Existing Conditions Report

Former Minocqua Cleaners
St. Germaine Street State Lead Site
Minocqua, Wisconsin 54548

MSA Project No. 213132
WDNR BRRTS # 02-44-000052

April 2006

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"Your Trusted Partner"

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EXECUTIVE SUMMARY

The purpose of this report is to document existing conditions at the Former Minocqua Cleaners State Lead Site and recent activities performed from May 2004 to December 1, 2005. MSA Professional Services, Inc. (MSA) was retained by the Wisconsin Department of Natural Resources (WDNR) to evaluate the operation of the existing groundwater extraction system, and assess the current status of the contaminant plume at the site. The following activities were performed:

- Cleaning and redevelopment of well B-13 and performing a pump test on the well
- Installed three piezometers at the site (wells B-13A, B-13 B, and B-8A). In addition, well B-4 was abandoned, and new locks and cap were installed on the wells, as needed.
- Redevelopment of extraction wells EXW-2 and EXW-5.
- Collected three rounds of groundwater samples from the monitoring and extraction wells.
- Collected one air sample event from the five vapor probes installed in July 2005.
- Previously evaluated the system flow meters and obtained flow meter replacement information.

The following were findings and conclusions of the activities performed at the site:

Well Development

- Well B-13 was successfully redeveloped and the pump test estimated the transmissivity of the water table aquifer to be approximately 14,100 gpd/ft.
- The redevelopment of wells EXW-2 and EXW-5 resulted in much sand entering the wells during pumping. Sand and gravel up to 1-inch diameter was entering well EXW-5 during pumping, suggesting some type of screen damage is likely present in the extraction wells.

Soil Samples Results

- No VOCs were detected in samples B-13B, 10 to 12 ft, B-13B, 37 to 39 ft bgs, or B-13A drill cuttings.
- At B-13B, 5 to 7 ft, 0.076 mg/kg tetrachloroethene (PCE) was detected. This concentration exceeds the EPA's generic soil screening level (SSL) for the migration to groundwater pathway.
- The soil sample from boring B-8A, 20 to 22 ft, contained 36 mg/kg p-isopropyltoluene (p-cymene). P-isopropyltoluene was detected at well B-8A, in the December 2004 (0.76 µg/L) and March 2005 (2.9 µg/L) groundwater samples, but was not detected in the August 2005 groundwater sample. It has not been detected in samples from the Lakeland Sanitary District (LSD) municipal water supply Well #3.

Air Sample Results

- No VOCs were detected in the air samples collected from the five vapor probes.

Hydrogeology

- The groundwater flow direction at the water table was southeast in December 2004 and March 2005, and varied slightly depending on the LSD pumping schedule at the municipal wells. Downward vertical hydraulic gradients were typically measured at the well nests during these periods.
- The groundwater flow direction observed at the medium piezometers (i.e. screened from 55 to 60 ft bgs) varied from west-northwest in December 2004, to the south in March 2005.
- The groundwater flow direction at the deep piezometers (i.e. screened from 85 to 90 ft bgs) was to the northeast toward LSD well #3 in December 2004, and to the south in March 2005.

Groundwater Plume Evaluation

- The PCE concentration in the source area has decreased from 8000 µg /L at well MW-18 in January 1994 to 470 ug/L at well MW-18 in August 2005.
- Currently, the data shows two separate contaminant plumes at the water table with ES exceedances. One plume is located near the source area and has ES exceedances of PCE, cis-1,2-dichloroethene, TCE, and vinyl chloride. The second plume is centered near well B-2B and contains ES exceedances of PCE and TCE.
- The plume in the source area appears to be expanding, based on ES exceedances at well B-3A. The expansion of the plume may be related to lower water table elevations in 2005.
- The contaminant plume near well nest B-2B/B-2A contains PAL exceedances of PCE and TCE, and extends to the municipal Well #3.
- Vertical hydraulic gradients at well nest B-1B/B-1A increased from -0.0025 ft/ft in March 2005, when Well #3 was not pumping, to -0.01 ft/ft in December 2004 when Well #3 was pumping. The strong vertical gradient created by the municipal well pumping results in a greater hydraulic drive in the downward migration of PCE and TCE at piezometer B-2A and Well #3.
- No ES or PAL exceedances were detected in piezometers screened from 85 to 90 ft bgs.
- Municipal Well #4 is less susceptible to impacts because it is cased to 69 ft, compared to 47 ft at well LSD Well #3.

Flowmeters

- The manufacturer (Badger Meter) no longer supports the existing flow meters at the site. The existing groundwater data indicates that continued groundwater pumping might not be warranted from some extraction wells. Therefore, MSA recommends that flow meter replacement be determined after it is decided if groundwater pumping will be continued at the specific extraction wells. Recommended replacement flow meter information (provided this is performed) is presented in Appendix G.

The following recommendations are based on the results of the evaluation presented above.

- Evaluate the feasibility of treatment of the PCE and PCE plume at well nest B-2B/B-A with remedial options such as Enhanced Reductive Dechlorination (ERD) to remediate the impact to municipal Well #3.
- Continue groundwater extraction at extraction well EXW-4 because it is located within the plume that is impacting municipal well LSD #3.
- Because of the low contaminant concentrations at wells EXW-2 (no detects in March and August 2005) and EXW-5 (1.6 µg/L PCE, 9 µg/L TCE, and 2.7 µg/L vinyl chloride) in March 2005, rehabilitation of the compromised screens at these extraction wells may not be necessary at this time. MSA recommends obtaining and reviewing additional site monitoring information prior to proceeding with extraction well repair.
- Continued groundwater monitoring should be performed to aid in the evaluation of remedial options in the source area. Possible remedial alternatives for the plume in the source area should include options such as natural attenuation, ERD treatment, and further evaluation of groundwater extraction from wells B-13, EXW-1, and EXW-5.

INTRODUCTION AND BACKGROUND

INTRODUCTION

The purpose of this report is to document the existing conditions and recent activities performed at the Former Minocqua Cleaners State Lead Site. The report documents site activities performed from May 2004 to December 1, 2005. MSA Professional Services, Inc. (MSA) was retained by the Wisconsin Department of Natural Resources (WDNR) to evaluate the operation of the existing groundwater extraction system, and assess the current status of the contaminant plume. The scope of work performed by MSA and documented in this report is presented in detail below.

The site background and the results of prior contaminant assessments are presented below. The prior site information and the results of the recent activities were used to assess the effectiveness of the remediation actions performed to date. This information will also be used to plan future remedial activities for the site

PROJECT BACKGROUND

The general site location is shown on Figure 1. The site is located in the SW ¼, NE ¼, and the NW ¼, SE ¼, Sec 14, T39N, R6E in the Town of Minocqua, Oneida County, WI.

Groundwater contamination with perchloroethylene (PCE) was first detected in July 1, 1984 at Lakeland Sanitary District (LSD) water supply Well No. 3. The well was subsequently closed to public usage on August 7, 1984, after 24 ug/L PCE was detected by the WDNR during routine testing of the well water. In response to this situation, the LSD used Well #4 to meet the water demand. In July, August, September and October 1985, low concentrations of PCE (less than or equal to 0.6 ug/L) were detected in Well #4.

Two likely contamination sources were identified in the area, an old landfill and an abandoned Laundromat and dry cleaner business near the municipal wells. In 1985, STS Consulting Ltd (STS) began an assessment of the contamination. Wells B-1 to B-8 were installed as initial activities. It was determined the former dry cleaner business was the major source of the PCE. Figure 2 shows the location of the former dry cleaner business, Wells #3 and #4, and the approximate limits of an old neighborhood refuse landfill.

In June 1986 three additional wells (B-9 to B11) were installed and sampled by STS. In 1987, a groundwater extraction remediation system was installed consisting of four extraction wells, EXW-1 to EXW-4, and an aeration cascade with discharge to the lake. Figure 3 shows the locations of the monitoring and extractions wells, and the approximate extent of the PCE plume in 1987.

In 1989, extraction well EXW-5 and monitoring wells MW-16 to MW-18 were installed, and a soil vapor extraction (SVE) system was designed to address contaminated soil located at the former dry cleaner parcel. The SVE system was installed in 1990, and was subsequently operated and dismantled. The groundwater extraction system is still operable, although several extraction wells have experienced significant pumping problems since at least December 2003. Most recently, wells EXW-2, EXW-4, and EXW-5 have been operated and have also experienced problems resulting in periodic well operation and/or shut-down of the individual wells.

SCOPE OF WORK

The following scope of services was performed by MSA following approval by the WDNR on October 21, 2004.

- Three new piezometer-monitoring wells (B-13A, B-13 B, and B-8A) were installed during the week of November 8, 2004 to assess vertical migration from the source area, and assess contaminant conditions at depth in the aquifer.

- MSA oversaw the redevelopment of well B-13 to address bio-fouling during the week of November 8, 2004, during the same mobilization as the piezometer installations. Following the well cleaning, a small-scale pump test (about three pumping hours) was performed on well B-13 to obtain data to determine the suitability of well B-13 as an extraction well.

- Monitoring wells with observed problems such as caps and locks were repaired. Well B-4 had a damaged steel protector pipe and well was abandoned.

- MSA collected three rounds of groundwater samples for the purpose of establishing the current plume status. The sample events occurred on December 8 and 9, 2004, March 23 and 24, 2005, and August 31 and September 1, 2005. The groundwater sampling was performed using the sampling plan presented in the project correspondence dated September 17, 2004.

- MSA oversaw the redevelopment of wells EXW-2 and EXW-5 on the week of December 6, 2004. The well rehabilitation of extraction wells EXW-2 and EXW-5 was performed in an attempt to increase declining pump rates at these wells.

- MSA evaluated the current equipment and provided recommendations for replacement flow meters.

- MSA evaluated the monitoring data and the current plume status. Remedial strategies were given preliminary evaluation based on the current plume concentrations and the extent of contamination, and are presented below.

- MSA resurveyed the TOC of wells B-1, B-1A, B-1B, B-2, B-2A, B-3, B-3, B-8, B-8A, B-10, B-11, B-12, B-13, B-13A, B-13B, MW15, and MW17 on May 5, 2005. The bolt on the top of the fire hydrant was used as the benchmark of 1603.56, as shown on the basemap.

