIVISION OF TWIN PORTS TESTING, INC.

Client
Earth Remediation Services
500 Leisure Street
Duluth, MN 55816
(218) 628-0248

Project Moose Junction, WI
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1644-93LS			
Sample Type	Soil			
Collected	05/19/93			
Received	05/20/93			
Analyzed	06/01/93			
Reported	06/03/93			
Sample Description	MW-3 (14-16)			
Analysis				
Gasoline Range Organics	<10.000 mg/kg			
Methyl Tertiary Butyl Ether	<0.200 mg/kg			
Moisture	9.63%			
1,2,4-Trimethylbenzene	<0.200 mg/kg			
1,3,5-Trimethylbenzene	<0.200 mg/kg			
Benzene	<0.200 mg/kg			
Ethylbenzene	<0.200 mg/kg			
Lead	6.31 mg/kg			
Toluene	<0.200 mg/kg			
Total Xylenes	<0.200 mg/kg			

Remarks
MTBE QC recovery for samples MW-1 (4-6)-MW-3 (14-16) was 69.8%

Sarah Arthur 6/9/93
Analyzed By **Date**

Loretta Peterson 6/9/93
Reviewed By **Date**

SAMPLE CONDITION UPON RECEIPT CHECKLIST

Client: Earth Remediation Services

Project: Moose Junction

Date Received: 5-20-93

COC # 10482 + 10485

Samples Received By: Loretta Peterson

Loretta Peterson
(Signature)

		Yes	No
1.	Is there a chain of custody (COC) or letter stating information contained on a COC?	X	
2.	Is the date and time relinquished in agreement with that written on the letter or COC?	X	
3.	Do the samples received agree with the COC or accompanying paperwork (i.e. number of samples, matrices, sample tags, sample containers, analyses, etc.)?	X	
4.	Are all the samples within the holding times for requested analyses? Communicate any lapse of greater than 4 days beyond date of collection for VOA analysis.	X	
5.	Are all the sample containers intact (i.e., not broken, leaking, etc.)?	X	
6.	Did the samples arrive on ice? a) Are the samples at the proper temperature?	X —	 —
7.	Is there enough sample to do all the analyses?	X	
8.	Are the samples preserved correctly?	X	
9.	Are the VOA vials head-space free?	NA	

'NO' Items Explained:

NA = Not Applicable.

SERIAL NUMBER

№ 10482

LAKE SUPERIOR LABORATORIES

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

A DIVISION OF TWIN PORTS TESTING, INC.

LABORATORY REQUEST AND CHAIN OF CUSTODY RECORD

Project Name/No. Moose Junction, WI 9308-0301 P.O. # _____

Client Earth Remediation Services

Address P.O. Box 16083

Duluth, MN 55816

Phone (218) 628 0248

Report To Roger Biebl

Bill To Earth Remediation Services

Remarks

Sampler Signature Roger W Biebl

Sampler (Print) Roger W Biebl

Sample No./Location	Date	Time	Matrix: Air	Matrix: Liquid	Matrix: Solid	Number Of Containers	Preservative	Analyses: PVOC/GRO	Analyses: Moisture/Total Pb	LSL No.
SB-8 (6-8)	5/17/93	17:00			✓	2	MEOH	1	1	1628
SB-7 (8-10)	5/17/93	18:00			✓			1	1	1629
SB-11 (6-8)	5/18/93	09:30			✓			1	1	1630
SB-9 (4-6)	5/18	10:30			✓			1	1	1631
SB-10 (8-10)	5/18	11:30			✓			1	1	1632
SB-12 (4-6)	5/18	12:00			✓			1	1	1633
SB-12 (14-16)	5/18	13:30			✓			1	1	1634
MW-4 (8-10)	5/18	14:00			✓			1	1	1635
MW-4 (14-16)	5/18	14:30			✓			1	1	1636
MW-1 (4-6)	5/18	16:30			✓	↓	↓	1	1	1637

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
Roger W Biebl	5-20-93 9:38	Dorothy Peterson			
Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By

Turnaround Time: 24 Hour Rush _____ 2-5 Day _____ 2 Week ✓

SERIAL NUMBER

№ 10485

LAKE SUPERIOR LABORATORIES

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

A DIVISION OF TWIN PORTS TESTING, INC.

