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MAY 27 1994

SITE INVESTIGATION RESULTS

**FORMER POWER PLANT
W61 N617 MEQUON AVENUE
CEDARBURG, WISCONSIN**

April 15, 1994

April 15, 1994
(CLW131246)

Mr. Dale Lythjohan
Cedarburg Light and Water Commission
N30 W5926 Lincoln Boulevard
Post Office Box 767
Cedarburg, Wisconsin 53012

RE: Site Investigation Results, Former Power Plant, W61 N617 Mequon Avenue,
Cedarburg, Wisconsin

Dear Mr. Lythjohan:

Northern Environmental Technologies, Incorporated (Northern Environmental) has completed a site investigation at the former power plant located at W61 N617 Mequon Avenue, Cedarburg Wisconsin. The site will be referred to as "the Property" in the remainder of this letter. The Property is located in the southeast quarter of the northeast quarter of Section 27, Township 10 North, Range 21 East (latitude 43 degrees, 18 minutes, 22 seconds north, longitude 87 degrees, 59 minutes, 40 seconds west), Ozaukee County, Wisconsin (Figure 1). Three petroleum underground storage tanks (USTs) were formerly used at the Property. The investigation was initiated to provide information concerning potential environmental impacts to soil and/or ground-water quality. This report describes the methods used to conduct the investigation, summarizes the findings, and discusses the significance of these findings.

BACKGROUND INFORMATION

The City of Cedarburg operated an electrical power plant at the Property from 1901 until 1984. The original electrical generators utilized steam for driving the turbines. From 1901 until 1929 wood and coal was used to fuel steam production. In 1929, diesel powered electrical generators were installed. The generators burned number 5 diesel fuel. Two 20,000-gallon USTs were installed on the north side of the power plant for storage of the diesel fuel. In 1952, the generators at the power plant were replaced. The new generators used number 2 diesel fuel which was also stored in the USTs. The generators continued to use number 2 diesel fuel until electrical production at the power plant was terminated in 1984 (Reference 1). A 1,000 gallon UST was also used at the Property. The 1,000 gallon UST had originally been used to store gasoline and was later used to store diesel fuel for vehicular use.

The two 20,000-gallon capacity diesel fuel USTs were reportedly cleaned, and abandoned in place by National Tank Service of Wisconsin (1813 South 43rd Street, West Allis, Wisconsin) on April 16, 1986 (Reference 2). The two abandoned 20,000 gallon USTs remain in place beneath the electrical substation at the Property (Figure 2). The 1,000 gallon gasoline/diesel UST which was located 10 feet north of the 20,000 gallon USTs (Figure 2) was cleaned, removed, and disposed of at this time (Reference 2). A closure assessment to document decommissioning of the tank systems was not required at the time these USTs were taken out of service.

In April 1993, Cedarburg Light and Water Commission retained Northern Environmental to drill and sample soil in the vicinity of the closed USTs as part of an environmental assessment of the Property. A soil sample obtained from an exploratory soil boring (B1 [Figure 2]) on April 29, 1993 indicated the presence of diesel range organic compounds (DRO) and gasoline range organic compounds (GRO) in the subsurface near the USTs. The WDNR was notified of the findings and the Cedarburg Light and Water Commission retained Northern Environmental to perform this site investigation.

METHODS OF INVESTIGATION

The investigation consisted of soil exploration borings, installation of ground-water monitoring wells, and soil and ground-water sampling and laboratory analysis. The investigative methods are described in detail below. Photographs documenting field conditions are available upon request from Northern Environmental.

Soil Exploration Drilling and Sampling

Four soil exploration boreholes (B1 through B4) have been drilled at the locations shown on Figure 2. Boring B1 was drilled as part of an environmental assessment on April 29, 1993. Borings B2 through B4 were drilled on October 14, 1993 as part of this site investigation. The boreholes were drilled to depths ranging from 18 to 20.5 feet below ground surface using a CME 50 rotary drill rig operated by Wisconsin Testing Laboratories of Menomonee Falls, Wisconsin. Drilling was performed using hollow stem augers (HSA) in general conformance with ASTM Standard Method D-1452. Boring B1 utilized 7.5-inch outside diameter (O.D.) HSA. Boring B2 was drilled with 4.25-inch O.D. HSA, and borings B3 and B4 utilized 6.25-inch O.D. HSA. All downhole drilling equipment was steam cleaned prior to use at each borehole. No lubricants or solvents were used on downhole drilling or sampling equipment. No drilling fluid was used. The sampling devices were washed with a trisodium phosphate (Alconox) detergent solution and double rinsed with potable water between sampling intervals.

Soil samples were collected at 2.5 foot intervals during drilling using an 18-inch long split barrel sampler and standard split-barrel sampling techniques (ASTM D-1586). Each sample was field screened for the presence of volatile organic compounds (VOCs). Field screening included evaluation of incidental soil odor, soil appearance, and field headspace analysis using a photoionization detector (PID). PID headspace analyses was performed by collecting a portion of each soil sample in a 16-ounce glass jar, sealing the jar with aluminum foil and a threaded metal collar, and storing the sample in a relatively warm (at least 60°F) location for at least 30 minutes.

The aluminum foil was then carefully punctured with the PID probe, and the highest stable PID reading occurring within 10 to 20 seconds was recorded in instrument units as isobutylene (iui).

The PID utilized was a Thermo Environmental Instruments Model 580A Organic Vapor Meter outfitted with a 10.6 eV lamp calibrated for direct response to isobutylene. The PID was calibrated daily with 251 parts per million (ppm) isobutylene.

A portion of each sample was immediately placed in a glass sample jar and cooled for potential laboratory analysis. The relatively "most impacted" soil sample (based on PID screening, odor, and appearance) obtained from soil boring B2 (sample B2-03) was submitted under chain-of-custody to a WDNR certified analytical laboratory (U.S. Oil Analytical Laboratory, Combined Locks, Wisconsin [WDNR Certificate No. 445027660]) for analysis of DRO using the WDNR Modified Method (Reference 3). Because field screening did not indicate the presence of contamination in borings B3 and B4, laboratory analysis was not performed on soil samples from those borings. Borehole logs were prepared in the field in general conformance with ASTM D-2488. Completed WDNR soil boring log information forms (Form 4400-122) are included in Attachment A1.

Ground-Water Monitoring Well Installation and Sampling

Ground-water quality monitoring wells MW200, MW300, and MW400 were installed in boreholes B2, B3, and B4, respectively. The locations of the ground-water monitoring wells are shown on Figure 3. The ground-water monitoring wells were constructed in general conformance with applicable WDNR requirements (Reference 4). Well casings consisted of two-inch diameter, threaded, flush joint, schedule 40 PVC. The wells were screened with two-inch diameter, 0.010-inch factory slot, threaded, flush joint, schedule 40 PVC. Because the wells are located in traffic areas, flush-mount locking protective casings were installed. No glues, solvents, or lubricants were used in well construction. WDNR monitoring well construction summaries are included in Attachment A2 (Form 4400-113A).

Well locations and elevations were surveyed to the nearest 0.01 foot relative to a site reference datum. The site datum is the embossed "open" on the fire hydrant in front of the former firehouse on Mequon Avenue. This point was assigned an arbitrary site reference elevation of 100.00 feet. Based on topographic maps, the Property is approximately 790 feet above mean sea level (msl) (Reference 5). Consequently, site reference elevations may be converted to approximate mean sea level datum by adding 690 feet.

The three monitoring wells were developed on February 25, 1993 using a centrifugal pump and/or a new disposable polyethylene bailer. Development was accomplished by alternately surging and pumping the wells until all fine particles were removed. During well development, pH, specific conductance, temperature, and turbidity were measured. Water levels were measured in the wells immediately before purging. The water extracted from the wells during development was temporarily stored on site in 55-gallon drums pending laboratory analysis and proper disposal. Approximately 30, 30, and 55 gallons of water were removed from MW200, MW300, and MW400, respectively (6.5, 6.3, and 9.8 well volumes). WDNR well development summaries are presented in Attachment A3 (Form 4400-113B).

Following well development, each well was purged and sampled using a 1.66-inch diameter disposable polyethylene bailer. The wells were purged prior to sampling to ensure that samples reflected ambient ground-water conditions. A disposable polyethylene bottom emptying device was used to transfer water from the bailers to the sample vials to minimize sample agitation and associated volatilization of petroleum compounds. The water samples were immediately cooled to 4°C and submitted under chain-of-custody to a WDNR-certified analytical laboratory (U.S. Oil Analytical Laboratories, Combined Locks, Wisconsin WDNR Certification #445027660) for analysis of VOCs using EPA Method 8021, dissolved lead using EPA Method 6010, and DRO and GRO using the WDNR Modified Methods (Reference 3). The water sample collected for dissolved lead analysis was filtered in the field and preserved with nitric acid (HNO₃). Subsequent analyses of ground-water monitoring well samples from MW300 and MW400 were reduced to PVOC using EPA Method 8020. The second round samples from MW200 was analyzed for VOCs and polynuclear aromatic hydrocarbons (PAH) using EPA Method 8310.

SUMMARY OF FINDINGS

Physical Setting

The Property is located in the City of Cedarburg, and is bounded on the west by a portion of Cedar Creek known as Ruck Pond, by Columbia Road to the south, Mequon Avenue to the east, and the fire department building to the north. An approximately six foot high stone retaining wall is present on the bank of Cedar Creek in this area. A dam located approximately 200 feet downstream forms Ruck Pond in the vicinity of the Property. Residential and professional offices line the east side of Mequon Avenue. Commercial property is found along the south side of Columbia Avenue.

The Property lies in a moderate to steeply westward sloping area. With the exception of the retaining wall along Cedar Creek, the Property itself is relatively flat. The area around the former USTs is paved. Cedar Creek flows south-southeast and discharges into the Milwaukee River approximately two miles southeast of the Property.

Cedarburg Light and Water Commission owns and operates an electrical substation adjacent to the north side of the former Power Plant at the Property. The two 20,000 gallon USTs are buried beneath the substation. Three cement-cased, high voltage power lines run from the substation to a service manhole approximately 100 feet to the northwest (Figure 2).

Overview of Local Geology and Hydrogeology

Information available from the United States Department of Agriculture (Reference 6) indicates that the predominant natural surface soil in the vicinity of the Property belongs to the Hochheim-Sisson-Casco association. This association consists of well-drained to somewhat poorly drained soil of moderate permeability with a loam to clay loam subsoil. The subsoil is derived from glacial till of the Oak Creek Formation (Reference 7).

The uppermost geologic unit at the Property is the Oak Creek Formation. The Oak Creek Formation includes fine textured glacial till, lacustrine clay, silt, sand, and some glaciofluvial sand and gravel. Commonly the deposit is brown silty clay. The Oak Creek Formation is

relatively widespread in southeastern Wisconsin, where it occurs as the surface drift in a north-south belt that extends from the Illinois State line northward through Kenosha, Racine, Milwaukee, and eastern Waukesha Counties at least as far as Ozaukee and Washington Counties (Reference 7).

Underlying the Oak Creek Formation is dolomite of the Manistique Formation. Depth to bedrock is variable, ranging from less than two feet at the base of the six foot retaining wall along the bank of Cedar Creek to 17.5 feet east of the retaining wall at boring B1. The dolomite is fractured and weathered at the top, but changes to massive and competent with depth.

Rock units below the dolomite in the area are hydraulically connected and form a single hydrogeologic unit, collectively referred to as the sandstone aquifer (Reference 8). The sandstone aquifer is present throughout the area as well as most of southern Wisconsin and northern Illinois. The Maquoketa Shale is present between the dolomite and the sandstone aquifer. The Maquoketa Shale is a low permeability unit which serves as a hydraulic barrier between shallow ground water and the deeper sandstone aquifer. Because of its low permeability, the shale restricts the vertical movement of water and confines water in the sandstone aquifer (Reference 8).

The depth to water in each of the monitoring wells was measured on five occasions to determine local ground-water flow direction across the Property. Static water levels were measured prior to removing any water from the wells. The depth to water in the wells averaged approximately 13 feet. The water level data is summarized on Table 1. The depth to water measurements were converted to water level elevations referenced to the site datum. The data collected on January 7, 1994 was contoured (Figure 3) and indicates a relatively flat westward gradient across the Property.

Soil Screening and Laboratory Analysis

A total of 17 soil samples were collected and field screened from the four exploration boreholes drilled at the Property. The results of field screening and laboratory analysis of borehole soil samples are summarized in Table 2. The soil sample collected from 13.5 to 15 feet below grade from boring B1 (sample number S106) produced an elevated PID response. Soil samples collected from 15 to 17 feet depth in boring B1 and from 11 to 15 feet below grade from boring B2 (sample numbers S107, B2-03, and B2-04) produced slightly elevated PID responses and light petroleum odors. Field screening did not produce evidence of petroleum impacts in soil samples obtained from boreholes B3 and B4. Laboratory analysis results from sample S106 indicate that 590 milligrams per kilogram (mg/kg) of DRO were present in the sample. Laboratory results also indicated 48 mg/kg of GRO in S106, however, the laboratory report noted that the GRO quantification was influenced by light diesel fractions (Attachment B). Laboratory analysis results from sample B203 indicated 110 mg/kg of DRO. Complete laboratory analysis reports and chain-of-custody records are presented in Attachment B.

Ground-Water Monitoring Well Sampling and Analysis

The three ground-water monitoring wells have been sampled for laboratory analysis on two occasions. Laboratory analysis results are summarized in Table 3 along with ground-water quality standards set by the WDNR for substances that may effect public health and welfare. Two regulatory threshold standards, the enforcement standard (ES) and the preventive action limit (PAL) are used in the State of Wisconsin (Reference 9). The ES represents a level above which action should be taken to improve the quality of ground water. The PAL is a lower limit above which the ground-water quality should be monitored for change.

Neither floating product nor unusual odors were detected in water extracted from any of the monitoring wells during well development and sampling. In the first round of sampling (October 28, 1993) GRO and DRO were detected in MW200 (100 and 720 $\mu\text{g/l}$, respectively). Trichloroethene was detected above the ES in MW200 (7.6 $\mu\text{g/l}$), and lead exceeded the PAL. Tetrachloroethene was also detected at a concentration slightly above the ES in MW200 (5.4 $\mu\text{g/l}$), however, it should be noted that the laboratory check standard failed to meet Quality Control (QC) limits during analytical processing, therefore, the actual concentration of tetrachloroethene is $\pm 15\%$ of the reported value (Reference 10). All other VOCs in MW200 were either below the PAL or were not detected above the method detection limit (mdl). The ground-water sample collected from MW300 contained 1.2 $\mu\text{g/l}$ of benzene which is above the PAL but below the ES. Tetrachloroethene was also detected above the PAL in MW300 (3.9 $\mu\text{g/l}$), however, as with the analysis of MW200, the check standard did not meet acceptable QC limit and consequently, the actual concentration is $\pm 15\%$ of the reported value (Reference 10). All other analytes were not detected or were below the PAL. No VOCs were detected in the sample collected from MW400.