- Air samples were collected from the vapor probes on August 31, 2005.

RESULTS

WELL REDEVELOPMENT

Well B-13 was redeveloped by Boart Longyear in November 2004 using CETCO well rehabilitation chemicals LBA, and SC-200. The chemicals were added to the well, surged using a 4-inch diameter surge block, and then the chemicals remained in the well overnight. On the following day the well was pumped and redeveloped with discharge into a nearby Lakeland Sanitary District sanitary sewer. The well development form is in Appendix A.

Wells EXW-2 and EXW-5 were redeveloped in December 2004 by Boart Longyear. CETCO well rehabilitation chemicals (i.e.SC-200, LBA, DPA) were added to both wells. This chemical process involved applying a surfactant to the well, followed by acid-based chemicals. The chemicals stayed in the wells for approximately 36 hours. Following the recommended waiting period, the wells were surged and pumped to remove the suspended material and development water from the well. The redevelopment pumping process produced low pH (acid) water with suspended solids and was disposed into a nearby Lakeland Sanitary District sanitary sewer.

Approximately 2,000 gallons of water was pumped from well EXW-2, however much sand entered the well during pumping. When well EXW-5 was pumped, sand and gravel up to 1 inch in diameter entered the well. It appears the integrity of the screens of both of these wells is compromised. The well development forms are in Appendix A.

PUMP TEST

A pump test was performed on well B13 after the well was redeveloped. The pump test was performed to determine the transmissivity of the aquifer. Transmissivity is the rate at which water flows through a vertical strip of aquifer. This information was used to evaluate the feasibility of converting well B13 into an extraction well

Well B-13 was used as the pump well and the observation well. A 3-inch diameter Grundfos® pump was installed into well B-13. Water levels were measured in well B-13 using an electronic water level indicator. The pump rate was measured using a flow meter attached to the pump. The water was pumped to a nearby sanitary sewer. The pump test was conducted for 3 hours and 7 minutes. The pumping rate varied from 30 gpm at the start of the test, to 20 gpm at the end of the 3-hour test. The average pumping rate was 21.9 gpm. The drawdown stabilized after 10 minutes at approximately 5.59 ft., and after 92 minutes it decreased slightly to 5.61 ft. The well recovery data collected after the completion of the pumping was used to determine the transmissivity.

Using the equation: $T=(264 * Q)/\Delta S$, where, T = Transmissivity, Q = pumping rate, and ΔS = change in drawdown, the transmissivity was estimated to be 14,100 gpd/ft. The pump test recovery data is in Appendix B. The relatively high transmissivity value indicates Well B-13 was successfully redeveloped and the well could potentially be used as an extraction well.

WELL INSTALLATION

On November 8 to 15, 2004, three new piezometer-monitoring wells (B-13A, B-13 B, and B-8A) were installed and developed by Boart Longyear. Two piezometers (B-13A screened at 55 to 60 ft., and B-13B screened at 85 to 90 ft.) were installed near existing well B-13, and one piezometer (B-8A screened at 55 to 60 ft.) was installed near existing well B-8. The new piezometers were installed at depths similar to the other piezometers in the monitoring system at the site, with shallow wells at screened at the water table (about 30 ft. ground surface (bgs)), medium piezometers screened at 55 to 60 ft. bgs, and deep piezometers screened at 85 to 90 ft. bgs. A round of groundwater levels were obtained from the monitoring wells. The locations of the new wells are shown on Figure 4.

In addition, well B-4 was abandoned because it was previously damaged. New locks were installed on six wells with broken or missing locks. New PVC caps were installed on the ten wells that had the PVC caps missing inside their protector pipes. The soil boring logs, well construction forms, and well development forms are in Appendix A.

SOIL SAMPLING

Soil samples were collected from boring B-13B at 5-7 ft bgs, 10 to 12 ft bgs, and at 37 to 39 ft bgs. Soil samples were also collected from the B-13A drill cuttings, and from boring B-8A at 20 to 22 ft bgs. The soil samples were collected to determine the disposal requirements for the soil cuttings from the boreholes. The soil samples were analyzed for VOCs. No organic vapors were detected in the soil cuttings from borings B13-A and B-13B. Therefore, the soil cuttings were not drummed, but were placed on the Minocqua Cleaners property and covered with plastic.

Table 1 presents the results of the soil sample analyses. No VOCs were detected in samples B-13B 10 to 12 ft, B-13B 37 to 39 ft bgs, or B-13A drill cuttings.

At B-13B 5 to 7 ft, 0.076 mg/kg tetrachloroethene (PCE) was detected. This sample was collected at the unsaturated/saturated soil interface. No cleanup standards have been established by the WDNR for this compound. The EPA's generic soil screening level (SSL) for this compound for the migration to groundwater pathway is 0.06 mg/Kg. The soil sample laboratory report is in Appendix C. The soil cuttings from this boring are on the Minocqua Cleaners property and covered with plastic.

The soil sample collected from boring B-8A, at 20 to 22 ft, contained ethylbenzene (0.031 mg/kg) and toluene (0.2 mg/kg) at concentrations below the NR 720 generic residual contaminant levels (GRCLs). The soil sample collected from boring B-8A at 20 to 22 ft also contained 36 mg/kg p-isopropyltoluene (p-cymene). No soil cleanup standards are established by the WDNR, and no SSLs are established by the EPA for this compound. P-isopropyltoluene was not detected in the groundwater samples from well B-8, which was screened at the same depth the soil sample was collected. Similarly, p-isopropyltoluene was not detected in Municipal Well #3. However, p-isopropyltoluene was detected at well B-8A (screened at 55 to 60 ft bgs)

on December 6, 2004 (0.76 µg/L), and on March 22, 2005 (2.9 µg/L), but was not detected in the August 31, 2005 sample. No NR 140 enforcement standard (ES) or preventive action limit (PAL) are established for this compound.

VAPOR PROBE SAMPLING

Five vapor probes (VP-1 to VP-5) were installed by Geiss, Inc. on July 8, 2005. The well construction forms documenting the construction of the vapor probes are in Appendix D. The approximate locations are shown the figure in Appendix D.

Air samples were collected from the probes using charcoal tubes on August 31, 2005. The air samples were analyzed for Total VOCs. No VOCs were detected in the air samples.

GEOLOGY & HYDROGEOLOGY

The subsurface geology at the site consists primarily of glacial outwash material to approximately 75 ft below ground surface (bgs). The glacial outwash material was described as brown fine to medium sand with trace gravel. At depths greater than 75 ft bgs, fine to coarse sand with varying amounts of gravel and cobbles were encountered. Two geologic cross sections are in Appendix E. One cross section shows from the source area to Municipal Well #3. The second cross shows from the source area to Municipal Well #4. Cross sections from the Remedial Action Design (STS 1990) are also in Appendix E.

Table 2 presents the groundwater elevation data. MSA collected water level measurements on June 29, 2004, November 9, 2004, December 6, 2004, March 22 and 23, 2005, and August 31 and September 1, 2005. The pumping schedule for Municipal Well #3 on these dates is in Appendix F, along with the Municipal Well #3 and #4 Well Construction Reports. Pumping would alternate as needed between Municipal Wells #3 and #4. Water demand increases during the summer months, which results in the municipal wells pumping more often during that time period.

Figure 5 shows the groundwater flow direction at the water table on December 6, 2004. The groundwater flow is to the southeast from the former dry cleaner property. There was a cone of depression associated with the pumping of Municipal Well #3, which resulted in groundwater flowing northeast from Well B-2B toward Municipal Well #3. A similar groundwater flow pattern was seen on November 9, 2004.

Figure 6 shows the groundwater flow direction at the water table on March 22 and 23, 2005, when Municipal Well #3 was pumping 5 hours on March 22, but was not during the sampling period on March 23. Groundwater flow was to the southeast, toward well nest B-2B, and toward Municipal Well #3. The groundwater flow was similar to the December 2004 flow direction, except there was a smaller cone of depression around Well #3. The groundwater flow pattern on

August 31, 2005 was to the southeast, toward well nest B-2B, with no influence from Well #3, as it was not pumping during the sampling period.

Figure 7 shows the potentiometric surface on December 6, 2004 of the medium piezometers, screened from approximately 55 to 60 ft. bgs. The groundwater flow was from Well B-3 to the east-northeast toward the source area, and to the west-southwest toward Well #3. There were downward gradients at each of the well nests, except at wells B5/B9, which had an upward gradient of approximately 0.09 ft/ft. It is likely this upward gradient is in response to rising water levels after Well #4 was shut off.

Figure 8 shows the potentiometric surface of the medium peizometers on March 22 and 23, 2005. The groundwater flow was to the south. There were downward gradients at each of the well nests. This southern groundwater flow direction was also seen at the deep piezometers, screened from 85 to 90 ft. bgs, during the March 2005 sample round. There were downward gradients at well nests B-13A/B and B-1/B-1A, and a slight upward gradient (0.003 ft/ft) at B-2/B-2A. The groundwater flow pattern in the medium piezometers (60 ft bgs) in August 2005 was also to the south.

Figure 9 shows the potentiometric surface of the deep piezometers, screened from 85 to 90 ft. bgs, on December 6, 2004. The groundwater flow was to the northeast toward Well #3, which was pumping at the time. Well #3 is screened from 47 to 87 ft. bgs. There were downward gradients at the three deep well nests. The groundwater flow direction was similar in the deep piezometers during the March 2005 and August 2005 sampling rounds.

EVALUATION OF GROUNDWATER PLUME DATA

A series of three groundwater samples was collected from Well B-13 during the pump test. Sample B-13-1 was collected 37 minutes after the pump test started. Sample B-13-2 was collected after 95 minutes. Sample B-13-3 was collected after 124 minutes. The sample analytical results are in Table 3. The concentrations of the cis-1,2-dichloroethene (520 to 550 µg/L), trans-1,2-dichloroethene (9.1 to 11 µg/L), PCE (330 to 380 µg/L), trichloroethene (TCE, 300 to 330 µg/L), and vinyl chloride (32 to 38 µg/L) remained relatively stable during the pump test.