LABORATORY REQUEST AND CHAIN OF CUSTODY RECORD

Project Name/No. MOOSE JUNCTION, WI 9308-0301 P.O. # _____

Client Earth Remediation Services

Report To Roger Biebl

Address P.O. Box 16083

Duluth, MN 55816

Bill To Earth Remediation Services

Phone (218) 628-0248

Sampler Signature Roger W Biebl

Sampler (Print) Roger W Biebl

Remarks

MW-2 (12-13) dry wt. bag leaked

Sample No./Location	Date	Time	Matrix: Air	Matrix: Liquid	Matrix: Solid	Number Of Containers	Preservative	Analyses: PVOC / GRO	Analyses: MOISTURE / TOTAL Pb	LSL No.
~~MW-1 (8-10)~~	~~5/19~~	~~12:00~~			~~✓~~	~~2~~	~~HCl~~	~~1~~	~~1~~	~~1637~~
MW-2 (4-6)	5/19	12:00			✓	2	HCl	1	1	1638
MW-2 (12-13)	5/19	13:30			✓	2	HCl	1	1	1639
Field Blank	5/19	14:00			✓	2	HCl	1	1	1640
SB-13 (2-4)	5/19	15:30			✓	2	HCl	1	1	1641
SB-13A (12-14)	5/19	16:25			✓	2	HCl	1	1	1642
SB-13 (12-14)	5/19	16:30			✓	2	HCl	1	1	1643
MW-3 (14-16)	5/19	18:00			✓	2	HCl	1	1	1644

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
Roger W Biebl	5-20-93 9:30	Christa Peterson			
Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By

Turnaround Time: 24 Hour Rush _____ 2-5 Day _____ 2 Week X

LAKE SUPERIOR LABORATORIES

LABORATORY ANALYSIS REPORT
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295

A DIVISION OF TWIN PORTS TESTING, INC.

Client
Earth Remediation Services
500 Leisure Street
Duluth, MN 55816
(218) 628-0248

Project Moose Junction, WI
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1740-93LS	1741-93LS	1742-93LS	1743-93LS
Sample Type	Water	Water	Water	Water
Collected	05/27/93	05/27/93	05/27/93	05/27/93
Received	05/28/93	05/28/93	05/28/93	05/28/93
Analyzed	06/10/93	06/10/93	06/10/93	06/10/93
Reported	06/14/93	06/14/93	06/14/93	06/14/93
Sample Description	MD-WW	DS-WW	MW-3	MW-4
Analysis				
Gasoline Range Organics	<0.100 mg/L	<0.100 mg/L	<0.100 mg/L	<0.100 mg/L
Lead	0.007 mg/L	<0.002 mg/L	0.118 mg/L	0.018 mg/L

Remarks

Barbara Peterson 6/17/93
Analyzed By **Date**

Sarah Arthur 6-16-93
Reviewed By **Date**

LABORATORY ANALYSIS REPORT

Client
Earth Remediation Services
500 Leisure Street
Duluth, MN 55816
(218) 628-0248

Project Moose Junction, WI
Project No. 9308-0301

Collected By Roger Biebl
Delivered By Roger Biebl

Chem. Lab ID	1744-93LS	1745-93LS	1746-93LS	
Sample Type	Water	Water	Water	
Collected	05/27/93	05/27/93	05/27/93	
Received	05/28/93	05/28/93	05/28/93	
Analyzed	06/10/93	06/10/93	06/10/93	
Reported	06/14/93	06/14/93	06/14/93	
Sample Description	MW-2	MW-1	MW-1A	
Analysis				
Gasoline Range Organics	132 mg/L	6.16 mg/L	6.14 mg/L	
Lead	0.131 mg/L	0.406 mg/L	-	

Remarks
- Not tested for.

Analyzed By — Date 6/17/93

Reviewed By — Date 6-16-93

LAKE SUPERIOR LABORATORIES
728 GARFIELD AVENUE ■ DULUTH, MINNESOTA 55802
MN (218) 722-1911 ■ FAX (218) 722-3295
A DIVISION OF TWIN PORTS TESTING, INC.