A second round of ground-water quality samples was collected on January 13, 1994. The concentration of tetrachloroethene in MW200 (1.4 $\mu\text{g/l}$) was substantially below the first round sample and is below the ES. Similarly, the concentration of trichloroethene in MW200 (1.6 $\mu\text{g/l}$) was also substantially below the initial result and is below the ES. The concentration of lead was above the PAL but was also below the ES. Benzene was again detected in MW300 (1.3 $\mu\text{g/l}$) above the PAL but below the ES. No VOCs were detected in MW400. No other analytes were detected above the method detection limits or the PAL in any wells.

Because DRO was detected in the initial analysis in MW200, a sample collected from MW200 was also analyzed for PAH. Test results indicate that minor concentrations of some PAH compounds are present at MW200 (Table 4). Copies of the laboratory analysis results, and sample chain-of-custody records are presented in Attachment B.

IMPACT ASSESSMENT

Based on the information gathered from soil exploration borings and laboratory analyses, DRO was present in soil samples collected from near the approximate depth of the water table in boring B1 and B2. Soil sample field screening in boreholes B3 and B4 did not indicate the presence of soil contamination at these locations.

Results of the laboratory analysis performed on ground-water samples from MW200 confirm that ground-water contamination is present at the Property. DRO and GRO were detected in MW200. Tetrachloroethene and trichloroethene concentrations marginally exceeded the ES in MW200 in the first round of sampling and were below the ES in the second round of sampling. Lead exceeded the PAL in both rounds of sampling. DRO and GRO were not present in MW300, however, benzene was detected in concentrations exceeding the PAL, but below the ES. No other VOCs were present above regulatory standards in either MW200 or MW300. Soil sample field screening and laboratory analysis of both soil and ground water did not detect any impacts at MW400. Based on these results, the extent of ground-water contamination appears to be limited. In addition, the concentrations of individual VOCs in ground water are relatively low with no VOCs exceeding the enforcement standard in the latest round of sampling.

Native sediment at the site was found to be predominantly silty clay with less than 5 percent fine gravel or sand. Because of the fine grained nature of the native sediment, hydraulic conductivity is expected to be low. The low well yield and slow water-level recovery observed during well development supports the assumption of low hydraulic conductivity. Low hydraulic conductivity inhibits lateral migration of contaminants.

Potential Receptors

The City of Cedarburg serves the community with public water and shallow potable water wells are not typically used in the area. A municipal water supply well (Cedarburg well #1) is located approximately 130 feet northeast of the Property. A lithologic log and generalized construction diagram of that well is included in Attachment C. According to the well log, the municipal well is 1,210 feet deep and is cased with steel casing through the Maquoketa Shale to 718 feet below ground surface (Attachment C). The well extracts water from the sandstone aquifer beneath the Maquoketa Shale which acts as a vertical barrier to ground-water flow. Therefore, the potential for contaminated shallow ground water to affect the water quality of the municipal water supply well appears to be negligible.

At the time that static water levels were measured in the monitoring wells, the ground-water flow across the Property was toward Ruck Pond (Cedar Creek). Ground water would normally be expected to flow away from an impounded body of water such as Ruck Pond and the gradient may be an anomaly caused by unusually high precipitation over the past year. Nonetheless, it is apparent that ground water beneath the Property may discharge to Cedar Creek. Given the low gradient, the low hydraulic conductivity of the native sediments, and the relatively low concentrations of VOCs, only minimal volumes of VOCs would enter the Creek. Based on this factor, coupled with the dilution factor provided by the Ruck Pond, the impact to Cedar Creek appears to be minimal.

FEASIBILITY OF REMEDIAL ALTERNATIVES

Several conditions exist at this site which present significant logistical problems, reduce technical effectiveness, and/or substantially increase the cost of any active soil and ground-water remedial action program. Site conditions severely restrict implementation and effectiveness of remedial action. Due to the presence of buildings, the electrical substation, the cement cased high voltage underground power lines, the retaining wall, and the proximity

of Cedar Creek, any excavation would be extremely hazardous and essentially impractical.

Pump and treat systems are the best known and most common technique to address contaminated ground water. However, the effectiveness of a pump and treat system at the Property is diminished due to the apparent low hydraulic conductivity of the sediments. Reported values for typical glacial silts and clays in Wisconsin range from 10^{-5} to 10^{-8} centimeters per second (cm/sec) (Reference 12). Similarly, hydraulic conductivity is expected to be low in the dolomite bedrock (10^{-4} to 10^{-7} cm/sec [Reference 12]). In addition, the proximity of Cedar Creek would limit the capture zone of ground-water extraction wells. A steady-state pumping rate from wells in proximity to a water body would likely induce seepage and the majority of extracted water would originate from the Creek.

In-situ bioremediation relies on attenuation of organic compounds through degradation by microbial populations. Passive bioremediation relies on naturally occurring microbes and nutrients while active bioremediation enhances the indigenous microbial population by providing deficient nutrients and/or oxygen. Either active or passive bioremediation requires a comprehensive site characterization program to determine the suitability of the site for this type of remediation. The effectiveness of these methods is limited in low permeability soils by the difficulty in distributing oxygen and/or nutrients. At this time, the WDNR does not generally allow *in-situ* active bioremediation.

It should also be noted that Ruck Pond has a well documented history of environmental problems. Remediation of polychlorinated biphenyl (PCB) contaminated sediment is scheduled for Ruck Pond in the summer of 1994. The pond will be dewatered and the bottom sediment excavated and removed. It is unknown what effect that activity will have on this site. However, lowering the pond elevation may lower the water table elevation on this site and would possibly reduce the effectiveness of any operating ground-water remediation system.

CONCLUSIONS

Impacted soil and ground water at the Property appears to be limited in both magnitude and extent. In addition, site conditions restrict active remediation. However, mechanical dispersion and dilution of the contaminant plume, coupled with the natural process of biodegradation, should act to reduce the effects of the release over time. Based on the lack of potential receptors in the area, the apparently limited threat to human health and the environment, and the logistical and technical difficulties of an active remediation program, the Cedarburg Light and Water Commission requests that no further action be required at this site.

The results of this study are based upon professional interpretation of the information available to Northern Environmental given site conditions and the time and budget constraints of this project. Northern Environmental does not warrant that this report represents an exhaustive study of all possible impacts at the study area. The items investigated as part of this investigation do represent the most likely sources of environmental impacts associated with the described UST systems, and are consequently believed to adequately address WDNR requirements and the needs of the client at the present time.

We trust this information meets your needs. Please feel free to contact us if you have any questions or comments.

Sincerely,
**Northern Environmental
Technologies, Incorporated**

Handwritten signature of Richard J. White in blue ink, with the letters "FOR" written in blue ink to the right of the signature.

John J. Lund
Hydrogeologist II

Handwritten signature of Gary S. Graham in blue ink.

Gary S. Graham
Senior Project Manager

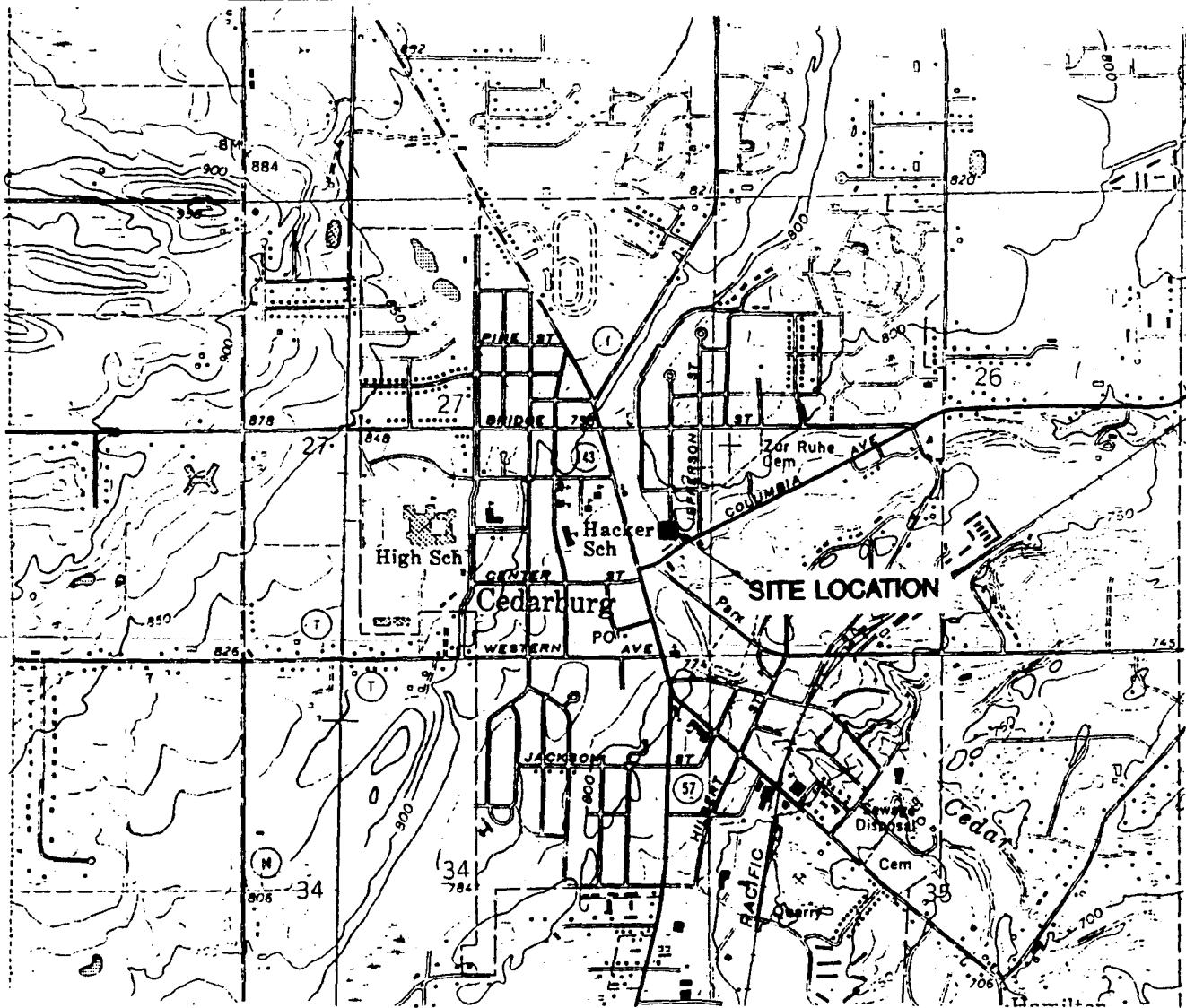
Handwritten signature of John R. Jansen in blue ink.

John R. Jansen, C.P.G., R.Gp.
Director of Geosciences

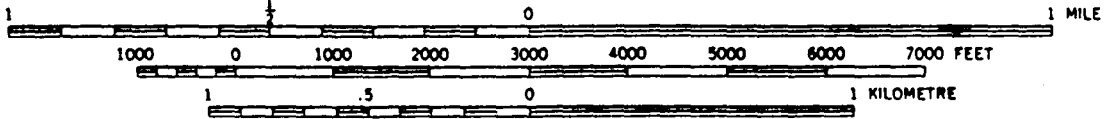
JJL/jmb
Enclosure
cc: John Feeney (WDNR - SED)

REFERENCES

- 1) Conversation: Wayne Fischer (*Cedarburg Light and Water Commission*) with John J. Lund (Northern Environmental), January 15, 1993.
- 2) Invoice: *National Tank Service of Wisconsin to Cedarburg Light and Water Commission*, April 25, 1986.
- 3) Wisconsin Department of Natural Resources, *Leaking Underground of Storage Tank (LUST) and Petroleum Analytical and Quality Assurance Guidance*, PUBL-SW-130, July 1993.
- 4) s. NR 141, Wisconsin Administrative Code, *Ground-Water Monitoring Well Requirements*, June 1991.
- 5) United States Geological Survey Topographic Map, *Cedarburg, Wisconsin 7.5 Minute Quadrangle map*, 1959, Photorevised 1971 and 1976.
- 6) United States Department of Agriculture, *Soil Survey of Ozaukee County, Wisconsin*, 1970.
- 7) Wisconsin Geological and Natural History Survey, *Pleistocene Stratigraphic Units of Wisconsin*, Miscellaneous Paper 84-1, 1984.
- 8) Wisconsin Geological and Natural History Survey, *Ground-Water Resources and Geology of Washington and Ozaukee Counties, Wisconsin*, Information Circular 38, 1980.
- 9) s. NR 140, Wisconsin Administrative Code, *Ground-Water Quality*, January 1992.
- 10) Conversation: Jim Stevens (*U.S. Analytical Laboratories*) with John J. Lund (Northern Environmental), November 17, 1993.
- 11) Cedarburg Light and Water Commission, *Well Construction Diagram*, February 18, 1994.
- 12) Fetter Jr., C.W., 1980. *Applied Hydrogeology*.



SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



N

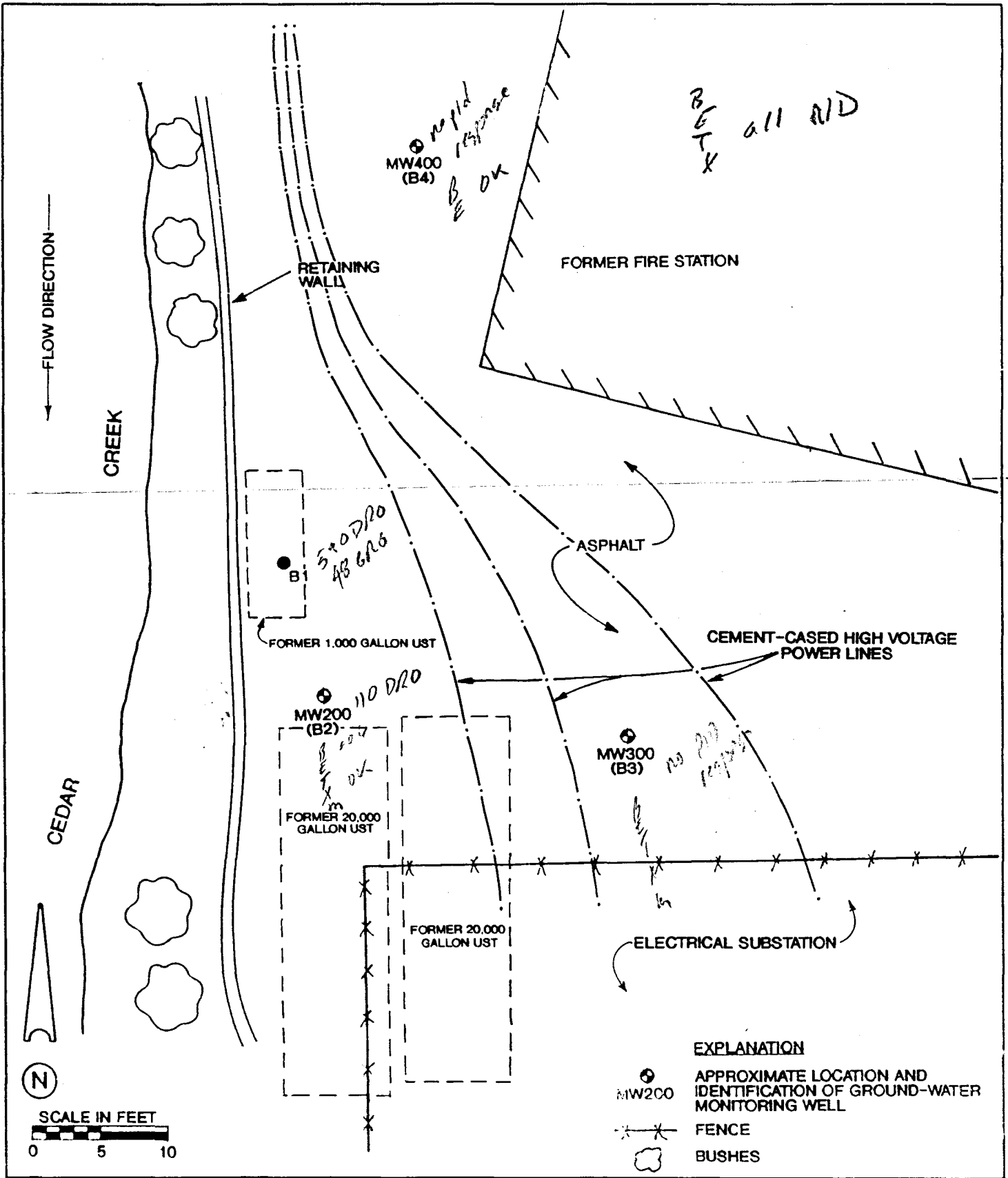


QUADRANGLE LOCATION

BASE MAP SOURCE: USGS CEDARBERG AND FIVE CORNERS, WI 7.5 MIN QUADRANGLE

REV	PROJECT: CLW131248	DATE: 04/15/94	CEDARBURG LIGHT & WATER COMMISSION CEDARBURG, WISCONSIN
	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF NORTHERN ENVIRONMENTAL INCORPORATED AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS EXPRESSLY FURNISHED. THE DRAWING AND ANY COPIES THEREOF SHALL BE RETURNED TO THE OWNER ON DEMAND.		
<p>▲ Northern Environmental Hydrologists • Engineers • Geologists</p>			SITE LOCATION AND LOCAL TOPOGRAPHY

FIGURE 1



EXPLANATION

- APPROXIMATE LOCATION AND IDENTIFICATION OF GROUND-WATER MONITORING WELL
- x—x— FENCE
- ☁ BUSHES

REV

PROJECT: CLW131246

DATE: 04/15/94

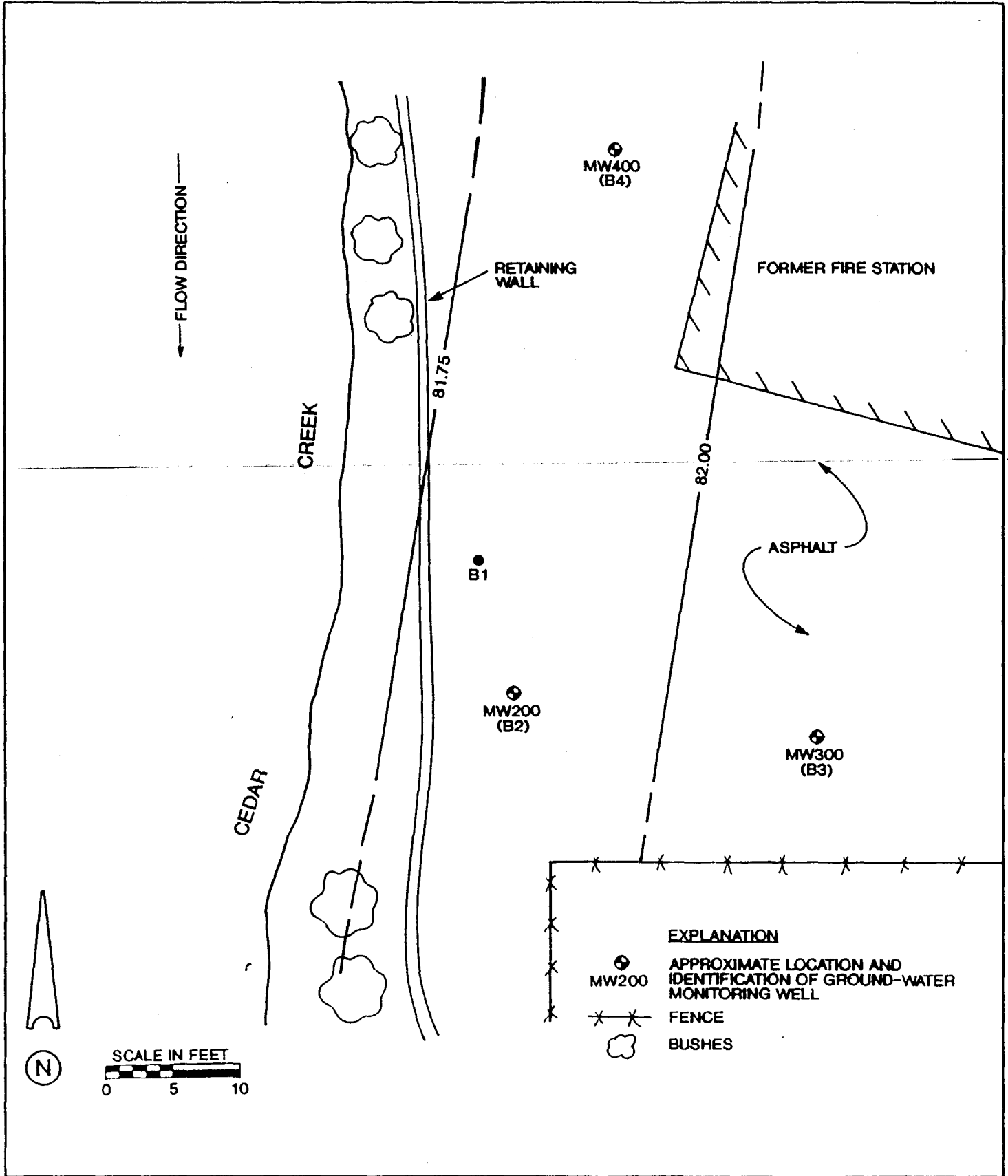
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**CEDARBURG POWER & LIGHT
CEDARBURG, WISCONSIN**

▲ Northern Environmental
Hydrologists • Engineers • Geologists

**SITE LAYOUT AND LOCATION OF
GROUND-WATER MONITORING WELLS**

FIGURE 2



REV	PROJECT: CLW131246	DATE: 04/15/94	CEDARBURG POWER & LIGHT CEDARBURG, WISCONSIN
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▲ Northern Environmental Hydrologists • Engineers • Geologists			WATER TABLE CONTOUR MAP JANUARY 7, 1994

FIGURE 3

Table 1 Summary of Ground-Water Measurements, Former Power Plant, Cedarburg, Wisconsin

Well Number	Ground Surface Elevation (feet)*	Reference Point ** Elevation (feet)*	Date	Depth to Water (ft. below Reference Point)	Water Table Elevation (feet)*
MW200	96.45	95.16	10/18/93	12.71	82.45
			10/25/93	12.78	82.38
			10/28/93	12.94	82.22
			01/07/94	13.30	81.86
			02/14/94	14.21	80.95
MW300	97.06	96.55	10/18/93	14.02	82.53
			10/25/93	14.01	82.54
			10/28/93	13.98	82.57
			01/07/94	14.41	82.14
			02/14/94	15.16	81.39
MW400	94.74	94.49	10/18/93	12.60	81.89
			10/25/93	12.58	81.91
			10/28/93	12.55	81.94
			01/07/94	12.87	81.87
			02/14/94	13.62	80.87

NOTE:

* = Elevations referenced to assigned site datum of 100.00 feet.

** = Reference point is the north side of PVC riser.

CLW131246.1246T1-1

April 4, 1994

Table 2 Summary of Laboratory and Field Screening Analyses, Soil Exploration Drilling Program, Former Power Plant, Cedarburg, Wisconsin

Sample Label	Depth (feet)	Date Collected	PID Headspace Analysis			Results of Laboratory Analyses		Sample Odor	Sample Description
			Time Collected	Time Analyzed	PID Response (iui)	Diesel Range Organics (DRO) (ppm)	Gasoline Range Organics (GRO) (ppm)		
S101	1.0 - 2.5	04/29/93	-	-	-	-	-	-	Gravel fill
S102	3.5 - 5.0	04/29/93	-	-	-	-	-	-	Light brown clayey sand, some gravel
S103	6.0 - 7.5	04/29/93	0914	1006	.5	-	-	None	Brown silty clay, trace gravel
S104	8.5 - 10.0	04/29/93	0921	1007	.5	-	-	None	Brown silty clay, trace gravel
S105	11.0 - 12.5	04/29/93	0926	1009	.5	-	-	None	Brown silty clay, trace gravel
S106	13.5 - 15.0	04/29/93	0930	1010	101	590	48 *	Moderate Petroleum	Dark brown silty clay, mostly innocuous debris
S107	15.0 - 17.0	04/29/93	0940	1015	7	-	-	Light Petroleum	Dark brown silty clay, trace gravel
S108	17.0 - 18.0	04/29/93	0957	1035	3.6	-	-	None	Black silty clay, changes to dolomite bedrock
B2-01	6.0 - 7.5	10/14/93	0905	1015	1.2	-	-	None	Light yellow sand
B2-02	8.5 - 10.0	10/14/93	0910	1020	2	-	-	None	Brown silty clay, trace fine sand
B2-03	11.0 - 12.5	10/14/93	0935	1035	12	110	-	Light petroleum	Black silty clay
B2-04	13.5 - 15.0	10/14/93	0945	1040	9	-	-	Light petroleum	Gray silty clay
B2-05	16.0 - 17.5	10/14/93	0950	1043	0	-	-	None	Gray silty clay
B2-06	18.5 - 20.0	10/14/93	0957	1045	0	-	-	None	Dolomite bedrock
B3-01	6.0 - 7.5	10/14/93	1108	1235	0	-	-	None	Light brown silty clay, trace sand
B3-02	8.5 - 10.0	10/14/93	1112	1237	0	-	-	None	Light brown silty clay, trace sand
B3-03	11.0 - 12.5	10/14/93	1118	1138	NA	-	-	None	Reddish brown silty clay
B3-04	13.5 - 15.0	10/14/93	-	-	-	-	-	-	Dolomite bedrock
B4-01	6.0 - 7.5	10/14/93	1445	1535	0	-	-	None	Light brown silty clay, trace gravel
B4-02	8.5 - 10.0	10/14/93	1448	1538	0	-	-	None	Dark brown silty clay, some sand
B4-03	11.0 - 12.5	10/14/93	-	-	-	-	-	-	Dolomite bedrock

NOTE:

* Laboratory reports that GRO concentration was influenced by light diesel fractions.

CLW131246.1246T1-2

April 4, 1994

Table 3 Ground-Water Monitoring Results, Former Power Plant, Cedarburg, Wisconsin

Parameter	WDNR Preventive Action Limit (PAL) (µg/l)	WDNR Enforcement Standard (ES) (µg/l)	Monitoring Wells (µg/l)						
			MW200		MW300		MW400		Field Blank
			10/28/93	01/13/94	10/28/94	01/13/94	10/28/93	01/13/94	
Lead	5	50	17*	22*	2	-	<1.0	-	-
GRO	NR	NR	110	-	<100	-	<100	-	-
DRO	NR	NR	720	-	<100	-	<100	-	-
Benzene	.5	5	<0.6	<0.6	1.2*	1.3*	<0.6	<0.6	<0.6
Ethylbenzene	140	700	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	68.6	343	35	2.4	1.5	<1.0	<1.0	<1.0	1.2
m & p-Xylene	124	620	<1.5	<1.5	<1.5	<2.5	<1.5	<2.5	<2.5
o-Xylene	124	620	5.6	1.8	<1.0	<2.5	<1.5	<2.5	<2.5
n-Butylbenzene	NR	NR	6.1	3.0	<2.0	-	<2.0	-	-
Chloroethane	80	400	23F	26	3.3F	-	<1.0	-	-
1,2-Dichlorobenzene	60	600	<1.0	1.6	<1.0	-	<1.0	-	-
1,1-Dichloroethane	85	850	7.4F	3.6	5.0	-	<1.0	-	-
cis-1,2-Dichloroethene	7	70	3.5F	1.2	3.4	-	<1.0	-	-
MTBE	12	60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	8	40	5.7F	7.1	<2.0	-	<2.0	-	-
Tetrachloroethene	.5	5	5.4F**	1.4*	3.9F*	-	<1.0	-	-
Trichloroethene	.5	5	7.6**	1.6*	<1.0	-	<1.0	-	-
1,2,4-Trimethylbenzene	NR	NR	5.7	2.1	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	NR	NR	3.2	1.5	<1.0	<1.0	<1.0	<1.0	<1.0

Trichloroethylenes?
(TCE)

NOTE:

- µg/l = Micrograms per liter = parts per billion
- NR = Not Regulated by the WDNR
- < = Less than detection limit (not detected)
- * = WDNR Preventive Action Limit Exceeded
- ** = Enforcement Standard Exceeded
- = Not analyzed
- F = Check standard result failed to meet acceptable QC limits

Table 4 Comparison of PAH Compounds Detected in Ground-Water Samples with WDNR Public Health Ground-Water Quality Standards, Former Power Plant, Cedarburg, Wisconsin

Parameter	WDNR Preventive Action Limit (PAL) (µg/l)	WDNR Enforcement Standard (ES) (µg/l)	Date	Monitoring Well MW200 (µg/l)
Acenaphthene	NR	NR	01/13/94	1.4
1-Methyl Naphthalene	NR	NR	01/13/94	5.0
2-Methyl Naphthalene	NR	NR	01/13/94	2.6
Naphthalene	8	40	01/13/94	2.2
Phenanthrene	NR	NR	01/13/94	0.8