Table 3 presents the groundwater sample analytical results. NR 140 enforcement standard (ES) exceedances of PCE, and one or more of its breakdown compounds cis-1,2-dichloroethene, TCE, and vinyl chloride were detected at water table wells B-2B, B-3A, B-13, MW-17, MW-18, MW-19, and EXW-5. No ES exceedances were detected in the recent samples from the two downgradient extraction wells, or the piezometers.

NR 140 Preventive Action Limits (PAL) exceedances were detected at medium piezometer B-2A for PCE (1.2, 0.64, and 0.74 µg/L) and TCE (2.3, 1.0, and 1.1 µg/L) in December 2004, March 2005, and August 2005, respectively. This contamination is at the depth Well #3 is screened. Well #3 is screened from 47 to 87 ft. bgs. Concentrations of PCE (1.4 and 0.93 µg/L) and TCE

(2.7 and 2.2 µg/L) detected at Well #3 exceeded the PAL during the December 2004 and March 2005 sampling rounds. In August 2005, only TCE (1.1 µg/L) exceeded the PAL, though the PCE (0.48 µg/L) concentration detected was below the PAL of 0.5 µg/L.

PCE Plume

There were two separate PCE plumes during the December 2004, the March 2005, and the August 2005 sampling rounds. Figure 10 shows the PCE iso-concentration contours for the March 2005 sampling round, which was similar to what was seen in December 2004 and August 2005. One of the two PCE plumes originated from the source area, and the second plume originated near well B-2A.

The PCE plume near the source area had the highest PCE concentrations detected at Well MW-19 in December 2004 (71 µg/L) and in March 2005 (250 µg/L), and at Well MW-18 in August 2005 (470 µg/L). The plume extended west to Well B-3A, where PCE was not detected in December 2004, but was detected at Well B-3A in March 2005 (0.74 µg/L) and August 2005 (11 µg/L). The PCE plume did not extend to well nest B-8/B-8A, where PCE was not detected.

In the August 2005 sample round at Well B-3A, PCE (11 µg/L) exceeded the ES for the first time in more than 5 years. The concentrations of TCE (30 µg/L) and vinyl chloride (8.3 µg/L) also exceeded the ES. It appears the expansion of the plume to the east was a result of the dry summer and lower groundwater levels. The water table elevations in the 2005 sample rounds were approximately a foot lower than the 2004 elevations. This suggests that prolonged low water table conditions may result in additional impacts to LSD Well #3. Additional monitoring should be performed to evaluate the need to operate extraction well EXW-1 to remediate the expanding plume.

A separate plume was centered around well nest B-2B/B-2A and appeared to flow toward LSD Well #3 (0.64 µg/L PCE) during the December 2004, March 2005, and August 2005 sample rounds. Figure 10 presents the PCE iso-concentration contours for the March 2005 sample rounds, which is representative of the other sample rounds. The PCE concentrations detected at well B-2B (water table well) during the three samples rounds were 9.1, 9.0, and 3.1 µg/L. PCE concentrations exceeding the PAL were detected at extraction well EXW-4 (0.87 µg/L) during the March 2005 sample round. PCE was also detected in Well #3 during the three sample rounds, 0.64 0.93, and 0.48 µg/L. The cone of depression formed during the pumping of Well #3 appears to draw PCE to the water supply well from southwest. This correlates with the groundwater flow direction during the December 2004 sampling round (refer to Figure 5).

TCE Plume

Figure 11 shows the TCE iso-concentration contours for the March 2005 sampling round. There were also two separate TCE plumes exceeding the ES during the December 2004, March 2005 sample rounds. The highest TCE concentrations were detected at Well B-13 (150 ug/L), located downgradient of the source in December 2005, Well B-19 (92 µg/L) in March 2005, and Well

and EXW-2 in December 2004 and March 2005, where TCE either was not detected or the TCE concentrations were less than the ES. However, TCE exceeded the ES at well B-3A (30 µg/L) in the August 2005 sample, suggesting the plume may have expanded in response to the lower water levels.

A separate TCE plume was detected at well B-2B (15 ug/L) and appeared to flow toward Well #3 (2.2 ug/L TCE). TCE was also detected at extraction well EXW-4 (1.2 ug/L) in March 2005.

Other PCE Breakdown Products

Vinyl chloride was only detected at wells MW-17, MW-18, EXW-5, and B-13, and B-3A, which were located near and directly downgradient of the source. Similarly, ES exceedances of cis-1,2-dichloroethene were only detected at wells MW-17, MW-18, MW-19, and B-13.

Discussion

The PCE and TCE plumes centered near well nest B-2B/B-2A are likely the result of downgradient migration from the source area. The well nest was within the 1987 plume (refer to Figure 3) and is likely a remnant of the original plume. This plume appears to be separated from the source area because of the effectiveness of the remediation system, which has significantly reduced the size of the plume and the contaminant concentrations within the plume. The residual contamination near well nest B-2B/B-2A appears beyond the range of influence of the current remediation system.

Downward hydraulic gradients caused by pumping Well #3 resulted in the PCE and TCE impacts at piezometer B-2A and the Well #3. The downward hydraulic gradients measured at well nest B-2B/B-2A was -0.01 ft/ft in December 2004 when well LSD #3 was pumping, compared to -0.0025 in March 2005, when it was not pumping. The stronger vertical gradient during the pumping would result in the downward migration of PCE and TCE documented at Well B-2A and Well #3.

FLOWMETERS

The existing flow meters are 6-inch Prop meter manufactured by Badger Meter. MSA contacted Badger Meter and they indicated this model meter is no longer manufactured or supported. MSA evaluated replacement flow meters and the recommended flow meter for this application (i.e., dissolved contamination in the pumped water) is a mag or vortex flow meter with stainless steel internals. A replacement prop meter (i.e., Sparling 6 inch) for the contaminated water application is available, but is more expensive than the mag or vortex models. Recommended replacement flow meter information (if this is performed) is presented in Appendix F. However, the existing groundwater data indicates that continued groundwater pumping may not be warranted from these extraction wells. Therefore, it is recommended that specifications for the

flow meters be determined after it is determined groundwater pumping will be continued at the specific extraction wells.

In addition, the extraction well EXW-5 does not have a working sampling faucet, which should be installed.

CONCLUSIONS

The following conclusions are based on the scope of work performed and the evaluation of the contaminant plume:

Well Development

- Monitoring Well B-13 was successfully redeveloped. The pump test performed after the well development estimated the transmissivity to be 14,100 gpd/ft.

- The redevelopment of wells EXW-2 and EXW-5 resulted in much sand entering the wells. When well EXW-5 was pumped, sand and gravel up to 1 inch in diameter was entering the well. The integrity of both these well screens appear compromised.

Soil Samples Results

- No VOCs were detected in samples B-13B 10 to 12 ft bgs, B-13B 37 to 39 ft bgs, or B-13A drill cuttings.

- At B-13B 5 to 7 ft, 0.076 mg/kg tetrachloroethene (PCE) was detected, which exceeds the EPA's generic soil screening level (SSL) for the migration to groundwater pathway of 0.06 mg/Kg. This sample was collected at the unsaturated/saturated soil interface.

- The soil sample from boring B-8A, 20 to 22 ft, contained 36 mg/kg p-isopropyltoluene (p-cymene). No WDNR cleanup standards are established and no EPA SSLs are established for this compound. This sample was collected from organic soil beneath the former landfill. At well B-8A, p-isopropyltoluene was detected in the December 2004 (0.76 µg/L) and March 2005 (2.9 µg/L) groundwater samples.

Hydrogeology

- Groundwater flow at the water table was to the southeast in December 2004 and March 2005, and varied slightly with the municipal pumping schedule. Downward gradients were typically measured at wells nests during these periods.

- The groundwater flow at the medium piezometers (screened from 55 to 60 ft bgs) varied in response to the pumping regimes of Wells #3 and #4. Groundwater flow was to the west-northwest in December 2004 to the south in March 2005.

- The groundwater flow at the deep piezometers (screened from 85 to 90 ft bgs) varied in response to the pumping regimes of Wells #3 and #4. Groundwater flow was to the northeast in December 2004, and to the south in March 2005.

Evaluation of Groundwater Plume Data

- The current extent of the contaminant plume has decreased when compared to the 1987 data (refer to Figures 3 and 8). The PCE concentration in the source area decreased from 8000 µg/L at well MW-18 in January 1994 to 250 µg/L at well MW-19 in March 2005.

- There are currently two separate contaminant plumes at the water table. One plume is located near the source area, and has ES exceedances of PCE, and one or more of its breakdown compounds cis-1,2-dichloroethene, TCE, and vinyl chloride. The second plume centered near Well B-2B contains ES exceedances of PCE and TCE, and extends to municipal Well #3.

- Although the overall contaminant plume has decreased from 1987 concentrations, localized areas of concern are observed in the monitoring data. For example, ES exceedances of PCE, TCE, and vinyl chloride were detected at well B-3A in September 2005 for the first time since before June 2000.

- Vertical hydraulic gradients at well nest B-1B/B-1A increased from -0.0025 ft/ft in March 2005, when Well #3 was not pumping, to -0.01 ft/ft in December 2004 when Well #3 was pumping. The stronger vertical gradient during the pumping resulted in the downward migration of PCE and TCE toward Well #3.

- No ES or PAL exceedances were detected in the deep piezometers screened from 85 to 90 ft bgs.

- Municipal Well #4 is less susceptible to impacts because it is cased to 69 ft, compared to 47 ft at Municipal Well #3.

RECOMMENDATIONS

The following recommendations are based on the results of the evaluation present above.

- The operation of groundwater extraction well EXW-4 should be continued because it is located within the plume that is impacting municipal Well #3. Low concentrations of PCE and its breakdown products were detected in the March 2005 samples from this well. This well was pumped at 80 gpm in January 2005. The operation of this extraction well provides low cost remediation of the groundwater of the contaminant plume until additional remedial actions are evaluated.