Earth Remediation Services
PO Box 16083
Duluth, MN 55816

June 16, 1993

Attention: Roger Biebl

Project # 9308-0301 / Moose Junction Lounge
COC # 10487
Date Sampled: 05/27/93
Date Received: 05/28/93

VOC EPA Method 5030/8021

Sample Identification:		DS-WW	MW-3	MW-4	MW-2
Sample Type:		Water	Water	Water	Water
Laboratory Log Number:		1741-93LS	1742-93LS	1743-93LS	1744-93LS
PARAMETER	UNITS				
Benzene	ug/L	<1	<1	3	19000
Bromobenzene	ug/L	<1	<1	<1	<1
Bromochloromethane	ug/L	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1
n-Butylbenzene	ug/L	<1	<1	<1	53
sec-Butylbenzene	ug/L	<1	<1	<1	<1
tert-Butylbenzene	ug/L	<1	<1	<1	270
Carbon tetrachloride	ug/L	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1
2-Chlorotoluene	ug/L	<1	<1	<1	<1
4-Chlorotoluene	ug/L	<1	<1	<1	<1
Dibromochloromethane	ug/L	<1	<1	<1	130
1,2-Dibromo-3-chloro propane	ug/L	<1	<1	<1	<1
1,2-Dibromoethane	ug/L	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	<1	<1	<1	<1

Sample Identification:	DS-WW	MW-3	MW-4	MW-2
Sample Type:	Water	Water	Water	Water
Laboratory Log Number:	1741-93LS	1742-93LS	1743-93LS	1744-93LS

VOC EPA Method 5030/8021 (continued)

PARAMETER	UNITS				
Dichlorodifluoromethane	ug/L	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	<1	<1	<1	<1
1,1-Dichloroethene	ug/L	<1	<1	<1	<1
cis-1,2-Dichloroethene	ug/L	<1	<1	<1	<1
Trans-1,2-Dichloroethene	ug/L	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	<1	<1	<1	<1
1,3-Dichloropropane	ug/L	<1	<1	<1	<1
2,2-Dichloropropane	ug/L	<1	<1	<1	<1
1,1-Dichloropropene	ug/L	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	1600
Hexachlorobutadiene	ug/L	<1	<1	<1	<1
Isopropylbenzene	ug/L	<1	<1	<1	53
p-Isopropyltoluene	ug/L	<1	<1	<1	<1
Methylene chloride	ug/L	<1	<1	<1	<1
Naphthalene	ug/L	<1	<1	<1	<1
n-Propylbenzene	ug/L	<1	<1	<1	1300
Styrene	ug/L	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	ug/L	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1
Toluene	ug/L	<1	<1	<1	29000
1,2,3-Trichlorobenzene	ug/L	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	<1	<1	<1	<1
1,1,1,-Trichloroethane	ug/L	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/L	<1	<1	<1	<1
Trichloroethene	ug/L	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/L	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	<1	<1	<1	390

Sample Identification:	DS-WW	MW-3	MW-4	MW-2
Sample Type:	Water	Water	Water	Water
Laboratory Log Number:	1741-93LS	1742-93LS	1743-93LS	1744-93LS

VOC EPA Method 5030/8021 (continued)

PARAMETER	UNITS				
1,3,5-Trimethylbenzene	ug/L	<1	<1	<1	470
Vinyl Chloride	ug/L	<1	<1	<1	<1
o-Xylene	ug/L	<1	<1	<1	4500
m- &/or p-Xylene	ug/L	<1	<1	<1	12000

Sample Identification:	MW-1
Sample Type:	Water
Laboratory Log Number:	1745-93LS

VOC EPA Method 5030/8021

PARAMETER	UNITS	
Benzene	ug/L	41
Bromobenzene	ug/L	<1
Bromochloromethane	ug/L	<1
Bromodichloromethane	ug/L	<1
Bromoform	ug/L	<1
Bromomethane	ug/L	<1
n-Butylbenzene	ug/L	<1
sec-Butylbenzene	ug/L	<1
tert-Butylbenzene	ug/L	<1
Carbon tetrachloride	ug/L	<1
Chlorobenzene	ug/L	<1
Chloroethane	ug/L	<1
Chloroform	ug/L	<1
Chloromethane	ug/L	<1
2-Chlorotoluene	ug/L	<1
4-Chlorotoluene	ug/L	<1
Dibromochloromethane	ug/L	<1
1,2-Dibromo-3-chloro propane	ug/L	<1

Sample Identification: MW-1
Sample Type: Water
Laboratory Log Number: 1745-93LS

VOC EPA Method 5030/8021 (continued)