NOTE:

µg/l = micrograms per liter

NR = Not Regulated by the WDNR

< = Less than detection limit (not detected)

* = WDNR Preventive Action Limit Exceeded

** = Enforcement Standard Exceeded

CLW131246.1246T1-4

April 4, 1994

ATTACHMENT A

**SOIL EXPLORATION BORINGS AND
GROUND-WATER MONITORING WELL FORMS**

ATTACHMENT A1

**WISCONSIN DEPARTMENT OF NATURAL RESOURCES
SOIL BORING LOG INFORMATION FORMS (FORM 4400-122)**

State of Wisconsin
Department of Natural Resources

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

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Page 1 of 2

Facility/Project Name FARMER POWER PLANT CEDARBURG LIGHT AND WATER (LW110935)		License/Permit/Monitoring Number	Boring Number B1E0
Boring Drilled By (Firm name and name of crew chief) WISCONSIN TESTING LABS (DEAN)		Date Drilling Started 04/29/93 MM DD YY	Date Drilling Completed 04/29/93 MM DD YY
Common Well Name		Final Static Water Level Feet MSL	Surface Elevation Feet MSL
Boring Location State Plane _____ N, _____ E S/C/N		Local Grid Location (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County OZAUKEE		DNR County Code 46	Civil Town/City/ or Village CEDARBURG
NE 1/4 of SE 1/4 of Section 27 , T 10 N, R 21 W		Lat 43 18 22 Long 87 59 40	

Sample Number	Length 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					RQD/ Comments		
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200			
			1	0.0-0.5 ASPHALT												
S101	6	3 4 4	2	0.5-2.5 FILL - CRUSHED DOLOMITE (T.B. used for Road base)	GW											
			3	2.5 - 15.0 CLAYEY SAND with numerous rounded pebbles changing to SILTY CLAY at 6.0 feet with a trace of rounded pebbles changing to organic debris at 13.5 feet, petroleum odor at 13.5 feet, wet at 14.5 feet, soft, (disturbed, possibly fill)	SC											
S102	8	2 3 4	4													
			5													
S103	10	1 2 3	7			CL			.5							
			8													
S104	6	1 2 3	9				.5									
			10													
S105	15	0 1 1	11													
			12					.5								

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

Signature Marty Koopman Firm Northern Environmental Technologies

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	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number	Length Recovered (m)								Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
				As previous										
S106	15	0 1	13 14				101							
S107	18	0 1 1	15 16 17	15.0-17.5 CLAYEY SILT changing to PEAT changing to SILTY CLAY, trace sub-angular pebbles IN SILTY CLAY, Petroleum oil, wet, soft (CL, PT, LL)	OL PT LL		7							
S108	9	0 60	17 18	17.5-18.0 BEDROCK (SILICEAN CALCINITE) EOB = 18			36							

Facility/Project Name CLW 131246 License/Permit/Monitoring Number _____ Boring Number B-2
 Boring Drilled By (Firm name and name of crew chief) DAWN CARLSON Date Drilling Started 10/14/93 Date Drilling Completed 10/14/93 Drilling Method HSA.
WISCONSIN TESTING LABS
 DNR Facility Well No. _____ Well Unique Well No. _____ Common Well Name _____ Final Static Water Level _____ Surface Elevation _____ Borehole Diameter 4.25 inches
 Boring Location State Plane _____ N. _____ E S/C/N _____ Lat 43° 18' 22" Local Grid Location (If applicable) _____
 _____ 1/4 of _____ 1/4 of Section _____ T _____ N, R _____ E/W _____ Long 87° 59' 46" Feet N E
 S W
 County OZAUKEE DNR County Code 46 Civil Town/City or Village CEDARBURG

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PIPTFD	Soil Properties					RQD/Comments		
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200			
			0-2	0-7.5' = LIGHT YELLOW SAND, POSSIBLY GRADED, ROUNDED, LOOSE, SLIGHTLY MOIST, FILL												
B2-01	14	11	6	7.3'-7.5' = DARK BROWN SILTY CLAY/SAND, WELL GRADED, LOOSE, SOFT, MOIST, SOME ORGANIC MATERIAL	SP			1.2								
B2-02	14	11	8	7.5'-15.5' = BROWN SILTY CLAY, TRACE FINE SAND, SLOW DILATANCY, LOW TOUGHNESS, LOW PLASTICITY, MOIST, GRADES TO MOTTLED BLACK SILTY CLAY AT 12', SLOW DILATANCY LOW TOUGHNESS, MEDIUM PLASTICITY	SC			2								
B2-03	18	11	12	MOIST TO WET, CHANGE TO DARK GRAY SILTY CLAY (212.4'), WET FUEL OIL ODR	CL			12								
B2-04	.2	-	14					9								
B2-05	18	16	16	15.5'-17.4' = GRAY SILTY CLAY, WET FROM 16'-216.7' THEN MOIST, HIGH TOUGHNESS, NO DILATANCY, MEDIUM PLASTICITY	BR			0								
B2-06	3	60	20	17.4' - EOB = LIMESTONE BEDROCK EOB = 20'				0								

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

Signature [Signature] Firm NORTHERN ENVIRONMENTAL TECH., INC.

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.

Facility/Project Name CDG 131246 License/Permit/Monitoring Number _____ Boring Number B-3

Boring Drilled By (Firm name and name of crew chief) DAN CARLSON Date Drilling Started 10/14/93 Date Drilling Completed 10/14/93 Drilling Method HSR RD
WISCONSIN TESTING LABORATORIES M M D D Y Y M M D D Y Y TRACK ROLLER

DNR Facility Well No. _____ WI Unique Well No. _____ Common Well Name _____ Final Static Water Level _____ Feet MSL Surface Elevation _____ Feet MSL Borehole Diameter 6.25 inches

Boring Location State Plane _____ N, _____ E S/C/N Lat 43° 18' 22" Local Grid Location (If applicable) _____ Feet _____ Feet
1/4 of _____ 1/4 of Section _____, T _____ N, R _____ E/W Long 87° 59' 40" _____ Feet _____ Feet

County OTAUKEE DNR County Code 46 Civil Town/City or Village CEDARBURG

Sample Number	Length 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				ROD/Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	
			0-11.9'	LIGHT BROWN SILTY CLAY, FINE SUBANGULAR SAND, NO DILATANCY, LOW TOUGHNESS, LOW PLASTICITY, SOFT, SLIGHTLY MOIST, HOMOGENEOUS	CL								
B3-01	15.5	1 3	6										
B3-02	6.5	2 2	8										
B3-03	16.5	0 1 1	12	11.9'-13.4' REDDISH-BROWN/SILTY CLAY NO DILATANCY, LOW TOUGHNESS, LOW PLASTICITY, MOIST, SOFT, HOMOGENEOUS									
B3-04	5	89 50	14	13.4'-EOB LIMESTONE BEDROCK	BR								
			EOB=20.5'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.
 Signature [Signature] Firm NORTHEN ENVIRONMENTAL TECH, INC

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.

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

Facility/Project Name: CLW 131246 License/Permit/Monitoring Number: _____ Boring Number: B-4

Boring Drilled By (Firm name and name of crew chief): DEAN C. MELSON Date Drilling Started: 10/14/93 Date Drilling Completed: 10/14/93 Drilling Method: HST. AND TRI-CONE ROLLER
WISCONSIN TESTING LABORATORIES M M D D Y Y M M D D Y Y

DNR Facility Well No: _____ Unique Well No: _____ Common Well Name: _____ Final Static Water Level: _____ Feet MSL Surface Elevation: _____ Feet MSL Borehole Diameter: 6.25 inches

Boring Location State Plane: _____ N, _____ E S/C/N Lat 43° 18' 22" Local Grid Location (If applicable) _____ N _____ E _____ S _____ W
NE 1/4 of SW 1/4 of Section 27, T 10 N, R 21 EW Long 87° 59' 40" Feet _____ Feet _____

County: CRAIREE DNR County Code: 46 Civil Town (City) or Village: CECILBURG

Sample Number	Length 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					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200		
			0-4.5'	POORLY GRADED SAND, SOME GRAVEL CONTAINING TO GRAVEL	SP										
B4-01	15	1-18	4.5-10.8'	LIGHT BROWN SILTY CLAY, TRACE SUBANGULAR GRAVEL, NO DILATANCY, MODERATE TOUGHNESS, MODERATE PLASTICITY, MOIST, SOFT, MOTTLED BROWN, SANDY SILT LENS AT 6.8' (18") GRADES TO DARK BROWN SILTY CLAY, SOME SUBANGULAR SAND, NO DILATANCY, MODERATE TOUGHNESS, LOW PLASTICITY, MOIST, SOFT, GRADES TO REDDISH BROWN SILTY CLAY AT 9.8'	GM CL			Ø							
B4-02	11	1-11						Ø							
B4-03	5	27-50						1							
			10.8'-EDB	LIMESTONE BEDROCK	BR										
				EDB = 19'											

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

Signature: [Signature] Firm: ALCANTARA ENVIRONMENTAL TECH. INC.

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.

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.

GENERAL INFORMATION		(1) FACILITY NAME
Well/Drillhole/Borehole Location <u>B100</u>	County <u>OSHESHA</u>	Original Well Owner (If Known) <u>Cedarburg Light and Water</u>
(If applicable) NE 1/4 of SE 1/4 of Sec. <u>27</u> ; T. <u>10</u> N. R. <u>21</u>		Present Well Owner <u>As Above</u>
Gov't Lot _____	Grid Number _____	Street or Route <u>N 30 W 3926 Lincoln Boulevard</u>
Grid Location _____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code <u>Cedarburg Wisconsin 53012</u>
Civil Town Name <u>Cedarburg</u>		Industry Well No. and/or Name (If Applicable) WI Unique Well No. _____ _____
Street Address of Well <u>1061 N 617 Madison Avenue</u>		Reason For Abandonment <u>Drilled for soil sampling only</u>
City, Village <u>Cedarburg</u>		Date of Abandonment <u>04/29/93</u>

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet)
(3) Original Well/Drillhole/Borehole Construction Completed On (Date) <u>04/29/93</u>		<u>19.5</u>
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input type="checkbox"/> Yes <input type="checkbox"/> No	Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Explain _____
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____		Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <u>NA</u> Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____
Total Well Depth (ft.) <u>13'</u> Casing Diameter (ins.) <u>NA</u> (From ground surface) Casing Depth (ft.) <u>NA</u>		(6) Sealing Materials <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Chipped Bentonite
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		For monitoring wells and monitoring well boreholes only <input checked="" type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
<u>Cold patch</u>	<u>Surface</u>	<u>0.5</u>	<u>.154³</u>	
<u>Bentonite chips</u>	<u>0.5</u>	<u>18.0</u>	<u>5.34³</u>	

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Dean from Wisconsin Testing Labs

Signature of Person Doing Work <u>Marty Korman for WTL</u>	Date Signed <u>5/13/93</u>
Street or Route	Telephone Number ()
City, State, Zip Code	

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

ATTACHMENT A2

**WISCONSIN DEPARTMENT OF NATURAL RESOURCES
WELL CONSTRUCTION SUMMARIES (FORM 4400-113A)**

Facility/Project Name <u>CLW 131246</u>	Local Grid Location of Well r. <u>NS</u> ft. <u>EW</u>	Well Name <u>MW-200</u>
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. <u>43° 18' 22"</u> Long. <u>87° 59' 40"</u>	Well Number/DNR File No.
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plans _____ ft. N. _____ ft. E.	Date Well Installed <u>1 0 1 1 4 1 9 3</u> m m d d y y
Distance Well Is From Waste/Source Boundary ft.	Section Location of Waste/Source <u>NE 1/4 of SE 1/4 of Sec. 27, T. 10N, R. 21</u>	Well Installed By: (Person's Name and Firm) <u>DEM/CMILSON</u>
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input checked="" type="checkbox"/> Not Known	<u>WISCONSIN TESTING LABORATORY</u>

A. Protective pipe, top elevation _____ ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation _____ ft. MSL	2. Protective cover pipe: a. Inside diameter: <u>8.0</u> b. Length: <u>-1.5</u> c. Material: Steel <input checked="" type="checkbox"/> Other <input type="checkbox"/>
C. Land surface elevation _____ ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
D. Surface seal, bottom _____ ft. MSL or <u>1.0</u> ft.	3. Surface seal: Bentonite <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input type="checkbox"/> SC <input checked="" type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input checked="" type="checkbox"/> CH <input type="checkbox"/> Bedrock <input checked="" type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> Annular space seal <input type="checkbox"/> Other <input type="checkbox"/>
13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. Annular space seal: a. Granular Bentonite <input type="checkbox"/> b. _____ Lbs/gal mud weight... Bentonite-sand slurry <input type="checkbox"/> c. _____ Lbs/gal mud weight... Bentonite slurry <input type="checkbox"/> d. _____ % Bentonite... Bentonite-cement grout <input type="checkbox"/> e. _____ Ft ³ volume added for any of the above
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	f. How installed: Tremie <input type="checkbox"/> Tremie pumped <input type="checkbox"/> Gravity <input type="checkbox"/>
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite pellets <input type="checkbox"/> c. _____ Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7. Fine sand material: Manufacturer, product name & mesh: a. <u>BADGER MINING #30</u> b. Volume added <u>.37</u> ft ³
Describe _____	8. Filter pack material: Manufacturer, product name and mesh: a. <u>RED FLINT 60/40</u> b. Volume added <u>2.3</u> ft ³
17. Source of water (attach analysis): _____	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> Flush threaded PVC schedule 80 <input type="checkbox"/> Other <input type="checkbox"/>
E. Bentonite seal, top _____ ft. MSL or <u>1.0</u> ft.	10. Screen material: <u>PVC SCHED 40</u> a. Screen type: Factory cut <input checked="" type="checkbox"/> Continuous slot <input type="checkbox"/> Other <input type="checkbox"/>
F. Fine sand, top _____ ft. MSL or <u>5.5</u> ft.	b. Manufacturer <u>TIMCO</u>
G. Filter pack, top _____ ft. MSL or <u>7.5</u> ft.	c. Slot size: <u>0.0</u>
H. Screen joint, top _____ ft. MSL or <u>9.5</u> ft.	d. Slotted length: <u>10</u>
I. Well bottom _____ ft. MSL or <u>19.5</u> ft.	11. Backfill material (below filter pack): None <input checked="" type="checkbox"/> Other <input type="checkbox"/>
J. Filter pack, bottom _____ ft. MSL or <u>20.0</u> ft.	
K. Borehole, bottom _____ ft. MSL or <u>20.0</u> ft.	
L. Borehole, diameter <u>6.2</u> in.	
M. O.D. well casing <u>2.3</u> in.	
N. I.D. well casing <u>2.0</u> in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature [Signature] Firm MONITORING ENVIRONMENTAL TECH. INC.