- Rehabilitation of the compromised screens at wells EXW-2 and EXW-5 are not recommended at this time due to the low contaminant concentrations at wells EXW-2 (no detects in March 2005) and EXW-5 (1.6 µg/L PCE, 9 µg/L TCE, and 2.7 µg/L vinyl chloride) in March 2005). Continued groundwater monitoring should be performed to evaluate if additional groundwater pumping is warranted.

- A remedial options cost analysis should be performed to compare the costs of remedial alternatives including natural attenuation of the source area, the use of Enhanced Reductive Dechlorination (ERD) to remediate the groundwater in source area, and continued groundwater pumping with rehabilitation the extraction wells EXW-2 and EXW-5. The feasibility of the treatment of the PCE and PCE plume at well nest B-2B/B-2A with remedial options such as ERD should be evaluated. Because this plume is relatively small and is impacting Municipal Well #3, treatment to reduce contaminant concentrations in the plume should remain a priority.

- Additional monitoring and evaluation of groundwater pumping at well EXW-1 should be performed based on the expansion of the plume to well B-3A.

- If additional groundwater pumping is required near the source area, the use of shallower extraction wells should be evaluated, based on the lack of contaminant concentrations in piezometers near the source area. Shallower extraction wells would remove more water from the upper layers of the aquifer where contamination exists. The existing extraction wells appear to be pumping relatively low level contaminated groundwater from deeper in the aquifer. Options may include the conversion of well B-13 to a shallow extraction well, and the use of a liner in well EXW-5 (which currently has a damaged screen) to remove shallow water from the aquifer.

TABLES

Table 1
Soil Sample Analytical Results
Former Minocqua Cleaners
Germain Street, Minocqua, WI

Location	Depth Interval	Date	Tetrachloro ethene	Ethyl-benzene	Toluene	p-Isopropyl toluene
EPA SSL			0.06	13	12	
NR 720 GRCL's				2.9	1.5	
B-13B	5 to 7	8-Nov-04	**0.076**	<0.0076	<0.0076	<0.014
B-13B	10 to 12	8-Nov-04	<0.014	<0.0073	<0.0073	<0.014
B-13B	37 to 39	10-Nov-04	<0.015	<0.008	<0.008	<0.013
B-13A	Soil Cuttings	11-Nov-04	<0.018	<0.0095	<0.0095	<0.015
B-8A	20 to 22	12-Nov-04	<0.015	0.031	0.2	36

All soil concentrations are in mg/Kg.
Depths are in feet below ground surface.
SSL indicates Soil Screening Level
GRCL indicates generic residual contaminant level
Values in BOLD exceed a NR 720 GRCLs or EPA SSL.

Table 2
Summary Groundwater Elevations
Minocqua Cleaners
Minocqua, WI

Well Number	B-1		B-1A		B-1B		B-2		B-2A		B-2B		B-3		B-3A	
Screen Length	5		5		15		5		5		15		5		15	
Ground Surface	1605.78		1605.91		1606.12		1603.22		1602.92		1602.97		1603.72		1603.86	
Top of Casing	1606.48		1606.66		1606.92		1604		1603.52		1603.68		1605.16		1605.42	
Top of Screen	1525.08		1554.1		1586.02		1518.22		1547.92		1584.27		1548.72		1587.86	
DATE	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation
09-Nov-04	29.52	1576.96	26.11	1580.55	26.13	1580.79	23.42	1580.58	22.82	1580.7	22.25	1581.43	22.49	1582.67	22.71	1582.71
06-Dec-04	29.71	1576.77	26.39	1580.27	26.4	1580.52	23.78	1580.22	23.16	1580.36	22.28	1581.4	22.81	1582.35	22.92	1582.5
22-Mar-05	25.57	1580.91	25.61	1581.05	25.86	1581.06	23.61	1580.39	23.2	1580.32	22.81	1580.87	23.81	1581.35	23.88	1581.54
31-Aug-05	25.63	1580.85	25.68	1580.98	25.94	1580.98	23.61	1580.39	23.22	1580.3	22.83	1580.85	23.21	1581.95	23.62	1581.8

Well Number	B-5		B-8		B-8A		B-9		B-10		B-11		B-12	
Screen Length	15		10		5		5		5		10		25	
Ground Surface	1598.01		1602.06		1600.86		1600.99		1600.29		1600.56		1604.38	
Top of Casing	1600.24		1602.86		1603.37		1603.05		1601.25		1601.44		1604	
Top of Screen	1588.21		1577.06				1546		1554.5		1575.06		1589.1	
DATE	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation
09-Nov-04	16.94	1583.3	20.4	1582.46			16.34	1586.71	19.08	1582.17	19.22	1582.22	21.98	1582.02
06-Dec-04	17.08	1583.16	20.48	1582.38	22.35	1581.02	16.64	1586.41	19.11	1582.14	19.15	1582.29	21.81	1582.19
23-Mar-05			21.43	1581.43	22.29	1581.08								
31-Aug-05			21.77	1581.09	22.37	1581								

Well Number	B-13		B-13A		B-13B		B-15		MW-17		MW-18		MW-19	
Screen Length	25		5		5		25		10		10		10	
Ground Surface	1594.58		1593.91		1594.1		1598.85		1591.1		1590.9		1591.3	
Top of Casing	1596.7		1596.33		1596.16		1601.77		1591.8		1591.42		1591.73	
Top of Screen	1585.1		1538.9		1509.1		1583.35		1586.1		1585.9		1586.3	
DATE	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation
09-Nov-04	13.18	1583.52					18.36	1583.41	8.35	1583.45	8.14	1583.28	8.47	1583.26
06-Dec-04	13.28	1583.42	14.11	1582.22	13.68	1582.48	18.41	1583.36	8.69	1583.11	8.46	1582.96	8.84	1582.89
23-Mar-05	14.24	1582.46	15.08	1581.25	14.92	1581.24			9.63	1582.17	9.5	1581.92	9.88	1581.85
31-Aug-05	14.17	1582.53	14.77	1581.56	14.48	1581.68			9.49	1582.31	9.29	1582.13	9.53	1582.2

Note : Datum for Measurements is Mean Sea Level (MSL)
Elevations for TOC of wells B-1, B-1A, B-1B, B-2, B-2A, B-3, B-3A, B-8, B-8A, B-10, B-12, MW15, MW17 were resurveyed on May 5, 2005. The bolt on the fire hydrant was the benchmark of 1603.56, as shown on basemap.

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloro-ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivity
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
B-1	12/01/99	ND	ND	ND	ND	ND					
(90')	11/01/03	ND	ND	ND	ND	ND					
	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1576.77	8.68	1.29	126	309.9
	03/22/05	<0.60	<0.60	<0.4	<0.15	<0.12	1580.91	8.47	1.43	145	336.5
	08/31/05	<0.60	<0.60	<0.4	<0.15	<0.12	1580.85	7.21	1.06	147	399.2
	02/14/06	<0.60	<0.60	<0.4	<0.15	<0.12	1580.8	7.6	1.4	149	398.9
B-1A	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1580.27	8.44	1.08	173	463.4
(60')	03/22/05	<0.60	<0.60	<0.4	<0.15	<0.12	1581.05	8.23	1.88	138	399.7
	08/31/05	<0.60	<0.60	<0.4	<0.15	<0.12	1580.98	6.7	2.26	274	348
	02/14/06	<0.60	<0.60	<0.4	<0.15	<0.12	1580.96	7.3	1.7	157	348.2
B-1B	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1580.52	8.52	1.84	171	406.5
(27')	03/22/05	<0.60	<0.60	<0.4	<0.15	<0.12	1581.06	8.83	1.41	152	436.8
	08/31/05	<0.60	<0.60	<0.4	<0.15	<0.12	1580.98	6.69	1.4	277	374.4
	02/14/06	<0.60	<0.60	<0.4	<0.15	<0.12	1580.94	7.29	1.32	161	392
B-2	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1580.22	8.86	1.07	157	153
(90')	03/22/05	<0.60	<0.60	<0.4	<0.15	<0.12	1580.39	8.92	1.49	150	155.7
	08/31/05	<0.60	<0.50	<0.4	<0.15	<0.12	1580.39	7.56	1.95	1.64	140.1
	02/14/06	<0.60	<0.60	<0.4	<0.15	<0.12	1580.39	7.89	1.94	155	142
B-2A	12/06/04	0.5	<0.4	*1.2*	*2.3*	<0.3	1580.36	8.62	1.15	166	204.3
(60')	03/22/05	<0.60	<0.60	*0.64*	*1.0*	<0.12	1580.32	8.71	1.85	147	205.3
	08/31/05	<0.60	<0.60	*0.74*	*1.1*	<0.12	1580.3	7.2	1.84	153	196.6
	02/14/06	<0.60	<0.60	<0.4	*0.35*	<0.12	1580.34	7.65	1.53	156	202.7
B-2B	12/06/04	6.1	<0.4	**9.1**	**15**	<0.3	1581.4	8.4	1.88	169	221.5
(23')	03/22/05	4.7	<0.6	**9.0**	**15**	<0.12	1580.87	8.15	1.61	173	206.7
	08/31/05	1.9	<0.60	*3.1*	**6.3**	<0.12	1580.85	6.47	2.52	207	143.1
	02/14/06	1.9	<0.60	*3.3*	**5.4**	<0.12	1580.83	7.11	1.26	164	165.4
B-3	06/01/00	ND	ND	ND	ND	ND					
(60')	11/01/03	ND	ND	ND	ND	ND					
	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1582.35	9.17	1.16	58	250
	03/23/05	<0.6	<0.6	<0.4	<0.15	<0.12	1581.35	8.81	1.64	128	190.2
	09/01/05	<0.6	<0.6	<0.4	<0.15	<0.12	1581.95	7.61	0.51	242	179.5
	02/15/06	<0.6	<0.6	<0.4	<0.15	<0.12	1581.84	8.12	1.43	159	182.9
(dup)	02/15/06	<0.6	<0.6	<0.4	*1.8*	<0.12					
B-3A	06/01/00	ND	ND	<0.28>	ND	ND					
(32')	11/01/03	ND	ND	<0.70>	ND	ND					
	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1582.5	8.88	1.38	50	324
	03/23/05	1	<0.6	*0.74*	*1.2*	<0.12	1581.54	7.38	1.95	342	245
	09/01/05	*61*	2.1	**11**	**30**	**8.3**	1581.8	6.94	1.68	257	250.8
	02/15/06	*39*	2.9	**6.1**	**16**	**4.8**	1581.74	7.68	1.61	158	254.3
B-5	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1583.16	8.06	1.23	177	235.8
(20')											
B-8	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1582.38	8.2	0.86	-36	642.1
(30')	03/22/05	<0.60	<0.60	<0.4	<0.15	<0.12	1581.43	8.17	1.37	-36	631.6
	08/31/05	<0.60	<0.60	<0.4	<0.15	<0.12	1581.09	6.52	1.55	137	472.8
	02/14/06	<0.60	<0.60	<0.4	<0.15	<0.12	1581.56	6.89	1.48	145	566.4