PARAMETER	UNITS	
1,2-Dibromoethane	ug/L	<1
Dibromomethane	ug/L	<1
1,2-Dichlorobenzene	ug/L	<1
1,3-Dichlorobenzene	ug/L	<1
1,4-Dichlorobenzene	ug/L	<1
Dichlorodifluoromethane	ug/L	<1
1,1-Dichloroethane	ug/L	<1
1,2-Dichloroethane	ug/L	<1
1,1-Dichloroethene	ug/L	<1
cis-1,2-Dichloroethene	ug/L	<1
trans-1,2-Dichloroethene	ug/L	<1
1,2-Dichloropropane	ug/L	<1
1,3-Dichloropropane	ug/L	<1
2,2-Dichloropropane	ug/L	<1
1,1-Dichloropropene	ug/L	<1
Ethylbenzene	ug/L	22
Hexachlorobutadiene	ug/L	<1
Isopropylbenzene	ug/L	3
p-Isopropyltoluene	ug/L	6
Methylene chloride	ug/L	<1
Naphthalene	ug/L	<1
n-Propylbenzene	ug/L	6
Styrene	ug/L	<1
1,1,1,2-Tetrachloroethane	ug/L	<1
1,1,2,2-Tetrachloroethane	ug/L	<1
Tetrachloroethene	ug/L	<1
Toluene	ug/L	210
1,2,3-Trichlorobenzene	ug/L	<1
1,2,4-Trichlorobenzene	ug/L	<1
1,1,1,-Trichloroethane	ug/L	<1

Sample Identification: MW-1
Sample Type: Water
Laboratory Log Number: 1745-93LS

VOC EPA Method 5030/8021 (continued)

PARAMETER	UNITS	
1,1,2-Trichloroethane	ug/L	<1
Trichloroethene	ug/L	<1
Trichlorofluoromethane	ug/L	<1
1,2,3-Trichloropropane	ug/L	<1
1,2,4-Trimethylbenzene	ug/L	96
1,3,5-Trimethylbenzene	ug/L	190
Vinyl Chloride	ug/L	<1
o-Xylene	ug/L	530
m- &/or p-Xylene	ug/L	290

Prepared By: Loretta Peterson **Date** 6/17/93

Reviewed By: Sarah Stelhus **Date** 6-11-93

SAMPLE CONDITION UPON RECEIPT CHECKLIST

Client: Earth Remediation Services

Project: Moose Junction Lounge 9308-0301

Date Received: 5/28/93

COC # 10487

Samples Received By: Loretta Peterson

Loretta Peterson
(Signature)

		Yes	No
1.	Is there a chain of custody (COC) or letter stating information contained on a COC?	X	
2.	Is the date and time relinquished in agreement with that written on the letter or COC?	X	
3.	Do the samples received agree with the COC or accompanying paperwork (i.e. number of samples, matrices, sample tags, sample containers, analyses, etc.)?	X	
4.	Are all the samples within the holding times for requested analyses? Communicate any lapse of greater than 4 days beyond date of collection for VOA analysis.	X	
5.	Are all the sample containers intact (i.e., not broken, leaking, etc.)?	X	
6.	Did the samples arrive on ice? a) Are the samples at the proper temperature?	X —	 —
7.	Is there enough sample to do all the analyses?	X	
8.	Are the samples preserved correctly?	X	
9.	Are the VOA vials head-space free?	X	

'NO' Items Explained:

NA = Not Applicable.

SERIAL NUMBER

№ 10487

LAKE SUPERIOR LABORATORIES

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

A DIVISION OF TWIN PORTS TESTING, INC.

LABORATORY REQUEST AND CHAIN OF CUSTODY RECORD

Project Name/No. Moose Junction Lounge 9308-0301 P.O. # _____

Client Earth Remediation Services

Address P.O. Box 16083

Duluth, MN 55816

Phone 628-0248

Report To Roger Biebl

Bill To ERS

Remarks

Sampler Signature Roger W Biebl

Sampler (Print) Roger W Biebl

Sample No./Location	Date	Time	Matrix: Air	Matrix: Liquid	Matrix: Solid	Number Of Containers	Preservative	Analyses: VOC's (EPA 8021)	Analyses: GRO	Analyses: Total Pb	LSL No.
MD-WW	5/27/93	13:00		✓		4	HCl/HNO3		3 ✓	1 ✓	1740
DS-WW	↓	14:30		✓		7	↓	3	3	1	1741
MW-3		14:00		✓		7		3	3	1	1742
MW-4		15:00		✓		7		3	3	1	1743
MW-2		16:00		✓		7		3	3	1	1744
MW-1		17:00		✓		7		3	3	1	1745
MW-1A	↓	17:10		✓		~~4~~ 3	↓	~~X~~	3	~~X~~	1746