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.

Facility/Project Name <u>CLW 131246</u>	Local Grid Location of Well ft. <u>88</u> N. ft. <u>8</u> E. W.	Well Name <u>MW-400</u>
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. <u>43° 18' 22"</u> Long. <u>87° 59' 40"</u>	Well Number <u>[REDACTED]</u>
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plans _____ ft. N. _____ ft. E.	Date Well Installed <u>10/14/93</u> m m d d y y
Distance Well Is From Waste/Source Boundary ft. _____	Section Location of Waste/Source <u>NE 1/4 of SE 1/4 of Sec. 27 T. 10 N. R. 21</u>	Well Installed By: (Person's Name and Firm) <u>Daniel Conlson</u>
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input checked="" type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	<u>WISCONSIN TESTING LABORATORY</u>

- A. Protective pipe, top elevation _____ ft. MSL
- B. Well casing, top elevation _____ ft. MSL
- C. Land surface elevation _____ ft. MSL
- D. Surface seal, bottom _____ ft. MSL or 1.0 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 30
 Hollow Stem Auger 41
 Other

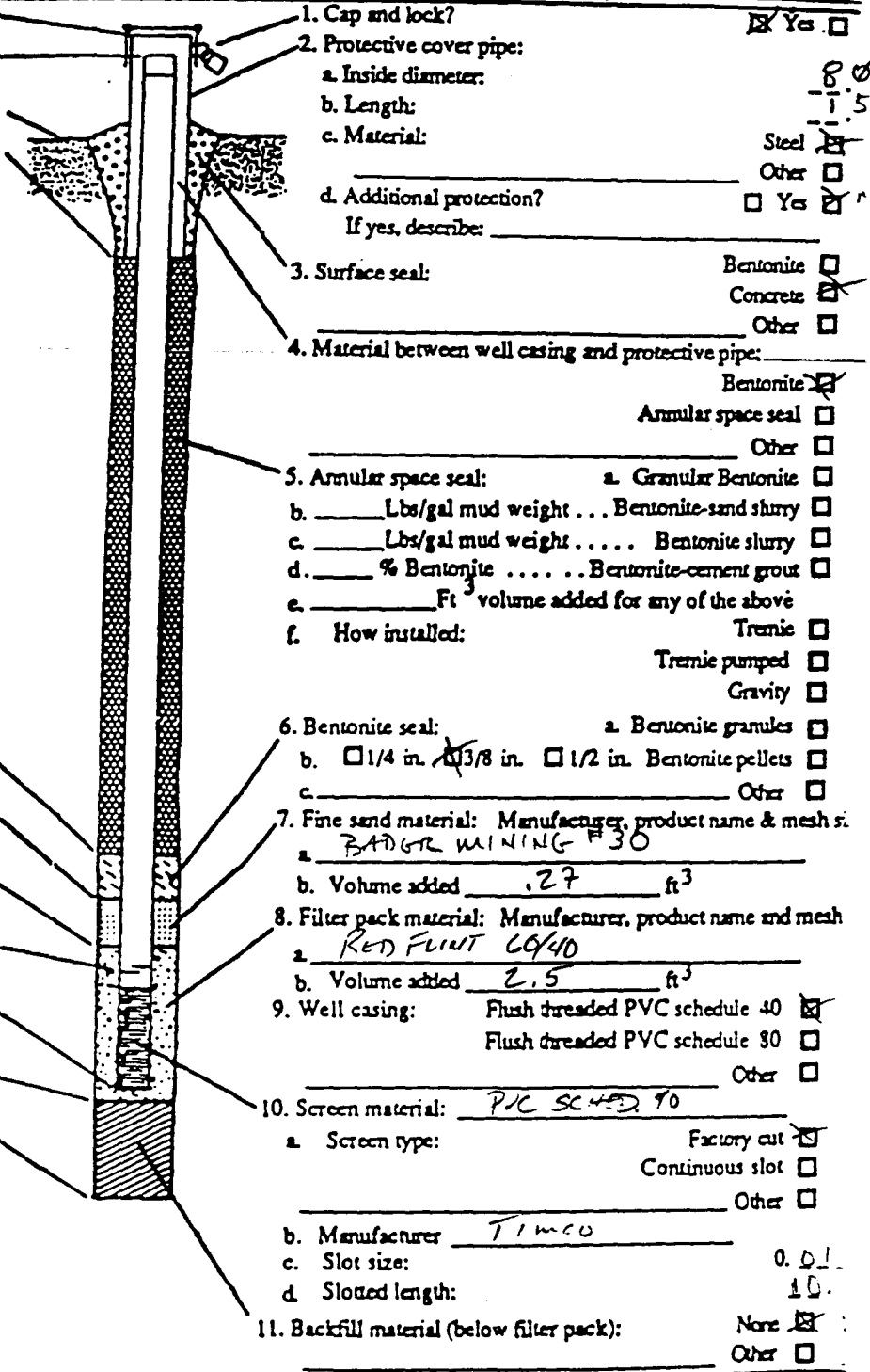
15. Drilling fluid used: Water 02 Air 01
 Drilling Mud 03 None 99

16. Drilling additives used? Yes No

Describe _____

17. Source of water (attach analysis):
MUNICIPAL POTABLE WATER

- E. Bentonite seal, top _____ ft. MSL or 1.0 ft.
- F. Fine sand, top _____ ft. MSL or 5.0 ft.
- G. Filter pack, top _____ ft. MSL or 6.5 ft.
- H. Screen joint, top _____ ft. MSL or 8.5 ft.
- I. Well bottom _____ ft. MSL or 18.5 ft.
- J. Filter pack, bottom _____ ft. MSL or 20.0 ft.
- K. Borehole, bottom _____ ft. MSL or 20.0 ft.
- L. Borehole, diameter 6.2 in.
- M. O.D. well casing 2.6 in.
- N. I.D. well casing 2.3 in.



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

Signature _____

Firm _____

Northland Environmental Tech., Inc

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. Stat. and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stat., 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. Stat., 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.

Facility/Project Name <u>CLW 131246</u>	Local Grid Location of Well ft. <u>8</u> N. ft. <u>8</u> E. W.	Well Name <u>MW-300</u>
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. <u>43° 18' 22"</u> Long. <u>87° 59' 40"</u>	Well Number <u>DNR 131246</u>
Type of Well Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plane _____ ft. N. _____ ft. E.	Date Well Installed <u>1/21/93</u>
Distance Well Is From Waste/Source Boundary ft.	Section Location of Waste/Source <u>NE 1/4 of SE 1/4 of Sec. 27, T. 10 N, R. 21 W.</u>	Well Installed By: (Person's Name and Firm) <u>Dorel Curleson</u>
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input checked="" type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	<u>WISCONSIN TESTING LABORATORY</u>

A. Protective pipe, top elevation _____ ft. MSL	1. Cap and lock? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
B. Well casing, top elevation _____ ft. MSL	2. Protective cover pipe: a. Inside diameter: _____ -8.0 b. Length: _____ -1.5 c. Material: _____ Steel <input checked="" type="checkbox"/> Other <input type="checkbox"/>
C. Land surface elevation _____ ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe: _____
D. Surface seal, bottom _____ ft. MSL or <u>1.0</u> ft.	3. Surface seal: _____ Bentonite <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input checked="" type="checkbox"/> CH <input type="checkbox"/> Bedrock <input checked="" type="checkbox"/>	4. Material between well casing and protective pipe: _____ Bentonite <input checked="" type="checkbox"/> Annular space seal <input type="checkbox"/> Other <input type="checkbox"/>
13. Sieve analysis attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. Annular space seal: a. Granular Bentonite <input type="checkbox"/> b. _____ Lbs/gal mud weight... Bentonite-sand slurry <input type="checkbox"/> c. _____ Lbs/gal mud weight... Bentonite slurry <input type="checkbox"/> d. _____ % Bentonite... Bentonite-cement grout <input type="checkbox"/> e. _____ Ft volume added for any of the above
14. Drilling method used: Rotary <input checked="" type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	f. How installed: _____ Tremie <input type="checkbox"/> Tremie pumped <input type="checkbox"/> Gravity <input type="checkbox"/>
15. Drilling fluid used: Water <input checked="" type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input type="checkbox"/> 99	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite pellets <input type="checkbox"/> c. _____ Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7. Fine sand material: Manufacturer, product name & mesh s. a. <u>BADGER MINING #30</u> b. Volume added <u>.37</u> ft ³
Describe _____	8. Filter pack material: Manufacturer, product name and mesh a. <u>RED FLINT 60/40</u> b. Volume added <u>2.3</u> ft ³
17. Source of water (attach analysis): <u>MUNICIPAL POTABLE WATER</u>	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> Flush threaded PVC schedule 30 <input type="checkbox"/> Other <input type="checkbox"/>
E. Bentonite seal, top _____ ft. MSL or <u>1.0</u> ft.	10. Screen material: <u>PVC SCHED. 40</u> a. Screen type: _____ Factory cut <input checked="" type="checkbox"/> Continuous slot <input type="checkbox"/> Other <input type="checkbox"/>
F. Fine sand, top _____ ft. MSL or <u>5.0</u> ft.	b. Manufacturer <u>TIMCO</u> c. Slot size: _____ 0.21 d. Slotted length: _____ LC
G. Filter pack, top _____ ft. MSL or <u>7.0</u> ft.	11. Backfill material (below filter pack): _____ None <input type="checkbox"/> <u>BEDROCK CUTTING</u> Other <input checked="" type="checkbox"/>
H. Screen joint, top _____ ft. MSL or <u>9.0</u> ft.	
I. Well bottom _____ ft. MSL or <u>19.0</u> ft.	
J. Filter pack, bottom _____ ft. MSL or <u>19.5</u> ft.	
K. Borehole, bottom _____ ft. MSL or <u>20.5</u> ft.	
L. Borehole, diameter <u>6.2</u> in.	
M. O.D. well casing <u>2.3</u> in.	
N. I.D. well casing <u>2.0</u> in.	

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature [Signature] Firm NORTHWEST ENVIRONMENTAL TECH., INC.

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. St. 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.

ATTACHMENT A3

**WISCONSIN DEPARTMENT OF NATURAL RESOURCES
WELL DEVELOPMENT SUMMARIES (FORM 4400-113B)**

Facility/Project Name <u>COCAINE LIGHT + WATER</u>	County Name <u>OSHAKEE</u>	Well Name <u>MW200</u>
Facility License, Permit or Monitoring Number _____	County Code <u>46</u>	Well Station Well Number _____

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 180 min.
4. Depth of well (from top of well casing) 17.5 ft.
5. Inside diameter of well 2.00 in.
6. Volume of water in filter pack and well casing 4.8 gal.
7. Volume of water removed from well 30.0 gal.
8. Volume of water added (if any) 0.0 gal.
9. Source of water added N/A
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. <u>12.71</u> ft.	_____ ft.
Date	b. <u>10/18/93</u> m m d d y y	____/____/____ m m d d y y
Time	c. <u>15:26</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	____:____ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) <u>CLOUDY -</u> <u>MURKY</u>	Clear <input type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe)

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

14. Total suspended solids N/A mg/l | N/A mg/l

15. COD N/A mg/l | N/A mg/l

16. Additional comments on development: _____

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>ROBERT ZIMMAY, JR.</u>	Signature: <u>[Signature]</u>
Firm: <u>NORTHEAN ENVIRONMENTAL</u>	Print Initials: <u>RHZ</u>
	Firm: <u>NORTHEAN ENVIRONMENTAL</u>

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

Facility/Project Name <u>COSHBURG LIGHT + WATER</u>	County Name <u>OSHAKEE</u>	Well Name <u>MW307</u>
Facility License, Permit or Monitoring Number _____	County Code <u>46</u>	Well Unique Well Number _____

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 120 min.
4. Depth of well (from top of well casing) 18.6 ft.
5. Inside diameter of well 2.00 in.
6. Volume of water in filter pack and well casing 40 gal.
7. Volume of water removed from well 30.0 gal.
8. Volume of water added (if any) 0.0 gal.
9. Source of water added N/A
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 <u>14.02</u> ft.	_____ ft.
Date	b <u>10/18/93</u> m m d d y y	___/___/___ m m d d y y
Time	c <u>15:24</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	___:___ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) _____	Clear <input type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe) _____

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

14. Total suspended solids N/A mg/l N/A mg/l

15. COD N/A mg/l N/A mg/l

16. Additional comments on development: _____

Well developed by: Person's Name and Firm Name: <u>ROBERT ZIMNEY JR</u> Firm: <u>NORTHAN ENVIRONMENTAL</u>	I hereby certify that the above information is true and correct to the best of my knowledge. Signature: <u>Robert Zimney Jr</u> Print Initials: <u>RH Z</u> Firm: <u>Northan Environmental</u>
--	---

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

Facility/Project Name <u>Cedarburg Light + Water</u>	County Name <u>OZAUKEE</u>	Well Name <u>MW400</u>
Facility License, Permit or Monitoring Number -----	County Code <u>46</u>	Well Number -----

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 90 min.
4. Depth of well (from top of well casing) 18.2 ft.
5. Inside diameter of well 2.00 in.
6. Volume of water in filter pack and well casing 5.6 gal.
7. Volume of water removed from well 55.0 gal.
8. Volume of water added (if any) 0.0 gal.
9. Source of water added N/A

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

16. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>12.60</u> ft.	----- ft.
Date	b. <u>10/18/13</u> m m d d y y	___/___/___ m m d d y y
Time	c. <u>15:28</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	___:___ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	----- inches	----- inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe)	Clear <input checked="" type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe)

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

14. Total suspended solids	<u>N/A</u> mg/l	<u>N/A</u> mg/l
15. COD	<u>N/A</u> mg/l	<u>N/A</u> mg/l

Well developed by: Person's Name and Firm

Name: ROBERT ZIMNEY JR.

Firm: NORTHERN ENVIRONMENTAL

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

Signature: Robert Zimney Jr.