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloro-ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivity
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
B-8A	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1581.02	8.83	1.32	117	444.5
(62')	03/22/05	<0.60	<0.60	<0.4	<0.15	<0.12	1581.08	8.88	1.44	-56	394.1
	08/31/05	<0.60	<0.60	<0.4	<0.15	<0.12	1581	7.22	1.98	109	271.5
	02/14/06	<0.60	<0.60	<0.4	*0.34*	<0.12	1580.93	7.56	1.95	163	269.3
B-9	12/06/04	<0.5	<0.4	<0.5	<0.6	<0.3	1586.41	8.42	1.04	165	158.9
(62')											
B-10	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1582.14	9.36	1.03	123	166
(52')											
B-11	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1582.29	8.98	1.33	119	276.4
(27')											
B-12	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1583.31	8.95	1.26	127	1731
(42')											
B-13	11/01/93	**310**	4.5	**470**	**290**	**32**					
(25')	01/01/94	nd	nd	nd	nd	nd					
	07/01/94	**180**	nd	**200**	**210**	**210**					
	01/01/95	*14*	nd	**320**	**22**	**22**					
	06/01/95	**290**	nd	**510**	**210**	**210**					
	01/01/96	**230**	*24*	**950**	**210**	**210**					
	06/01/96	**200**	nd	**590**	**200**	**200**					
	01/01/97	**210**	nd	**590**	**160**	**160**					
	10/01/97	*53*	nd	**1100**	**49**	**49**					
	04/01/98	**1100**	nd	**1100**	**1100**	**1100**					
	11/01/98	**527**	nd	**1100**	**28**	**28**					
	06/01/99	**520**	nd	**420**	**360**	**360**					
	06/01/00	*15*	nd	**510**	**13**	**13**					
	01/01/01	**1000**	14	**1000**	**830**	**830**					
	12/01/01	*68*	nd	**320**	**47**	**47**					
	06/01/02	*52*	nd	**580**	**44**	**44**					
	12/01/02	**510**	nd	**290**	**190**	**190**					
	11/03/03	**400**	nd	**460**	**260**	**260**					
Pump test	11/09/04	**530**	10	**370**	**330**	**35**	1583.52				
Pump test	11/09/04	**520**	9.1	**330**	**300**	**32**	1577.79				
Pump test	11/09/04	**550**	11	**380**	**320**	**38**	1577.8				
	12/08/04	**310**	6.6	**48**	**150**	**13**	1583.42	8.47	1.48	88	442
	03/23/05	*49*	4.8	**29**	**29**	**2.7**	1582.46	9.1	1.58	141	311
	09/01/05	*30*	6.1	**37**	**25**	**0.59**	1582.53	6.87	1.12	180	224.7
	02/15/06	*49*	<6.0	**92**	**20**	**<1.2**	1582.45	7.23	1.14	157	251
B-13A	12/08/04	1.5	<0.4	<0.5	<0.6	<0.3	1582.22	9.12	1.45	64	2.46.4
(62')	03/23/05	0.95	<0.6	<0.4	<0.15	<0.12	1581.25	9.38	1.36	141	191.5
	09/01/05	1	<0.6	<0.4	*2.6*	<0.12	1581.56	7.58	0.67	148	160
	02/15/06	1	<0.60	*0.62*	*2.8*	<0.12	1581.43	7.73	1.75	156	150.6
B-13B	12/08/04	0.92	<0.4	<0.5	<0.6	<0.3	1582.48	9.34	1.25	44	497.8
(92')	03/23/05	<0.6	<0.6	<0.4	<0.15	<0.12	1581.24	8.4	1.77	173	197.8
	09/01/05	<0.6	<0.6	<0.4	<0.15	<0.12	1581.68	7.57	1.41	253	144
	02/15/06	<0.6	<0.6	<0.4	<0.15	<0.12	1581.51	8.18	1.3	156	151.9

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloro-ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivity
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
B-15 (42')	12/07/04	<0.5	<0.4	<0.5	<0.6	<0.3	1583.36	8.73	1.19	136	410.9
EXW-2	06/01/00	4.3	ND	*3.2*	**7.9**	*<0.16>*					
	01/01/01	4	<0.18>	*3.4*	**7.3**	*<0.18>*					
	12/01/01	4.5	ND	**5.6**	**8.6**	ND					
	06/01/02	4.9	<0.21>	*1.9*	**7.3**	ND					
	12/01/02	5	ND	*1.2*	**5.3**	ND					
	11/01/03	6.8	ND	*3.4*	**6.9**	**0.53**					
	12/06/04	5.2	<0.4	*1.9*	*4.5*	<0.3					
	03/23/05	<0.6	<0.6	<0.4	<0.15	<0.12		9.03	1.56	-64	775.3
	09/01/05	<0.6	<0.6	<0.4	<0.15	<0.12		7.46	1.15	19	562.3
	02/15/06	<3.0	<3.0	<2.0	<0.75	<0.6		7.47	1.92	151	730.9
EXW-4	03/22/05	0.78	<0.6	0.87	1.2	<0.12					
	09/01/05	<0.6	<0.6	<0.4	<0.15	<0.12					
EXW-5	11/01/93	*32*	ND	**48**	**48**	ND					
	01/01/94	ND	ND	**48**	**48**	ND					
	07/01/94	6.2	ND	**6.7**	ND	**14**					
	01/01/95	*35*	ND	**32**	**57**	ND					
	06/01/95	ND	ND	**96**	**110**	**19**					
	01/01/96	*18*	ND	**17**	**19**	ND					
	06/01/96	*28*	1.7	*2.4*	**20**	ND					
	01/01/97	*59*	3.8	**28**	**36**	ND					
	10/01/97	*68*	ND	**36**	**49**	ND					
	04/01/98	*58*	ND	**31**	**33**	ND					
	11/01/98	**110**	ND	**38**	**54**	ND					
	06/01/99	**150**	ND	**<9.3>**	**24**	ND					
	12/01/99	2.5	ND	<0.42>	*0.98*	ND					
	06/01/00	**160**	1.6	**19**	**32**	ND					
	01/01/01	*16*	<0.29>	**5.8**	**10**	ND					
	12/01/01	*19*	ND	**5.6**	**8.6**	ND					
	06/02/02	*54*	ND	**11**	**24**	**3.3**					
	12/01/02	*57*	ND	**8.6**	**18**	ND					
	12/06/04	*61*	<0.4	<1.0	<1.2	**11**					
	03/23/05	*38*	<1.2	*1.6*	**9**	**2.7**		8.97	1.14	-72	417.5
	09/01/05	*29*	<0.6	<0.40	0.48	**2.1**		7.16	1.06	64	112.7
	02/15/06	*33*	<0.6	0.42	*1.2*	**4.5**		7.41	1.9	150	112.8

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloro-ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivity
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
MW-16	11/01/93	ND	ND	ND	ND	ND					
	01/01/94	ND	ND	ND	ND	ND					
	07/01/94	ND	ND	ND	ND	ND					
	01/01/95	ND	ND	ND	ND	ND					
	06/01/95	ND	ND	ND	ND	**0.71**					
	01/01/96	ND	ND	ND	ND	ND					
	06/06/96	ND	1.3	ND	ND	ND					
	01/01/97	ND	ND	ND	ND	ND					
	10/01/97	ND	ND	*0.54*	ND						
	04/01/98	ND	ND	*1*	ND	ND					
	11/01/98	ND	ND	ND	ND	ND					
	06/01/99	Well Disappeared									
MW-17 (18')	11/01/93	**230**	3.5	**23**	**40**	**1.2**					
	01/01/94	**400**	ND	**40**	**58**	ND					
	07/01/94	**380**	ND	**44**	**40**	ND					
	01/01/95	**12**	ND	*0.53*	**112**	ND					
	06/01/95	**ND**	ND	**380**	**53**	**12**					
	01/01/96	**180**	*40*	**32**	**31**	ND					
	06/06/96	**290**	13	**80**	**40**	**6.7**					
	01/01/97	**860**	7	**33**	**53**	**3.2**					
	10/01/97	**270**									
	04/01/98	**84**	ND	**11**	**9.4**	ND					
	11/01/98	**290**	4.5	**24**	**37**	**2.8**					
	06/01/99	**170**	ND	**<9.7>**	**23**	ND					
	12/01/99	**420**	ND	ND	**26**	ND					
	06/01/00	**220**	ND	ND	ND	ND					
	01/01/01	**270**	<7.0>	ND	**<8.7>**	**<4.4>**					
	12/01/01	**200**	<5.0>	**<5.2>**	**<4.8>**	ND					
	06/01/02	**180**	<5.7	**9.4**	**8.9**	ND					
	12/01/02	**230**	ND	**<13>**	**43**	**<5.1>**					
	11/01/03	**390**	<13>	ND	ND	ND					
	12/07/04	**220**	7.5	**6.8**	**14**	**4.7**	1583.11	8.64	1.46	-32	230
	03/23/05	**84**	3.4	**7.8**	**6.7**	**2.6**	1582.17	8.9	1.76	16	252.4
	09/01/05	**330**	9.1	*1.4*	**5**	**23**	1582.31	6.65	1.78	204	240
	02/15/06	**140**	4.6	*4.3*	*1.9*	**2.9**	1582.12	7.32	1.75	153	196.4