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
Roger W Biebl	5/28/93 10:50	Martti Pitkonen			
Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By

Turnaround Time: 24 Hour Rush _____ 2-5 Day _____ 2 Week ✓

APPENDIX F

WATER WELL LOGS

STATE OF WISCONSIN

WELL CONSTRUCTOR'S REPORT — DEPARTMENT OF RESOURCE DEVELOPMENT — DS-329 — Wel

1. COUNTY: Douglas

CHECK ONE: ☒ Town ☐ Village ☐ City — NAME: Dairyland

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

W½ NW NW¼ of the NW¼ Section 17 TWn. 44N RGE. 14W.

3. OWNER AT TIME OF DRILLING

Wisconsin Highway Commission

4. OWNER'S COMPLETE MAIL ADDRESS

P. O. Bix 425 Superior, Wisconsin 54880

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

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
---	--	--	--	--	-----	-----	--	--

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
--	---	----	200	----	------	--	--	------	----

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

None

6. Well is intended to supply water for:

Wayside

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	40			
6	40	60			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
10	New Steel TC 35.75 lb.	Surface	20 (withdrawn as neat cement was poured)
6	New Steel TC 19.45 lb.	0	40

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat Cement	Surface	40

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay and Top soil	Surface	32
Granite and Sandrock	32	60

Well construction completed on November 6 19 67

Well is terminated 14 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: 15 Hrs. at 3 GPM

Depth from surface to normal water level 15 ft.

Depth to water level when pumping 55 ft.

Water sample sent to Madison, Wis.. (Safe) laboratory on: Nov. 6 19 67

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

SIGNATURE: FISHER WELL DRILLING CO., INC.

By: E. C. Fisher, President Registered Well Driller

COMPLETE MAIL ADDRESS: 500 W. Main St.
Durand, Wisconsin 54736

Please do not write in space below

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Douglas {Town ☑ Village ☐ City ☐} Summit
   Check one and give name

2. Location S-E of S E ¼ Sec. 14 T 44 R 14 W
   Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Charles Swearingen
   Name of individual, partnership or firm

4. Mail Address Station B. Superior Wis
   Complete address required

5. From well to nearest: Building 8 ft; sewer none ft; drain none ft; septic tank none ft; dry well or filter bed none ft; abandoned well ____ ft.

6. Well is intended to supply water for: Farm

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
8	0	20			
4	20	294			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4"	Stl-gage 11#	0	21

9. GROUT:

Kind	From (ft.)	To (ft.)
Puddled Clay	0	21

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Sand & boulders	0	12
Hard pan	12	18
Trap rock	18	294

Construction of the well was completed on: 10-29 1955

The well is terminated 14 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No ____

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

11. MISCELLANEOUS DATA:

Yield test: 10 Hrs. at 5 GPM.

Depth from surface to water-level: 8 ft.

Water-level when pumping: 10 ft.

Water sample was sent to the state laboratory at: Superior (City) on Oct 1955

Signature M. M. Tony
Registered Well Driller

Poplar 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					

Wel 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Douglas {Town ☒ / Village ☐ / City ☐} Daisyland
   Check one and give name
2. Location NW, NW of Sec 20 - 44 - 14
   Name of street and number of premise or Section, Town and Range numbers
3. Owner ☒ or Agent ☐ Martin Seeley
   Name of individual, partnership or firm
4. Mail Address Kingsdale Minn
   Complete address required
5. From well to nearest: Building ~~____ft; sewer ____ft;~~ drain None ~~ft; septic tank ____ft;~~ dry well or filter bed None ~~ft; abandoned well ____ft.~~
6. Well is intended to supply water for: Farm

7. DRILLHOLE:

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
4	1	32			

8. CASING AND LINER PIPE OR CURBING:

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
4	Steel		

9. GROUT:

Kind	From (ft.)	To (ft.)

10. FORMATIONS:

Kind	From (ft.)	To (ft.)
Gravel Rock	1	32

RECEIVED
OCT 25 1957
ENVIRONMENTAL SANITATION

Construction of the well was completed on:
Oct 18 1957

The well is terminated 14 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

11. MISCELLANEOUS DATA:

Yield test Cont Hrs. at 5 GPM.