Print Initials: RZ

Firm: NORTHERN ENVIRONMENTAL

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

ATTACHMENT B

**LABORATORY ANALYSIS RESULTS
AND
SAMPLE CHAIN-OF-CUSTODY RECORDS**

ATTACHMENT B1

**SOIL SAMPLE LABORATORY ANALYSIS RESULTS
AND
CHAIN-OF-CUSTODY RECORDS**

Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

REPORT TO: MARTY KOOPMAN
556-036 S10600 1 1597783 02326
NORTHERN ENVIRONMENTAL

1214 W VENTURE CRT
MEQUON WI 53092

REPORT DATE 5/10/93
SAMPLE DATE 4/29/93
SAMPLE ID S106
SAMPLE DESC CEDARBURG

TEST DESCRIPTION

RESULTS

DATE SAMPLE RECEIVED
PROJECT NUMBER
SAMPLE TYPE

4/29/93
CLW110935
SOIL

TOTAL SOLIDS %
DATE ANALYZED

73.8
4/30/93

MODIFIED DRO WDNR APR 92
DATE EXTRACTED
DATE ANALYZED
DIESEL (DRO) MG/KG
MDL MG/KG

5/3/93
5/4/93
590
10

MODIFIED GRO WDNR APR 92
DATE ANALYZED
GASOLINE (GRO) MG/KG
MDL MG/KG

5/7/93
48
5.0

ND = NOT DETECTED

AUTHORIZED SIGNATURE



COMMENTS:

GRO QUANTIFICATION INFLUENCED BY LIGHT DIESEL FRACTIONS.

▲ Northern Environmental

1214 West Venture Court
 Mequon, WI 53092
 414-241-3133
 FAX 414-241-8222

372 West County Road D
 New Brighton, MN 55112
 612-635-9100
 FAX 612-635-0643

a subsidiary of Bonestroo, Rosene, Anderlik and Associates, Inc.

CHAIN OF CUSTODY RECORD REQUEST FOR ANALYSIS

Page 1 of 1

No 1353

Project No: <u>CLW110935</u> Task No:		Sampling Date(s): <u>4/29</u>		Sample Integrity - To be completed by receiving lab Seal intact upon receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Method of Shipment <u>Carrier</u> Contents Temperature <u>ice</u> °C Refrigerator No: _____			
Project Location: <u>Ledon Bay</u> (city) <u>Gary, Indiana</u>		Shipment Date: <u>4/29</u>		ANALYSES REQUESTED <input type="checkbox"/> TRPH (EPA Method 9073) <input type="checkbox"/> Oil & Grease (EPA Method 413.1) <input type="checkbox"/> BETX (EPA Method 8020) <input type="checkbox"/> PVOC (EPA Method 8020) <input type="checkbox"/> VOC (EPA Method 8021) <input type="checkbox"/> PAH (EPA Method) <input type="checkbox"/> Pb (EPA Method) <input type="checkbox"/> Other Analysis			
Project Manager: <u>Gary Carabam</u>		Hazard Identification <input type="checkbox"/> Reactive Non Hazardous <input type="checkbox"/> <input type="checkbox"/> Toxic Flammable <input type="checkbox"/> <input type="checkbox"/> Infectious Skin Irritant <input type="checkbox"/> <input checked="" type="checkbox"/> Other <u>Petroleum</u>					
Sampler (name): <u>Wendy Koonen</u>		TURNAROUND TIME REQUIRED <input type="checkbox"/> Normal <input type="checkbox"/> Rush <input type="checkbox"/> Date Needed <u>AAP</u>					
Sampler (signature): <u>Wendy Koonen</u>		Wisconsin DNR Certification No:					
Laboratory: <u>US Oil Analytical</u>		Laboratory Contact: <u>Tom Stevens</u>					
Reports to be Sent To: <u>Wendy Koonen</u>							

626

Lab Batch No:		Price Quote No:		Comments: <u>* if Gro shows Pro contamination run the DRO analysis</u>							
Packed By: <u>MLK</u>		Sealed For: <u>MLK</u>						Relinquished By: <u>[Signature]</u>		Date: <u>4/29</u>	
Shipping By: <u>MLK</u>		Relinquished By: <u>[Signature]</u>						Date: <u>4/29</u>		Company: <u>CS</u>	
Relinquished By: <u>[Signature]</u>		Date: <u>4/29</u>		Received By: <u>[Signature]</u>		Date: <u>4-29</u>					
Company: <u>Northern Environmental</u>		Time: <u>12:50</u>		Received By: <u>[Signature]</u>		Date: <u>4-29</u>					
Received By: <u>[Signature]</u>		Date: <u>4/29</u>		Company: <u>[Signature]</u>		Time: <u>3:00</u>					
Company: <u>[Signature]</u>		Time: <u>12:50</u>		Relinquished By: _____		Date: _____					
Company: <u>[Signature]</u>		Time: <u>12:50</u>		Company: _____		Time: _____					


Analytical Laboratory

 426 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

 REPORT TO: JOHN LUND
 556-036 B2030 1 1611830 02469
 NORTHERN ENVIRONMENTAL

 1214 W VENTURE CRT
 MEQUON WI 53092

 REPORT DATE 10/27/93
 SAMPLE DATE 10/14/93
 SAMPLE ID B2-03
 SAMPLE DESC CEDARBURG

TEST DESCRIPTION
RESULTS

 DATE SAMPLE RECEIVED
 PROJECT NUMBER
 SAMPLE TYPE

 10/15/93
 CLW131246
 SOIL

 TOTAL SOLIDS %
 DATE ANALYZED

 76.9
 10/18/93

MODIFIED DRO WDNR APR 92

 DATE EXTRACTED
 DATE ANALYZED
 DIESEL (DRO) MG/KG
 MDL MG/KG

 10/22/93
 10/22/93
 110
 10

 PVOC'S SW846 8020
 DATE ANALYZED

10/20/93

 BENZENE
 MDL MG/KG SW846 8020

 ND
 .06

 ETHYLBENZENE
 MDL MG/KG SW846 8020

 ND
 .05

 METHYL-T-BUTYL ETHER
 MDL MG/KG SW846 8020

 ND
 .05

 TOLUENE
 MDL MG/KG SW846 8020

 ND
 .10

 1,2,4-TRIMETHYLBENZENE
 MDL MG/KG SW846 8020

 ND
 .05

 1,3,5-TRIMETHYLBENZENE
 MDL MG/KG SW846 8020

 ND
 .05

 XYLENE'S
 MDL MG/KG SW846 8020

 ND
 .13

ND = NOT DETECTED

AUTHORIZED SIGNATURE

COMMENTS:

▲ Northern Environmental

1214 West Venture Court
Mequon, WI 53092
414-241-3133
FAX 414-241-8222

372 West County Road D
New Brighton, MN 55112
612-635-9100
FAX 612-635-0643

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CHAIN OF CUSTODY RECORD REQUEST FOR ANALYSIS

Page 1 Of 1

No 1694

Project No: <u>CLW 131246</u> Task No: _____		Sampling Date(s): <u>10/14/93</u>		Sample Integrity - To be completed by receiving lab Seal intact upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No							
Project Location (city): <u>COUMTAINING</u>		Shipment Date: <u>10/15/93</u>		Method of Shipment _____							
Project Manager: <u>LARRY S. GUNDELIN</u>				Contents Temperature _____ °C Refrigerator No: _____							
Sampler (name): <u>JERRY J. LEWIS</u>		Hazard Identification <input type="checkbox"/> Reactive <input type="checkbox"/> Non Hazardous <input type="checkbox"/> Toxic <input type="checkbox"/> Flammable <input type="checkbox"/> Infectious <input type="checkbox"/> Skin Irritant <input checked="" type="checkbox"/> Other <u>177 (cont. soil)</u>		ANALYSES REQUESTED							
Sampler (signature): <u>[Signature]</u>											
Laboratory: <u>U.S. OIL</u>											
Wisconsin DNR Certification No: <u>9115 077666</u>											
Laboratory Contact: <u>T. SILVER</u>		TURNAROUND TIME REQUIRED <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush Date Needed _____		DRO (WISNIR 9001, 9002) GRO TRPH (EPA Method 9073) Oil & Grease (EPA Method 413.1) BETX (EPA Method 8020) PVOIC (EPA Method 8020) VOC (EPA Method 8021) PAH (EPA Method) Pb (EPA Method)							
Reports to be Sent To: <u>J. Lewis</u>											
Lab ID. No.	Sample No.	Collection		No. of Containers, Size and Type	Description			Preservative	Other Analysis		
		Date	Time		Water	Soil	Other				
	<u>132-03</u>	<u>10/14</u>	<u>0755</u>	<u>2-2oz; 1-4oz</u>		<input checked="" type="checkbox"/>		<u>MeOH, FCC</u>			
Lab Batch No: _____		Price Quote No: _____		Comments: _____							
Packed By: <u>J. Lewis</u>		Sealed For Shipping By: <u>J. Lewis</u>									
Relinquished By: <u>[Signature]</u>		Date: <u>10/15/93</u>									
Company: <u>[Signature]</u>		Time: <u>7:35</u>		Relinquished By: _____		Date: _____		Relinquished By: _____		Date: _____	
Received By: _____		Date: _____		Company: _____		Time: _____		Company: _____		Time: _____	
Company: _____		Time: _____		Received By: _____		Date: _____		Received By: _____		Date: _____	
Company: _____		Time: _____		Company: _____		Time: _____		Company: _____		Time: _____	

ATTACHMENT B2

**GROUND-WATER SAMPLE
LABORATORY ANALYSIS RESULTS
AND
CHAIN-OF-CUSTODY RECORDS**

Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

Mr. Gary Graham
Northern Environmental
1214 West Venture Court
Mequon, WI 53092

Project #: CLW131246
Project : Cedarburg
Sample ID: MW200
Lab Code: 1613032
Sample Type: Water
Sample Date: 28-Oct-93

Report Date: 16-Nov-93

Test	Result	MDL	Unit	pH	Date Ext/Digested	Date Analyzed:	Analyzed By:	QC Code
LEAD SW846 7421	17	1	UG/L	1.4	03-Nov-93	04-Nov-93	C. Adrian	1
MODIFIED DRO WDNR APR 92	720	100	UG/L	2.8	04-Nov-93	05-Nov-93	C. Rotar	1
MODIFIED GRO WDNR APR 92	110	100	UG/L	1.6		04-Nov-93	C. Rotar	1

ND= Compound Not Detected

MDL=Method Detection Limit

HR END

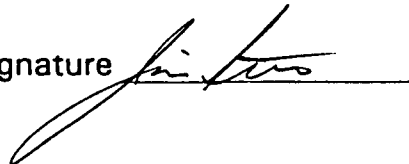
TYP. DIESEL PEAK

QC SUMMARY

CODE:

1 All laboratory QC requirements were met for this sample.

Authorized Signature



Analytical Laboratory

 425 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

Method 8021 Volatile Organic Compounds

 Mr. Gary Graham
 Northern Environmental
 1214 West Venture Court
 Mequon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW200
 Lab Code: 1613032
 Sample Type: Water
 Sample Date: 28-Oct-93
 Date Analyzed: 01-Nov-93

 Report Date: 16-Nov-93
 Analyzed By: Kim G.

ANALYTE	MDL UG/L	RESULT
Benzene	0.6	ND
Bromobenzene	1.0	ND
Bromochloromethane	1.0	ND
Bromodichloromethane	1.0	ND
Bromoform	1.0	ND
Bromomethane	1.0	ND
n-Butylbenzene	2.0	6.1
sec-Butylbenzene	1.0	ND
tert-Butylbenzene	1.0	ND
Carbon Tetrachloride	1.0	ND
Chlorobenzene	1.0	ND
Chloroethane <i>F X Decontam</i>	1.0	23
Chloroform	1.0	ND
Chloromethane	1.0	ND
2-Chlorotoluene	1.0	ND
4-Chlorotoluene	1.0	ND
1,2-Dibromo-3-Chloropropane	1.0	ND
Dibromochloromethane	1.0	ND
Dibromoethane	1.0	ND
Dibromomethane	1.0	ND
1,2-Dichlorobenzene	1.0	ND
1,3-Dichlorobenzene	1.0	ND
1,4-Dichlorobenzene	1.0	ND
Dichlorodifluoromethane	4.0	ND
1,1-Dichloroethane <i>F</i>	1.0	7.4
1,2-Dichloroethane	1.0	ND
1,1-Dichloroethene	1.0	ND
cis-1,2-Dichloroethene	1.0	3.5
trans-1,2-Dichloroethene	1.0	ND
1,2-Dichloropropane	1.0	ND

ANALYTE	MDL UG/L	RESULT
1,3-Dichloropropane	1.0	ND
2,2-Dichloropropane	1.0	ND
Di-Isopropyl Ether	1.0	ND
1,1-Dichloropropene	1.0	ND
Ethylbenzene	1.0	ND
EDB (Ethylenedibromide)	1.0	ND
Hexachlorobutadiene	1.0	ND
Isopropylbenzene	1.0	ND
p-Isopropyltoluene	1.0	ND
Methylene Chloride	2.0	ND
MTBE	1.0	ND
Naphthalene <i>F</i>	2.0	5.7
n-Propylbenzene	1.0	ND
Styrene	1.0	ND
1,1,1,2-Tetrachloroethane	1.0	ND
1,1,2,2-Tetrachloroethane	1.0	ND
Tetrachloroethene <i>F</i>	1.0	5.4
Toluene <i>X - ALONE + HIGH = Decontam</i>	1.0	35
1,2,3-Trichlorobenzene	1.0	ND
1,2,4-Trichlorobenzene	1.0	ND
1,1,1-Trichloroethane	1.0	ND
1,1,2-Trichloroethane	1.0	ND
Trichloroethene <i>X</i>	1.0	7.6
Trichlorofluoromethane	1.0	ND
1,2,3-Trichloropropane	1.0	ND
1,2,4-Trimethylbenzene	1.0	5.7
1,3,5-Trimethylbenzene	1.0	3.2
Vinyl Chloride	5.0	ND
m & p-Xylene	1.5	ND
o-Xylene	1.0	5.6

 Fluorobenzene Surrogate Standard.....95 %
 1,4-Dichlorobutane Surrogate Standard....73 %

Authorized Signature _____

 ND = Compound Not Detected Sample pH.....1.5
 MDL = Method Detection Limit

Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

Mr. Gary Graham
Northern Environmental
1214 West Venture Court
Mequon, WI 53092

Project #: CLW131246
Project : Cedarburg
Sample ID: MW200
Lab Code: 1613032
Sample Type: Water
Sample Date: 28-Oct-93
Date Analyzed: 01-Nov-93

Report Date: 16-Nov-93
Analyzed By: Kim G.

VOC QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

Check standard result failed to meet acceptable QC limits for Chloroethane, 1,1-Dichloroethane, Naphthalene, and Tetrachloroethene. — *Duplicate not within 20%; 2 CK standard*

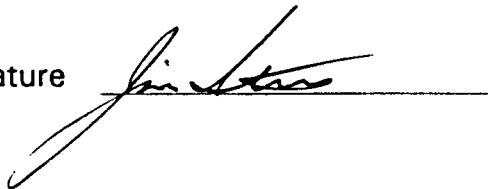
The matrix spike was within laboratory limits for all detected analytes.