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloro-ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivity
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
MW-18	11/01/93	*44*	0.93	**2200**	**200**	ND					
(17')	01/01/94	ND	ND	**8000**	**530**	ND					
	07/01/94	*15*	ND	**75**	**13**	ND					
	01/01/95	6.3	ND	*4.2*	**21**	ND					
	06/01/95	ND	ND	*4.1*	**1600**	**950**					
	01/01/96	6.7	ND	**110**	**100**	ND					
	06/06/96	3.9	ND	**51**	**34**	ND					
	01/01/97	*16*	ND	**500**	**130**	ND					
	10/01/97	*20*	ND	**290**	**150**	ND					
	04/01/98	3.3	ND	**37**	**13**	ND					
	11/01/98	*24*	0.84	**41**	**43**	ND					
	06/01/99	*19*	ND	**5.1**	**28**	ND					
	12/01/99	Not Sampled because well was bent in collision									
	06/01/00	**220**	3.3	*4.9*	**43**	**1.7**					
	01/01/01	*9.9*	ND	**34**	**76**	ND					
	12/01/01	<0.50	ND	*3.4*	*1.8*	ND					
	06/01/02	1	ND	**5.2**	*3.6*	ND					
	12/01/02	1.9	ND	**6.5**	**6**	**1.2**					
	11/01/03	1.3	ND	*1.6*	*1.1*	ND					
	12/07/04	1.1	<0.4	**5.7**	*2*	**0.43**	1582.96	8.41	1.33	42	475.8
	03/22/05	1.6	<0.6	*4.5*	*2.9*	**0.66**	1581.92	8.69	1.98	52	479.8
	08/31/05	**670**	7.7	**470**	**2700**	**1.3**	1582.13	6.5	1.11	292	328
	02/14/06	2.9	<0.6	**6.8**	**7.7**	**0.39**	1581.88	7.25	1.93	158	280.7
MW-19	11/01/93	*35*	0.65	*2.3*	**12**	ND					
(17')	01/01/94	*15*	ND	**18**	**9**	ND					
	07/01/94	**360**	1.5	**53**	**110**	ND					
	01/01/95	ND	ND	**16**	**9.4**	0.9					
	06/01/95	ND	ND	**680**	**630**	1700					
	01/01/96	4.1	ND	**11**	**170**	ND					
	06/06/96	*64*	*72*	**230**	**37**	ND					
	01/01/97	*13*	ND	**39**	**11**	ND					
	10/01/97	**150**	5.5	**54**	**50**	ND					
	04/01/98	**120**	2.8	**42**	**38**	ND					
	11/01/98	**200**	5	**45**	**83**	ND					
	06/01/99	**390**	ND	**280**	**210**	ND					
	12/01/99	**450**	ND	**52**	**120**	ND					
	06/01/00	**580**	<7.4>	**140**	**160**	ND					
	01/01/01	<0.33>	ND	*1.6*	<0.35>	ND					
	12/01/01	0.91	ND	**8.4**	*1.2*	ND					
	06/01/02	**93**	ND	**67**	**23**	ND					
	12/01/02	*55*	ND	**35**	**16**	ND					
	11/01/03	*14*	ND	*3.4*	**11**	ND					
	12/07/04	*68*	0.64	**71**	**20**	<0.3	1582.89	8.85	1.89	-8	262.7
	03/23/05	**250**	3.6	**250**	**92**	<0.24	1581.85	8.84	1.95	27	461.8
	09/01/05	**320**	<12	**41**	**95**	<2.4	1582.2	6.47	1.91	307	185.3
	02/15/06	**220**	<12	**45**	**66**	<2.4	1581.85	7.26	1.38	159	190.3

TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloro-ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH	DO	Redox	Conductivity
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
LSD	07/09/84		<1.0	<1.0	<1.0		sampled by Lakeland SD				
Well-3	08/07/84			**62**	*4*		sampled by Lakeland SD				
	08/21/84			**12**	<1.0		sampled by Lakeland SD				
	05/27/86		<1.0	<1.0	<1.0	<7.0	sampled by Lakeland SD				
	06/09/86		<1.0	<1.0	<1.0	<7.0	sampled by Lakeland SD				
	10/19/87		<0.1	<0.1	<0.1		sampled by Lakeland SD				
	06/25/90	<0.5	<0.5	<0.2	<0.2	<0.2	sampled by Lakeland SD				
	02/27/91	<0.5	<0.5	<0.5	<0.2	<0.2	sampled by Lakeland SD				
	06/28/91	<0.5	<05	<0.5	<0.2	<0.2	sampled by Lakeland SD				
	03/22/92	<0.5	<0.5	<0.5	<0.2	<0.2	sampled by Lakeland SD				
	06/10/92	<0.5	<0.5	<0.5	<0.2	<0.2	sampled by Lakeland SD				
	09/30/02	<0.5	<0.5	<0.5	<0.2	<0.2	sampled by Lakeland SD				
	11/10/93	<0.1	<0.1	<0.5	<0.5	<0.2	sampled by Lakeland SD				
	07/06/94	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by Lakeland SD				
	08/15/95	0.5	<0.1	*2.8*	*2.1*	<0.2	sampled by Lakeland SD				
	03/25/96	0.87	<0.1	*3.4*	*3.6*	<0.2	sampled by Lakeland SD				
	06/01/96	0.67	ND	*3.1*	*3.4*	ND					
	06/07/96	0.67	<0.1	*3.1*	*3.4*	<0.2	sampled by Lakeland SD				
	08/27/96	0.5	<0.1	<0.2	*2.2*	<0.2	sampled by Lakeland SD				
	12/16/96	0.24	<0.1	*0.9*	*1*	<0.2	sampled by Lakeland SD				
	01/01/97	ND	ND	*1.5*	*1.4*	ND					
	03/03/97	0.16	<0.1	*0.52*	0.46	<0.2	sampled by Lakeland SD				
	06/02/97	0.11	<0.1	0.33	0.34	<0.2	sampled by Lakeland SD				
	09/12/97	<0.1	<0.1	0.17	0.16	<0.2	sampled by Lakeland SD				
	10/01/97	ND	ND	*1.5*	0.32	ND					
	12/11/97	<0.1	<0.1	0.13	0.16	<0.2	sampled by Lakeland SD				
	03/03/98	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by Lakeland SD				
	06/25/98	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by Lakeland SD				
	09/01/98	ND	ND	ND	ND	ND					
	09/22/98	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by Lakeland SD				
	11/01/98	ND	ND	0.17	0.19	ND					
	12/14/98	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by Lakeland SD				
	03/16/99	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by Lakeland SD				
	06/01/99	ND	ND	ND	ND	ND					
	12/01/99	ND	ND	<0.26>	ND	ND					
	01/25/00	<0.1	<0.1	<0.2	<0.1	<0.2	sampled by Lakeland SD				
	06/01/00	ND	ND	ND	<0.17>	ND					
	01/01/01	ND	<0.41>	<0.43>	ND	ND					
	01/24/01	<0.1	<0.1	0.35	0.32	<0.2	sampled by Lakeland SD				
	12/01/01	ND	ND	<0.23>	<0.31>	ND					
	02/05/02	<0.1	<0.1	<0.2	0.18	<0.2	sampled by Lakeland SD				
	06/02/02	ND	ND	<0.23>	<0.38>	ND					
	12/02/02	<0.44>	ND	*0.56*	*1.2*	ND					
	03/11/03	<0.1	<0.1	<0.2	*0.77*	<0.2	sampled by Lakeland SD				
	07/30/03	0.75	<0.1	*0.66*	*1.7*	<0.2	sampled by Lakeland SD				
	11/01/03	[0.59]	ND	*0.59*	*1.4*	ND					
	11/26/03	0.55	<0.37	*0.63*	*1.4*	<0.12	sampled by Lakeland SD				
	03/01/04	0.78	<0.1	*0.71*	*1.7*	<0.2	sampled by Lakeland SD				
	04/26/04	0.73	<0.1	*0.59*	*1.4*	<0.2	sampled by Lakeland SD				
	08/24/04	0.47	<0.1	*0.44*	*1*	<0.2	sampled by Lakeland SD				
	11/03/04	0.95	<0.1	*0.93*	*2*	<0.2	sampled by Lakeland SD				
	12/06/04	0.61	<0.4	*0.64*	*1*	<0.3					
	02/14/05	1.7	<0.17	*1.8*	*3.6*	<0.17	sampled by Lakeland SD				
	03/09/05	1.3	<0.17	*1.4*	*2.7*	<0.15	sampled by Lakeland SD				
	03/23/05	1.2	<0.6	*0.93*	*2.2*	<0.12		8.52	3.41	291	308.3
	04/25/05	0.87	<0.17	*0.85*	*1.7*	<0.17	sampled by Lakeland SD				
	08/09/05	[0.57]	<0.58	[0.46]	*1*	<0.54	sampled by Lakeland SD				
	09/01/05	<0.60	<0.60	0.48	*1.1*	<0.12		7.35	2.22	234	278.7
	02/15/05	<0.6	<0.6	<0.4	<0.15	<0.12		7.77	2.49	156	284.8
	03/06/06	1.8	<0.17	*1.1*	*2*	*0.17*	sampled by Lakeland SD				