Depth from surface to water-level: ____ ft.

Water-level when pumping: ____ ft.

Water sample was sent to the state laboratory at:
Madison City on Oct 23 1957

Signature Wm Bessert
Registered Well Driller

Wm Bessert 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					

APPENDIX G

ACCESS AGREEMENTS

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

ACCESS PERMISSION FORM

I, Mary McKelvey, hereby give my permission to Earth Remediation Services (ERS), and its employees, duly authorized representatives, agents and contractors, to enter upon and have access at reasonable times to the following described property, located in the Town of Moose Junction, Section 20, Township 44N, Range 14W, Douglas County, Wisconsin (mailing address of this property: Route 3, Dairyland, Wisconsin 54830) for the following purposes:

1. To drill and maintain groundwater monitoring wells, collect soil and water samples, and to abandon monitoring wells according to Wisconsin Administrative Code NR 141 when the wells are no longer needed; and

2. To gain access to areas where remedial action or investigative work is to be conducted.

The permission granted herein shall remain in effect until environmental activities have ceased, which is estimated to be on May 31, 1994, when the remedial action that is to be implemented at the site is scheduled to be completed. After May 31, 1994, if the property owner wishes to withdraw permission for continued access, the property owner shall notify Earth Remediation Services (ERS) of that fact. ERS shall, within 90 days after receiving such notice, either abandon any wells that remain on the property or obtain a court order to allow continued access.

If soil or water samples are collected on the property described above, the property owner may request copies of the laboratory analytics of those samples.

If groundwater monitoring wells are installed on the property described above, the property owner agrees not to damage, or interfer with the use of, any monitoring well that is installed as permitted herein, and agrees to notify third parties who have access to the property described above that monitoring wells have been installed on the property.

Earth Remediation Services will be responsible for any damage to your property as a result of their environmental activities.

IN WITNESS WHEREOF:

Mary Mc Kelvey — April 14 1993

Signature of Property Owner — Date

Mary McKelvey
822 K Street
Eureka, CA 95501

(707) 442-0465

Specialist in Petroleum Impacted Soil & Water Remediation

EARTH REMEDIATION SERVICES
a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

ACCESS PERMISSION FORM

I, John Dickman, hereby give my permission to Earth Remediation Services (ERS), and its employees, duly authorized representatives, agents and contractors, to enter upon and have access at reasonable times to the following described property, located in the Town of Moose Junction, Section 17, Township 44N, Range 14W, Douglas County, Wisconsin (mailing address of this property: Route 3, Dairyland, Wisconsin 54830) for the following purposes:

1. To drill and maintain groundwater monitoring wells, collect soil and water samples, and to abandon monitoring wells according to Wisconsin Administrative Code NR 141 when the wells are no longer needed; and

2. To gain access to areas where remedial action or investigative work is to be conducted.

The permission granted herein shall remain in effect until environmental activities have ceased, which is estimated to be on May 31, 1994, when the remedial action that is to be implemented at the site is scheduled to be completed. After May 31, 1994, if the property owner wishes to withdraw permission for continued access, the property owner shall notify Earth Remediation Services (ERS) of that fact. ERS shall, within 90 days after receiving such notice, either abandon any wells that remain on the property or obtain a court order to allow continued access.

If soil or water samples are collected on the property described above, the property owner may request copies of the laboratory analytics of those samples.

If groundwater monitoring wells are installed on the property described above, the property owner agrees not to damage, or interfer with the use of, any monitoring well that is installed as permitted herein, and agrees to notify third parties who have access to the property described above that monitoring wells have been installed on the property.

Earth Remediation Services will be responsible for any damage to your property as a result of their environmental activities.