*Result Ch 30 ppb
not within 20%*

The duplicate was within laboratory limits for all detected analytes.

The surrogates were within laboratory limits for all detected analytes.

Authorized Signature



Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

Mr. Gary Graham
Northern Environmental
1214 West Venture Court
Mequon, WI 53092

Project #: CLW131246
Project : Cedarburg
Sample ID: MW300
Lab Code: 1613033
Sample Type: Water
Sample Date: 28-Oct-93

Report Date: 16-Nov-93

Test	Result	MDL	Unit	pH	Date Ext/Digested	Date Analyzed:	Analyzed By:	QC Code
LEAD SW846 7421	2	1	UG/L	1.0	03-Nov-93	04-Nov-93	C. Adrian	1
MODIFIED DRO WDNR APR 92	ND	100	UG/L	2.3	04-Nov-93	05-Nov-93	C. Rotar	1
MODIFIED GRO WDNR APR 92	ND	100	UG/L	1.4		03-Nov-93	C. Rotar	1

ND= Compound Not Detected

MDL=Method Detection Limit

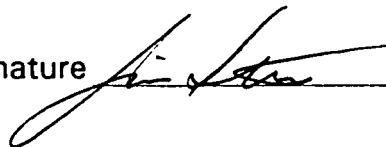
Small peak below mdl

QC SUMMARY

CODE:

1 All laboratory QC requirements were met for this sample.

Authorized Signature



Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

Method 8021 Volatile Organic Compounds

Mr. Gary Graham
Northern Environmental
1214 West Venture Court
Mequon, WI 53092

Project #: CLW131246
Project : Cedarburg
Sample ID: MW300
Lab Code: 1613033
Sample Type: Water
Sample Date: 28-Oct-93
Date Analyzed: 01-Nov-93

Report Date: 16-Nov-93
Analyzed By: Kim G.

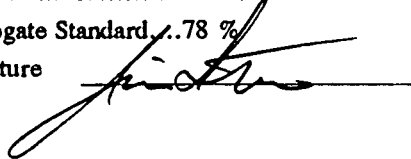
ANALYTE	MDL UG/L	RESULT
Benzene	0.6	1.2
Bromobenzene	1.0	ND
Bromochloromethane	1.0	ND
Bromodichloromethane	1.0	ND
Bromoform	1.0	ND
Bromomethane	1.0	ND
n-Butylbenzene	2.0	ND
sec-Butylbenzene	1.0	ND
tert-Butylbenzene	1.0	ND
Carbon Tetrachloride	1.0	ND
Chlorobenzene	1.0	ND
Chloroethane F	3.07 3.67 1.0	3.3
Chloroform	1.0	ND
Chloromethane	1.0	ND
2-Chlorotoluene	1.0	ND
4-Chlorotoluene	1.0	ND
1,2-Dibromo-3-Chloropropane	1.0	ND
Dibromochloromethane	1.0	ND
Dibromoethane	1.0	ND
Dibromomethane	1.0	ND
1,2-Dichlorobenzene	1.0	ND
1,3-Dichlorobenzene	1.0	ND
1,4-Dichlorobenzene	1.0	ND
Dichlorodifluoromethane	4.0	ND
1,1-Dichloroethane	1.0	5.0
1,2-Dichloroethane	1.0	ND
1,1-Dichloroethene	1.0	ND
cis-1,2-Dichloroethene	1.0	3.4
trans-1,2-Dichloroethene	1.0	ND
1,2-Dichloropropane	1.0	ND

ANALYTE	MDL UG/L	RESULT
1,3-Dichloropropane	1.0	ND
2,2-Dichloropropane	1.0	ND
Di-Isopropyl Ether	1.0	ND
1,1-Dichloropropene	1.0	ND
Ethylbenzene	1.0	ND
EDB (Ethylenedibromide)	1.0	ND
Hexachlorobutadiene	1.0	ND
Isopropylbenzene	1.0	ND
p-Isopropyltoluene	1.0	ND
Methylene Chloride	2.0	ND
MTBE	1.0	ND
Naphthalene	2.0	ND
n-Propylbenzene	1.0	ND
Styrene	1.0	ND
1,1,1,2-Tetrachloroethane	1.0	ND
1,1,2,2-Tetrachloroethane	1.0	ND
Tetrachloroethene F	3.67 4.25 1.0	3.9
Toluene	1.0	1.5
1,2,3-Trichlorobenzene	1.0	ND
1,2,4-Trichlorobenzene	1.0	ND
1,1,1-Trichloroethane	1.0	ND
1,1,2-Trichloroethane	1.0	ND
Trichloroethene	1.0	ND
Trichlorofluoromethane	1.0	ND
1,2,3-Trichloropropane	1.0	ND
1,2,4-Trimethylbenzene	1.0	ND
1,3,5-Trimethylbenzene	1.0	ND
Vinyl Chloride	5.0	ND
m & p-Xylene	1.5	ND
o-Xylene	1.0	ND

Fluorobenzene Surrogate Standard.....94 %

1,4-Dichlorobutane Surrogate Standard...78 %

Authorized Signature



ND = Compound Not Detected
MDL = Method Detection Limit

Sample pH.....1.2

Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

Mr. Gary Graham
Northern Environmental
1214 West Venture Court
Mequon, WI 53092

Project #: CLW131246
Project : Cedarburg
Sample ID: MW300
Lab Code: 1613033
Sample Type: Water
Sample Date: 28-Oct-93
Date Analyzed: 01-Nov-93

Report Date: 16-Nov-93
Analyzed By: Kim G.

VOC QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

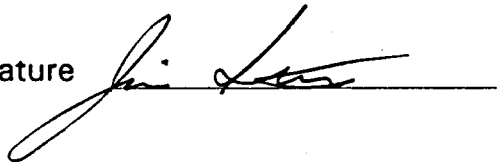
Check standard result failed to meet acceptable QC limits for Chloroethane and Tetrachloethen

The matrix spike was within laboratory limits for all detected analytes.

The duplicate was within laboratory limits for all detected analytes.

The surrogates were within laboratory limits for all detected analytes.

Authorized Signature



Analytical Laboratory

 425 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

 Mr. Gary Graham
 Northern Environmental
 1214 West Venture Court
 Mequon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW400
 Lab Code: 1613034
 Sample Type: Water
 Sample Date: 28-Oct-93

Report Date: 16-Nov-93

Test	Result	MDL	Unit	pH	Date Ext/Digested	Date Analyzed:	Analyzed By:	QC Code
LEAD SW846 7421	ND	1	UG/L	1.7	03-Nov-93	04-Nov-93	C. Adrian	1
MODIFIED DRO WDNR APR 92	ND	100	UG/L	2.3	04-Nov-93	05-Nov-93	C. Rotar	1
MODIFIED GRO WDNR APR 92	ND	100	UG/L	1.4		03-Nov-93	C. Rotar	1

ND= Compound Not Detected

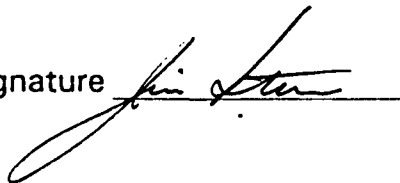
MDL=Method Detection Limit

QC SUMMARY

CODE:

1 All laboratory QC requirements were met for this sample.

Authorized Signature



Analytical Laboratory

 425 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

Method 8021 Volatile Organic Compounds

 Mr. Gary Graham
 Northern Environmental
 1214 West Venture Court
 Mequon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW400
 Lab Code: 1613034
 Sample Type: Water
 Sample Date: 28-Oct-93
 Date Analyzed: 01-Nov-93

 Report Date: 16-Nov-93
 Analyzed By: Kim G.

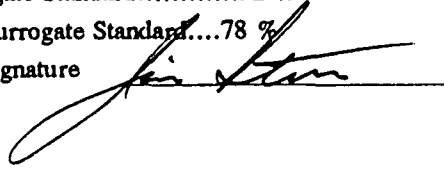
ANALYTE	MDL UG/L	RESULT
Benzene	0.6	ND
Bromobenzene	1.0	ND
Bromochloromethane	1.0	ND
Bromodichloromethane	1.0	ND
Bromoform	1.0	ND
Bromomethane	1.0	ND
n-Butylbenzene	2.0	ND
sec-Butylbenzene	1.0	ND
tert-Butylbenzene	1.0	ND
Carbon Tetrachloride	1.0	ND
Chlorobenzene	1.0	ND
Chloroethane	1.0	ND
Chloroform	1.0	ND
Chloromethane	1.0	ND
2-Chlorotoluene	1.0	ND
4-Chlorotoluene	1.0	ND
1,2-Dibromo-3-Chloropropane	1.0	ND
Dibromochloromethane	1.0	ND
Dibromoethane	1.0	ND
Dibromomethane	1.0	ND
1,2-Dichlorobenzene	1.0	ND
1,3-Dichlorobenzene	1.0	ND
1,4-Dichlorobenzene	1.0	ND
Dichlorodifluoromethane	4.0	ND
1,1-Dichloroethane	1.0	ND
1,2-Dichloroethane	1.0	ND
1,1-Dichloroethene	1.0	ND
cis-1,2-Dichloroethene	1.0	ND
trans-1,2-Dichloroethene	1.0	ND
1,2-Dichloropropane	1.0	ND

ANALYTE	MDL UG/L	RESULT
1,3-Dichloropropane	1.0	ND
2,2-Dichloropropane	1.0	ND
Di-Isopropyl Ether	1.0	ND
1,1-Dichloropropene	1.0	ND
Ethylbenzene	1.0	ND
EDB (Ethylenedibromide)	1.0	ND
Hexachlorobutadiene	1.0	ND
Isopropylbenzene	1.0	ND
p-Isopropyltoluene	1.0	ND
Methylene Chloride	2.0	ND
MTBE	1.0	ND
Naphthalene	2.0	ND
n-Propylbenzene	1.0	ND
Styrene	1.0	ND
1,1,1,2-Tetrachloroethane	1.0	ND
1,1,2,2-Tetrachloroethane	1.0	ND
Tetrachloroethene	1.0	ND
Toluene	1.0	ND
1,2,3-Trichlorobenzene	1.0	ND
1,2,4-Trichlorobenzene	1.0	ND
1,1,1-Trichloroethane	1.0	ND
1,1,2-Trichloroethane	1.0	ND
Trichloroethene	1.0	ND
Trichlorofluoromethane	1.0	ND
1,2,3-Trichloropropane	1.0	ND
1,2,4-Trimethylbenzene	1.0	ND
1,3,5-Trimethylbenzene	1.0	ND
Vinyl Chloride	5.0	ND
m & p-Xylene	1.5	ND
o-Xylene	1.0	ND

Fluorobenzene Surrogate Standard.....92 %

1,4-Dichlorobutane Surrogate Standard.....78 %

Authorized Signature



 ND = Compound Not Detected
 MDL = Method Detection Limit

Sample pH.....1.3

Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

Mr. Gary Graham
Northern Environmental
1214 West Venture Court
Mequon, WI 53092

Project #: CLW131246
Project : Cedarburg
Sample ID: MW400
Lab Code: 1613034
Sample Type: Water
Sample Date: 28-Oct-93
Date Analyzed: 01-Nov-93

Report Date: 16-Nov-93
Analyzed By: Kim G.

VOC QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

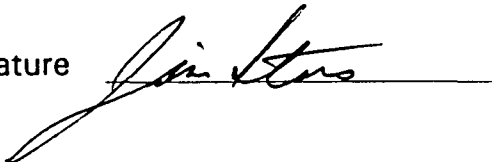
The check standard met the quality control criteria for all detected analytes.

The matrix spike was within laboratory limits for all detected analytes.

The duplicate was within laboratory limits for all detected analytes.

The surrogates were within laboratory limits for all detected analytes.

Authorized Signature



▲ Northern Environmental

1214 West Venture Court
 Mequon, WI 53092
 414-241-3133
 FAX 414-241-8222

372 West County Road D
 New Brighton, MN 55112
 612-635-9100
 FAX 612-635-0643

a subsidiary of Bonestroo, Rosene, Anderlik and Associates, Inc.

CHAIN OF CUSTODY RECORD REQUEST FOR ANALYSIS

No 2100

Project No: <u>CLW131246</u> Task No:	Sampling Date(s): <u>10/28/93</u>	Sample Integrity - To be completed by receiving lab Seal intact upon receipt <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Method of Shipment <u>courier</u> Contents Temperature <u>100</u> °C Refrigerator No: _____
Project Location: (city) <u>Cedarburg</u>	Shipment Date: <u>10/29/93</u>	
Project Manager: <u>GS</u>		

Sampler (name): <u>Robert Zimway Jr.</u>	Hazard Identification <input type="checkbox"/> Reactive <input type="checkbox"/> Non Hazardous <input type="checkbox"/> Toxic <input type="checkbox"/> Flammable <input type="checkbox"/> Infectious <input type="checkbox"/> Skin Irritant <input checked="" type="checkbox"/> Other _____	ANALYSES REQUESTED	
Sampler (signature): <u>[Signature]</u>			
Laboratory: <u>U.S. Oil</u>			
Wisconsin DNR Certification No: <u>445027660</u>	TURNAROUND TIME REQUIRED		
Laboratory Contact: <u>Jim Stevers</u>	<input checked="" type="checkbox"/> Normal	<input type="checkbox"/> Rush	
Reports to be Sent To: <u>GARY COLEMAN</u>	Date Needed _____		

Lab ID No.	Sample No.	Collection		No. of Containers, Size and Type	Description			Preservative	DRO	GRO	TRPH (EPA Method 9073)	Oil & Grease (EPA Method 413.1)	BETX (EPA Method 8020)	PVOC (EPA Method 8020)	VOC (EPA Method 8021)	PAH (EPA Method)	Pb (EPA Method)	Other Analysis
		Date	Time		Water	Soil	Other											
88 1613031	MW20	10/28		3-40ml	X			HCL										
87 1613032	MW20D			3-40ml-250, 1-L				HCL/HNO ₃	X	X				X		X		
88 1613033	MW300			2 2 2				7 7 7	X	X				X		X		
89 1613034	MW40D								X	X				X		X		
90 1613035	Field BL			3-40ml				HCL										
91 1613036	TRIP BL			1-40ml				"										

Lab Batch No:	Price Quote No:	Comments: <u>Note: Call Gary Coleman w/ results to determine if MW20, Field BL and trip BL will be analyzed.</u>	
Packed By: <u>BZ</u>	<u>Samples arrive and MW20, FB, B Lab Oct 11-12-93 Hold times up</u> <u>Thanks</u>		
Shipping By: <u>BZ</u>			
Relinquished By: <u>[Signature]</u>	Date: <u>10/29/93</u>	Relinquished By: <u>[Signature]</u>	Date: <u>10/29</u>
Company: <u>N&E</u>	Time: <u>9:00</u>	Company: <u>[Signature]</u>	Time: <u>11:20</u>
Received By: <u>[Signature]</u>	Date: <u>10-29</u>	Received By: <u>[Signature]</u>	Date: <u>10-29</u>
Company: <u>[Signature]</u>	Time: <u>9:00</u>	Company: <u>JS OIL</u>	Time: <u>11:20</u>



Analytical Laboratory
 425 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

Mr. Paul Greenlaw
 Northern Environmental
 1214 W. Venture Crt.
 Mequon, WI 53092

Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW200
 Lab Code: 1618928
 Sample Type: Water
 Sample Date: 13-Jan-94

Report Date: 08-Feb-94

Test	Result	MDL	Unit	pH	Date	Date	Analyzed	QC
					EX/Digested	Analyzed	By	Code
LEAD SW846 7421	22	2	UG/L	1.2	19-Jan-94	21-Jan-94	C. Adrian	1

ND-- Compound Not Detected

MDL=Method Detection Limit

QC SUMMARY

CODE:

- 1 All laboratory QC requirements were met for this sample.