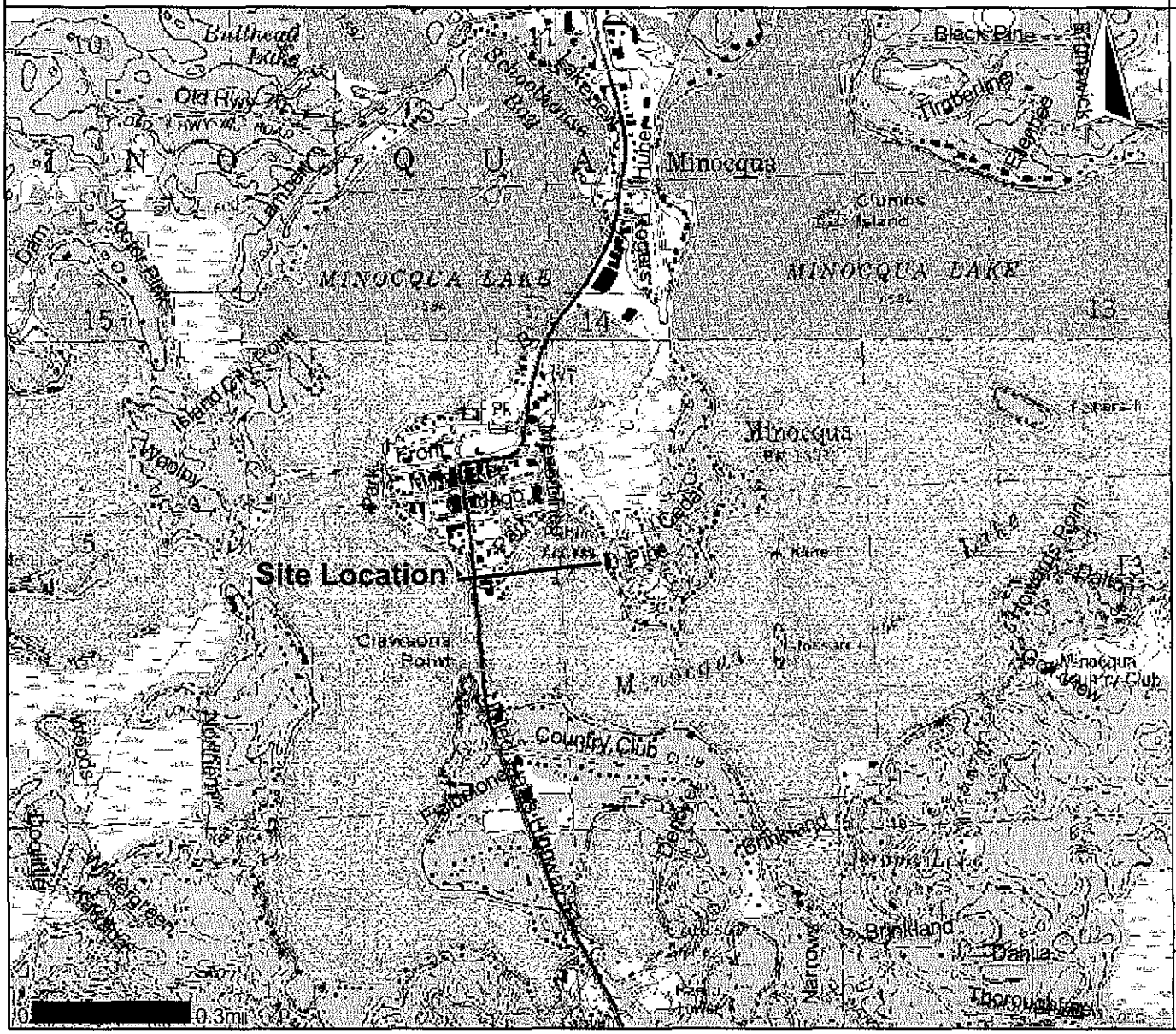
TABLE 3
Groundwater Sample Analytical Results
Minocqua Cleaners
Minocqua, WI

Analyte	Sampling Date	Cis-1,2-Dichloroethylene	Trans-1,2-Dichloroethylene	Tetrachloro-ethene	Trichloro ethene	Vinyl Chloride	GW Elevation	pH Elevation	DO	Redox	Conductivity
ES		70	100	5	5	0.2					
PAL		7	20	0.5	0.5	0.02					
GW	Mar-96			*3.6*	**5.2**						
Outfall	Jun-96			*4.6*	*4.9*						
	Sep-96			**5.6**	nd						
	Dec-96			*2.5*	*3.9*						
	Mar-97			*2.4*	nd						
	Jul-97			*2.6*	*4.3*						
	Sep-97			*3.6*	nd						
	Dec-97			*2.1*	*4.3*						
	Mar-98			*1.8*	nd						
	Jun-98			*1.6*	*2.7*						
	Sep-98			*1.2*	nd						
	Dec-98			*1.6*	*2.7*						
	Mar-99			*1.5*	nd						
	Jun-99			*1.3*	*2.4*						
	Sep-99			*1.4*	nd						
	Dec-99			*1*	*2.7*						
	Apr-00			*0.96*	nd						
	Jun-00			*1.1*	*3*						
	Sep-00			*2.5*	nd						
	Dec-00			*1.8*	*3.8*						
	Mar-01			*1.6*	nd						
	Jun-01			*3*	*4.4*						
	Oct-01			*1.2*	nd						
	Dec-01			*1.1*	*2.5*						
	Mar-02			*1.1*	*2.5*						
	Jun-02			*1*	*2.8*						
	Sep-02			*0.6*	*1.3*						
	Dec-04			*0.34*	*1.2*						

FIGURES

Figure 1

Site Location Map, Former Minocqua Cleaners, Minocqua, WI



Legend

- County Boundaries
- Local Roads
- Civil Towns
- Civil Town
- Cities and Villages
- Village
- City

Scale: 1:20,000

DO NOT USE FOR NAVIGATION

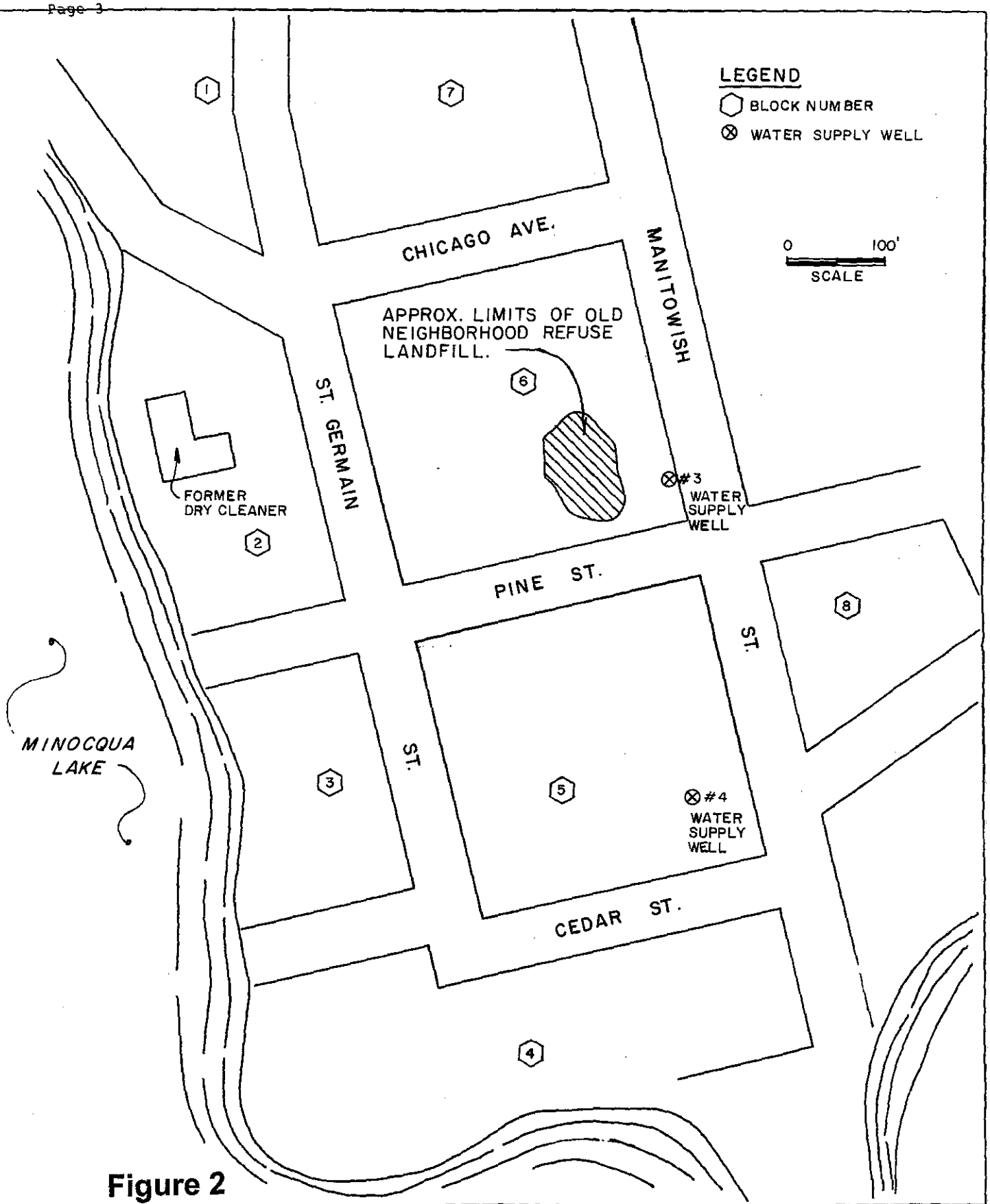


Figure 2

STUDY AREA MAP
LAKELAND SANITARY DISTRICT
MINOCQUA, WISCONSIN

STS CONSULTANTS LTD.
540 LAMBEAU STREET
GREEN BAY, WIS. 54303

P.D.P.	2-2-88	MDM	15574XF

LAKE MINOCQUA
(EL. 1584.7)

LAKE LEVEL FLUCTUATIONS:
MAX. 1585.00
MIN. 1582.72

High PCE Concentration 7/2/87

CHICAGO AVENUE

PINE STREET

MANITOWISH STREET

RISTO

ZENTNER

MILLING

SHED

YELTON

PUMP HOUSE 3

PUMP HOUSE 4

EXW-1 (DNR #83309) [70]

EXW-2 (DNR #83312) [1.4]

B-15 (1.8)

B-12 (2.1) [33]

B-14 (9.1) [<0.1]

B-1 (53.0)

B-1A (1.8)

B-1B (<0.1)

B-2 (<0.1)

B-2A (1.3)

B-2B (0.7)

B-3 (9.7)

B-3A (9820)

B-4 (<0.1)

B-5 (<0.1)

B-6 (<0.1)

B-7 (<0.1)

B-8 (<0.1)

B-9 (<0.1) [<0.1]

(34.5) [4.9]

(4.8) [<0.1]

(2.4) [1.4]

BM.- TAG BOLT ON WEST SIDE OF FLANGE OF FIRE HYDRANT ELEV.=1603.58

N

LEGEND

- x 1611.1 — GROUND SURFACE SPOT ELEVATION
- 1608 — TOPOGRAPHIC CONTOUR-2' INTERVAL
- BUILDING
- EDGE OF LAKE
- EXISTING GROUNDWATER MONITORING WELL
- 4" DIA. MONITORING WELL AND BACKUP EXTRACTION WELL
- HIGH CAPACITY EXTRACTION AND BARRIER WELL
- POWER POLE
- HYDRANT
- (9.7) PCE CONCENTRATION (ppb), 3-27/4-1-87
- [4.9] PCE CONCENTRATION (ppb), 7-2-87
- APPROXIMATE EXTENT OF PCE PLUME ON 3-27/4-1-87
- APPROXIMATE EXTENT OF PCE PLUME ON 7-2-87

Figure 3

NOTE: TOPOGRAPHIC SURVEYS BY STS PERSONNEL ON OCTOBER 13, 14, 1986, AND JUNE 2, 1987.