IN WITNESS WHEREOF:

John & Darlene Dickman 5-6-93

Signature of Property Owner — Date

John & Darlene Dickman
110 First Avenue NE
Surrey, ND 58785

(701) 838-0286

Specialist in Petroleum Impacted Soil & Water Remediation

EARTH REMEDIATION SERVICES

a division of Earth Burners, Inc.
31 West Superior Street, Suite 402
Duluth, Minnesota 55802

(218) 726-1537 office
(218) 726-0823 fax

ACCESS PERMISSION FORM

I, Margaret Dickman, hereby give my permission to Earth Remediation Services (ERS), and its employees, duly authorized representatives, agents and contractors, to enter upon and have access at reasonable times to the following described property, located in the Town of Moose Junction, Section 19, Township 44N, Range 14W, Douglas County, Wisconsin (mailing address of this property: Route 3, Box 330, Dairyland, Wisconsin 54830) for the following purposes:

1. To drill and maintain groundwater monitoring wells, collect soil and water samples, and to abandon monitoring wells according to Wisconsin Administrative Code NR 141 when the wells are no longer needed; and

2. To gain access to areas where remedial action or investigative work is to be conducted.

The permission granted herein shall remain in effect until environmental activities have ceased, which is estimated to be on May 31, 1994, when the remedial action that is to be implemented at the site is scheduled to be completed. After May 31, 1994, if the property owner wishes to withdraw permission for continued access, the property owner shall notify Earth Remediation Services (ERS) of that fact. ERS shall, within 90 days after receiving such notice, either abandon any wells that remain on the property or obtain a court order to allow continued access.

If soil or water samples are collected on the property described above, the property owner may request copies of the laboratory analytics of those samples.

If groundwater monitoring wells are installed on the property described above, the property owner agrees not to damage, or interfer with the use of, any monitoring well that is installed as permitted herein, and agrees to notify third parties who have access to the property described above that monitoring wells have been installed on the property.

Earth Remediation Services will be responsible for any damage to your property as a result of their environmental activities.

IN WITNESS WHEREOF:

Margaret Dickman
Signature of Property Owner

April 3, 1993
Date

Margaret Dickman
Route 3, Box ~~330~~ 338
Dairyland, WI 54830
Mailing Address of Property Owner

(715) 244-3364
Telephone Number

8. The permitted work shall be co-ordinated, and in no case interfere, with any highway improvement being undertaken at the same time.

9. It shall be the responsibility of the applicant to determine the location of, and protect from damage, any facility(s) already in place in the area to be influenced by the permitted work. All notification of others is likewise a responsibility of the applicant.

10. All operations shall be performed without obstructing nor closing all or any part of any highway traffic lane unless lane influence is specifically sanctioned by the highway authority and special controls applicable thereto are set forth herein and by such authority. Unless otherwise specified, unobstructed traffic shall be maintained on all constructed highway lanes.

11. This permit authorizes only the described work of and for the applicant indicated on the face of the permit. It does not grant authority for the facilities of any other, either by present or future installation.

12. Construction methods and restorations shall be in accordance with applicable portions of the Wisconsin Department of Transportation Standard Specifications for Road and Bridge Construction, current edition.

13. Highway signing applicable for the proposed work shall conform to the Wisconsin Department of Transportation Manual of Traffic Control Devices.

14. All highway facilities disturbed by the permitted work or associated operations shall be restored promptly. If restoration is not accomplished voluntarily, without delay, the highway authority may issue a notice setting forth a time-certain by which the restoration must be completed. If the applicant fails to satisfactorily complete all restorations within the time thus established, the highway authority may arrange directly for all needful restorations, and all costs associated with such restorations and the arrangements therefor shall be a cost-obligation of the applicant. The applicant agrees to pay any and all of such costs within 60 calendar days of the state billing.

15. Any brush, trash or waste materials resulting from the permitted work shall be removed from the highway right of way. All elm tree cuttings stemming from the work shall be disposed of in accordance with the procedures of the Wisconsin Department of Transportation. Copy of the procedure may be obtained by contacting the Wisconsin Highway Transportation District Office identified on the face of this permit. No tree or shrub of any species shall be cut, trimmed or damaged to facilitate the installation or maintenance of the permitted facility except as authorized by the owner of such tree or shrub. ss/86.03(2)(4), 86.16(3), 182.017(6), Wis. Statutes, and others pertaining.

16. Upon completion of the work and restorations, written notice thereof shall be filed with the District Chief Maintenance Engineer of that Wisconsin Highway Transportation District Office indicated on the face of this permit.

17. Smooth and finished slopes shall be constructed at those locations where any regraded portion of the highway right-of-way meets the land of an adjacent property owner.

18. Any turfed area of the right of way disturbed by the permitted work and operations shall be restored with fine-graded topsoil having a depth of not less than 4 inches, and reseeded to perennial grass or sodded.