Authorized Signature


Analytical Laboratory

 426 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

Method 8310 Polynuclear Aromatic Hydrocarbons

 Mr. Paul Greenlaw
 Northern Environmental
 1214 W. Venture Crt.
 Moquon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW200
 Lab Code: 1618928
 Sample Type: Water
 Sample Date: 13-Jan-94
 Date Extracted: 17-Jan-94
 Date Analyzed: 27-Jan-94

 Report Date: 08-Feb-94
 Analyzed By: T. Williams

ANALYTE	MDL UG/L	RESULT	ANALYTE	MDL UG/L	RESULT
Aconaphthone	0.5	1.4	Dibenzo(A,H)Anthracene	1.0	ND
Aconaphtholone	0.5	ND	Fluoranthene	0.5	ND
Anthracene	0.05	ND	Fluorene	0.1	ND
Benzo(A)Anthracene	0.1	ND	Indeno(1,2,3-CD)Pyrene	0.3	ND
Benzo(A)Pyrene	0.1	ND	1-Methyl Naphthalene	0.5	5.0
Benzo(B)Fluoranthene	0.5	ND	2-Methyl Naphthalene	0.5	2.6
Benzo(K)Fluoranthene	0.3	ND	Naphthalene	0.5	2.2
Benzo(G,H,I)Perylene	0.1	ND	Phenanthrene	0.1	0.8
Chrysene	0.3	ND	Pyrene	0.1	ND

 Carbazole Surrogate Standard.....88 %
 Sample pH.....7.2

MDL=Method Detection Limit

ND= Compound Not Detected

PAH QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

The check standard met the quality control criteria for all detected analytes.

The matrix spike was within laboratory limits for all detected analytes.

The duplicate was within laboratory limits for all detected analytes.

The surrogate was within laboratory limits.

Authorized Signature


Analytical Laboratory

425 S. Washington St. Combined Locks, WI 54113

Phone 414-735-8298

WI DNR Certified Lab #445027660

Method 8021 Volatile Organic Compounds

 Mr. Paul Greenlaw
 Northern Environmental
 1214 W. Venture Crt.
 Mequon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW200
 Lab Code: 1618928
 Sample Type: Water
 Sample Date: 13-Jan-94
 Date Analyzed: 26-Jan-94

 Report Date: 08-Feb-94
 Analyzed By: KIM G.

ANALYTE	MDL UG/L	RESULT
Benzene	0.6	ND
Bromobenzene	1.0	ND
Bromochloromethane	1.0	ND
Bromodichloromethane	1.0	ND
Bromoform	1.0	ND
Bromomethane	1.0	ND
n-Butylbenzene	2.0	3.0
sec-Butylbenzene	1.0	ND
tert-Butylbenzene	1.0	ND
Carbon Tetrachloride	1.0	ND
Chlorobenzene	1.0	ND
Chloroethane	1.0	26
Chloroform	1.0	ND
Chloromethane	1.0	ND
2-Chlorotoluene	1.0	ND
4-Chlorotoluene	1.0	ND
1,2-Dibromo-3-Chloropropane	1.0	ND
Dibromochloromethane	1.0	ND
Dibromoethane	1.0	ND
Dibromomethane	1.0	ND
1,2-Dichlorobenzene	1.0	1.6
1,3-Dichlorobenzene	1.0	ND
1,4-Dichlorobenzene	1.0	ND
Dichlorodifluoromethane	4.0	ND
1,1-Dichloroethane	1.0	3.6
1,2-Dichloroethane	1.0	ND
1,1-Dichloroethene	1.0	ND
cis-1,2-Dichloroethene	1.0	1.2
trans-1,2-Dichloroethene	1.0	ND
1,2-Dichloropropane	1.0	ND

Fluorobenzene Surrogate Standard.....81 %

1,4-Dichlorobutane Surrogate Standard...96 %

Authorized Signature

ANALYTE	MDL UG/L	RESULT
1,3-Dichloropropane	1.0	ND
2,2-Dichloropropane	1.0	ND
Di-Isopropyl Ether	1.0	ND
1,1-Dichloropropene	1.0	ND
Ethylbenzene	1.0	ND
EDB (Ethylenedibromide)	1.0	ND
Hexachlorobutadiene	1.0	ND
Isopropylbenzene	1.0	ND
p-Isopropyltoluene	1.0	ND
Methylene Chloride	2.0	ND
MTBE	1.0	ND
Naphthalene	2.0	7.1
n-Propylbenzene	1.0	ND
Styrene	1.0	ND
1,1,1,2-Tetrachloroethane	1.0	ND
1,1,2,2-Tetrachloroethane	1.0	ND
Tetrachloroethene	1.0	1.4
Toluene	1.0	2.4
1,2,3-Trichlorobenzene	1.0	ND
1,2,4-Trichlorobenzene	1.0	ND
1,1,1-Trichloroethane	1.0	ND
1,1,2-Trichloroethane	1.0	ND
Trichloroethene	1.0	1.6
Trichlorofluoromethane	1.0	ND
1,2,3-Trichloropropane	1.0	ND
1,2,4-Trimethylbenzene	1.0	2.1
1,3,5-Trimethylbenzene	1.0	1.5
Vinyl Chloride	5.0	ND
m & p-Xylene	1.5	ND
o-Xylene	1.0	1.8

ND = Compound Not Detected Sample pH.....1.2

MDL = Method Detection Limit

**Analytical Laboratory**

425 S. Washington St. Combined Locks, WI 54113
Phone 414-735-8298

WI DNR Certified Lab #445027660

Mr. Paul Greenlaw
Northern Environmental
1214 W. Venture Crt.
Mequon, WI 53092

Project #: CLW131246
Project : Cedarburg
Sample ID: MW200
Lab Code: 1618928
Sample Type: Water
Sample Date: 13-Jan-94
Date Analyzed: 26-Jan-94

Report Date: 08-Feb-94
Analyzed By: KIM G.

VOC QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

Check standard result failed to meet acceptable QC limits for Chloroethane.

The matrix spike was within laboratory limits for all detected analytes.

The duplicate was within laboratory limits for all detected analytes.

The surrogates were within laboratory limits for all detected analytes.

Authorized Signature

A handwritten signature in black ink, appearing to read 'Jim Stevens', is written over a horizontal line.


Analytical Laboratory

 425 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

PVOC'S SW846 8020

 Mr. Paul Greenlaw
 Northern Environmental
 1214 W. Venture Crt.
 Mequon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW300
 Lab Code: 1618929
 Sample Type: Water
 Sample Date: 13-Jan-94
 Date Analyzed: 20-Jan-94

 Report Date: 08-Feb-94
 Analyzed By: Chris Rotar

Analyte	Result	MDL	Units
BENZENE	1.3	0.6	UG/L
ETHYLBENZENE	ND	1.0	UG/L
METHYL-T-BUTYL ETHER	ND	1.0	UG/L
TOLUENE	ND	1.0	UG/L
1,2,4-TRIMETHYLBENZENE	ND	1.0	UG/L
1,3,6-TRIMETHYLBENZENE	ND	1.0	UG/L
XYLENE'S	ND	2.5	UG/L

Sample pH....1.3

ND= Compound Not Detected

MDL=Method Detection Limit

QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

The check standard met the quality control criteria for all detected analytes.

The matrix spike was within laboratory limits for all detected analytes.

The duplicate was within laboratory limits for all detected analytes.

Authorized Signature


Analytical Laboratory

 426 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #445027660

PVOC'S SW846 8020

 Mr. Paul Greenlaw
 Northern Environmental
 1214 W. Venture Crt.
 Mequon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: MW400
 Lab Code: 1618930
 Sample Type: Water
 Sample Date: 13-Jan-94
 Date Analyzed: 20-Jan-94

 Report Date: 08-Feb-94
 Analyzed By: Chris Rotar

Analyte	Result	MDL	Units
BENZENE	ND	0.6	UG/L
ETHYLBENZENE	ND	1.0	UG/L
METHYL-T-BUTYL ETHER	ND	1.0	UG/L
TOLUENE	ND	1.0	UG/L
1,2,4-TRIMETHYLBENZENE	ND	1.0	UG/L
1,3,5-TRIMETHYLBENZENE	ND	1.0	UG/L
XYLENE'S	ND	2.5	UG/L

Sample pH...1.2

ND= Compound Not Detected

MDL=Method Detection Limit

QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

The check standard met the quality control criteria for all detected analytes.

The matrix spike was within laboratory limits for all detected analytes.

The duplicate was within laboratory limits for all detected analytes.

Authorized Signature


Analytical Laboratory

 425 S. Washington St. Combined Locks, WI 54113
 Phone 414-735-8298

WI DNR Certified Lab #415027660

PVOC'S SW846 8020

 Mr. Paul Groomlaw
 Northern Environmental
 1214 W. Venture Crt.
 Mequon, WI 53092

 Project #: CLW131246
 Project : Cedarburg
 Sample ID: 1246-FB
 Lab Code: 1618931
 Sample Type: Water
 Sample Date: 13-Jan-94
 Date Analyzed: 20-Jan-94

 Report Date: 08-Feb-94
 Analyzed By: Chris Rotar

Analyte	Result	MDL	Units
BENZENE	ND	0.6	UG/L
ETHYLBENZENE	ND	1.0	UG/L
METHYL-T-BUTYL ETHER	ND	1.0	UG/L
TOLUENE	1.2	1.0	UG/L
1,2,4-TRIMETHYLBENZENE	ND	1.0	UG/L
1,3,5-TRIMETHYLBENZENE	ND	1.0	UG/L
XYLENE'S	ND	2.5	UG/L

Sample pH....1.1

ND= Compound Not Detected

MDL=Method Detection Limit

QC Summary

The method blank was free of contamination.

The initial calibration curve was within quality control limits for all analytes.

The check standard met the quality control criteria for all detected analytes.

The matrix spike was within laboratory limits for all detected analytes.

The duplicate was within laboratory limits for all detected analytes.

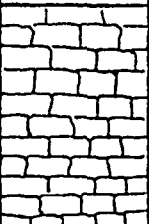
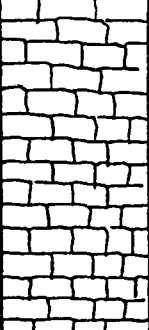


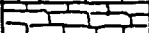


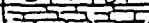
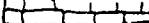

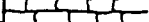
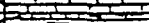

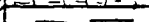

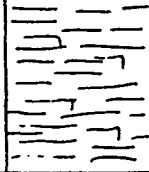


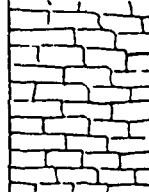


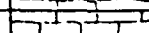
Authorized Signature

ATTACHMENT C

**MUNICIPAL WELL DRILLING
AND
CONSTRUCTION LOG**

WATERWORKS WELL, CEDARBURG, WIS.

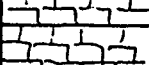
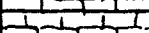
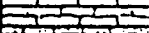


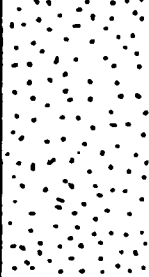
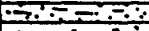

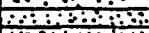
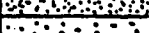
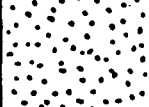
W. G. Kirchoffer, Engineer
 W. L. Thorne Co., Contractors
 Samples examined by F. T. Thwaites, U. W. Nos. 70045-70285
 Elevation ~~790~~ 792'
 SE $\frac{1}{4}$, NE $\frac{1}{4}$, SE $\frac{1}{4}$, SEC. 27, T. 10N., R. 21E.

CLINTON & NIAGARA	DRIFT	12	0-12		Surface, no sample	
			12-125		Dolomite, light brownish gray	
			125-150		Dolomite, white	
			150-155		Dolomite, bluish gray	
			155-325		Dolomite, white	
			325-335		Dolomite, gray; chert, white	
			335-350		Dolomite, light gray	
			350-365		Dolomite, gray; chert, white	
			365-400		Dolomite, light gray	
			400-410		Dolomite, light gray; chert, white	
			410-425		Dolomite, light gray	
			425-440		Dolomite, light gray; chert, white	
			440-455		Dolomite, dark gray; shaly?	
			455-475		Dolomite, gray to white, in part shaly?	
		RICHMOND <small>(Clinton)</small>	498		475-480	
	480-500				Dolomite, very light pinkish gray	
	500-505				Dolomite, gray	
	505-510				Dolomite, dark gray, shaly	
	510-520				Shale, blue, calcareous	
	520-525				Dolomite, bluish gray, shaly	
	525-630				Shale, bluish gray, calcareous	
	630-635				Shale, brownish gray, calcareous	
	635-705				Shale, bluish gray, calcareous	
EVING & GALENA	195				705-815	
			815-820		Dolomite, mixed gray and light blue	
			820-830		Dolomite, gray	
			830-865		Dolomite, mixed light blue and gray	

12" hole
10" pipe

718'-8"

CEDARBURG 2

PLATT-	215	865-890		Dolomite, gray
		890-905		Dolomite, bluish gray and gray
		905-915		Dolomite, gray
		915-920		Dolomite, gray, sandy
		920-930		Sandstone, medium, gray, calcareous
ST. PETER	205	930-1090		Sandstone, medium to fine, light gray
		1090-1100		Sandstone, medium to fine, light gray; shale, gray
		1100-1125		Sandstone, medium, white
		1125-1135		Sandstone, fine to very fine, gray
EAUCLAIRE	85	1135-1145		Sandstone, very fine, very hard, non-calcareous
		1145-1210		Sandstone, medium to fine, gray to light pink

K 10" hole