19. If, in the opinion of the District Chief Maintenance Engineer, the permitted work or facilities obstruct highway drainage, increase the difficulty of highway maintenance unduly, or in any other manner adversely affect a highway interest, the applicant shall, upon notice thereof, cure the fault in the manner directed, and restore the highway facility to the satisfaction of the said highway authority.

20. The permittee is responsible to assure that the site of construction is secure against any hazard to the public, both when the site is attended and during off-hours, any holiday, and the hours of night when the site may be unattended.

INDEMNIFICATION

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The Applicant shall save and hold the State, its officers, employees, agents, and all private and governmental contractors and subcontractors with the State under Chapter 84 Wisconsin Statutes, harmless from actions of any nature whatsoever (including any by Applicant itself) which arise out of, or are connected with, or are claimed to arise out of or be connected with any of the work done by the Applicant, or the construction or maintenance of facilities by the Applicant, pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way, (1) while the Applicant is performing its work, or (2) while any of the Applicant's property, equipment, or personnel, are in or about such place or the vicinity thereof, or (3) while any property constructed, placed or operated by or on behalf of Applicant remains on the State's property or right-of-way pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way; including without limiting the generality of the foregoing, all liability, damages, loss, expense, claims, demands and actions on account of personal injury, death or property loss to the State, its officers, employees, agents, contractors, subcontractors or frequenters; to the Applicant, its employees, agents, contractors, subcontractors, or frequenters; or to any other persons, whether based upon, or claimed to be based upon, statutory (including, without limiting the generality of the foregoing, worker's compensation), contractual, tort, or whether or not caused or claimed to have been caused by active or inactive negligence or other breach of duty by the State, its officers, employees, agents, contractors, subcontractors or frequenters; Applicant, its employees, agents, contractors, subcontractors or frequenters; or any other person. Without limiting the generality of the foregoing, the liability, damage, loss, expense, claims, demands and actions indemnified against shall include all liability, damage, loss, expense, claims, demands and actions for damage to any property, lines or facilities placed by or on behalf of the Applicant pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way in the past or present, or that are located on any highway or State property or right-of-way with or without a permit issued by the State, for any loss of data, information, or material; for trademark, copyright or patent infringement; for unfair competition or infringement of personal or property rights of any kind whatever. The Applicant shall at its own expense investigate all such claims and demands, attend to their settlement or other disposition, defend all actions based thereon and pay all charges of attorneys and all other costs and expenses of any kind arising from any such liability, damage, loss, claims, demands and actions.

Any transfer, whether voluntary or involuntary, of ownership or control of any property constructed, placed or operated by or on behalf of the Applicant that remains on the State's property or right-of-way pursuant to this permit shall not release Applicant from any of the indemnification requirements of this permit, unless the State is notified of such transfer in writing. Any acceptance by any other person or entity, whether voluntary or involuntary, of ownership or control of any property constructed, placed or operated by or on behalf of the Applicant that remains on the State's property or right-of-way pursuant to this permit, shall include acceptance of all of the indemnification requirements of this permit by the other person or entity receiving ownership or control.

Notwithstanding the foregoing, a private contractor or subcontractor with the State under Chapter 84 Wisconsin Statutes, that fails to comply with sections 66.047 and 182.0175 Wisconsin Statutes (1985-1986), remains subject to the payment to the Applicant of the actual cost of repair of intentional or negligent damage by the contractor or subcontractor to any property, lines or facilities placed by or on behalf of the Applicant pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way, and remains subject to payment to the Applicant for losses due to personal injury or death resulting from negligence by the contractor or subcontractor.

Notwithstanding the foregoing, if the State, or its officers, employees and agents, fail to comply with sections 66.047 and 182.0175 Wisconsin Statutes (1985-1986), the State or its officers, employees and agents, remain subject to the payment to the Applicant of the actual cost of repair of willful and intentional damage by the State, or its officers, employees and agents, to any property, lines or facilities placed by or on behalf of the Applicant pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way, and remain subject to payment to the Applicant for losses due to personal injury or death resulting from negligence by the State, its officers, employees and agents.

No indemnification of private contractors or subcontractors with the State under Chapter 84 Wisconsin Statutes, shall apply in the event of willful and intentional damage by such private contractors or subcontractors to the property, lines and facilities of the Applicant located on the highway right-of-way pursuant to this permit or any other permit issued by the State for the location of property, lines or facilities on highway right-of-way.