STS Consultants Ltd.
Consulting Engineers

PROJECT/CLIENT

PLAN VIEW OF ESTIMATED PERCHLOROETHYLENE PLUME BASED ON 3-27/4-1-87 & 7-2-87 SAMPLING ROUNDS

LAKELAND SANITARY DISTRICT
MINOCQUA, WI.

DRAWN BY	P.D.P.	8-17-87	SCALE: 1" = 40'	FIGURE NO.
CHECKED BY	M.D.M.		STS DRAWING NO. 14737-2SCD	
APPROVED BY	J.A.S.			

REVISIONS

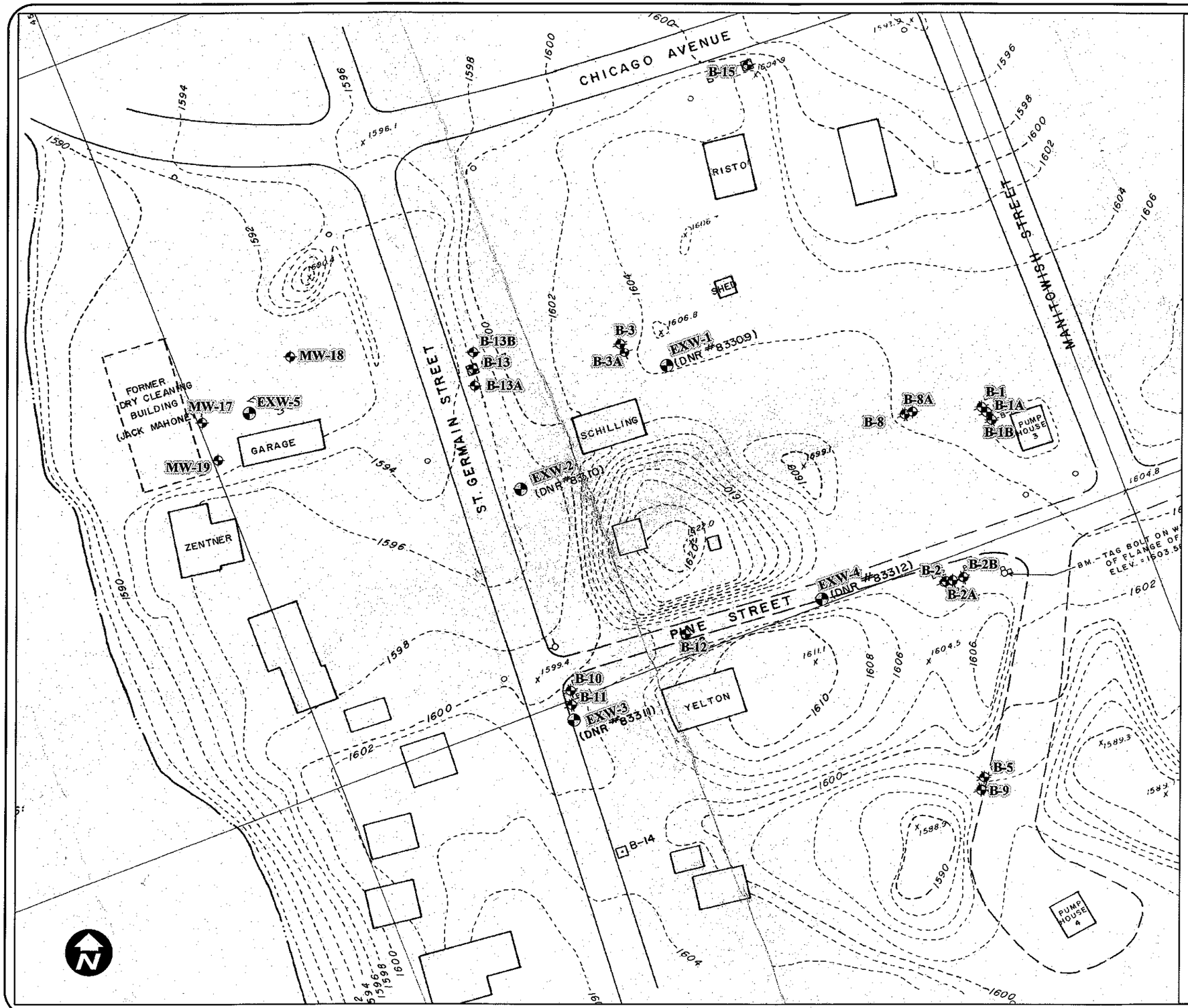


Figure 4
Monitoring Well Location Map
Minocqua Cleaners
Minocqua, Wisconsin

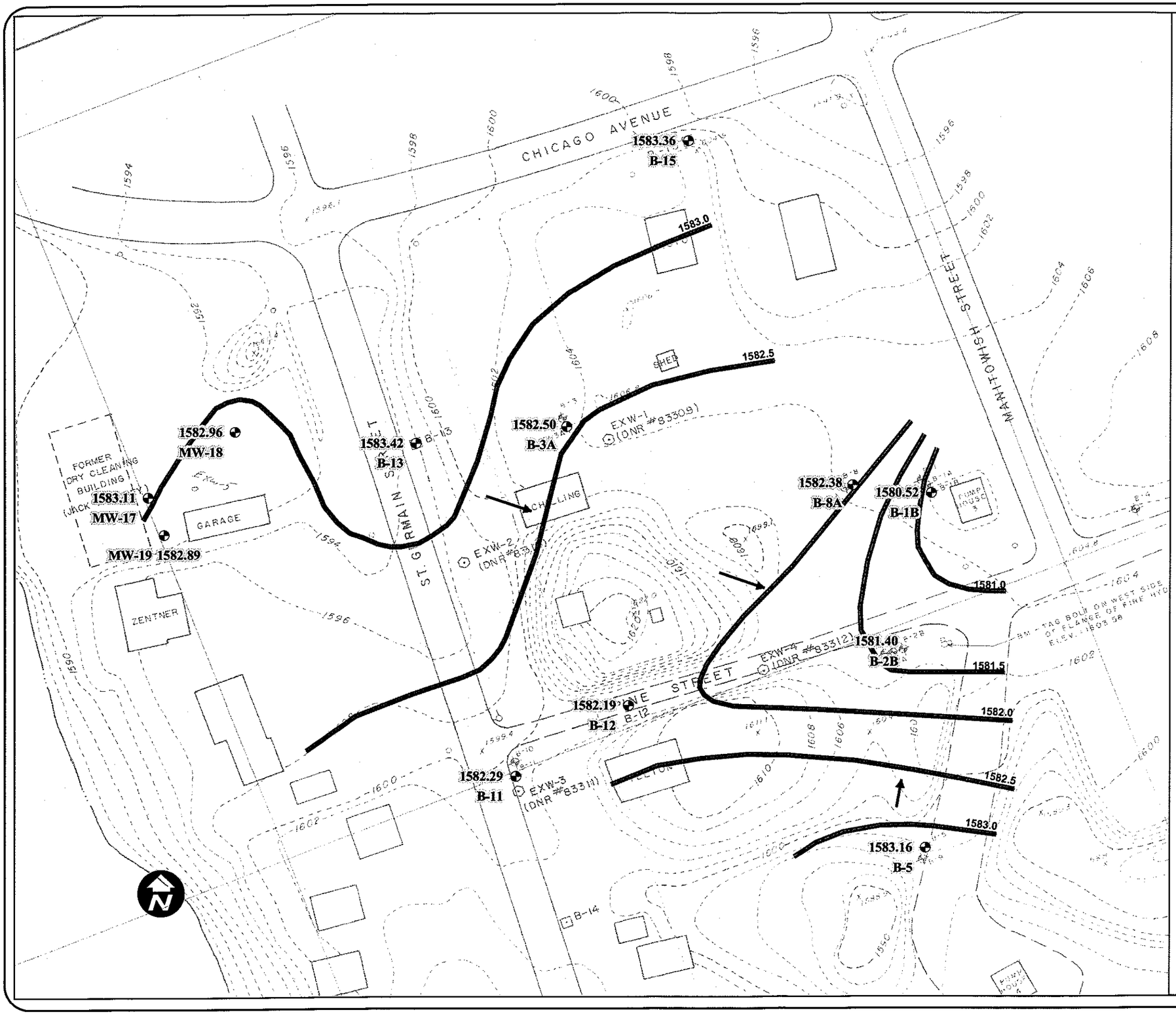
Legend

- Extraction Well
- Monitoring Well

DATE: 1/11/05
DRAFTED: TDP
FILE: FIGURE4.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL

Figure 5
Water Table Contours, 12/06/04
Minocqua Cleaners
Minocqua, Wisconsin



Legend

- Monitoring Well with water table elevation
- Water Table Contour
- Groundwater Flow Direction

Notes:

Municipal Well #3 Was Pumping

1 inch equals 60 feet

0 30 60 120 Feet

DATE: 6/30/05
DRAFTED: TDP
FILE: FIGURE5.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
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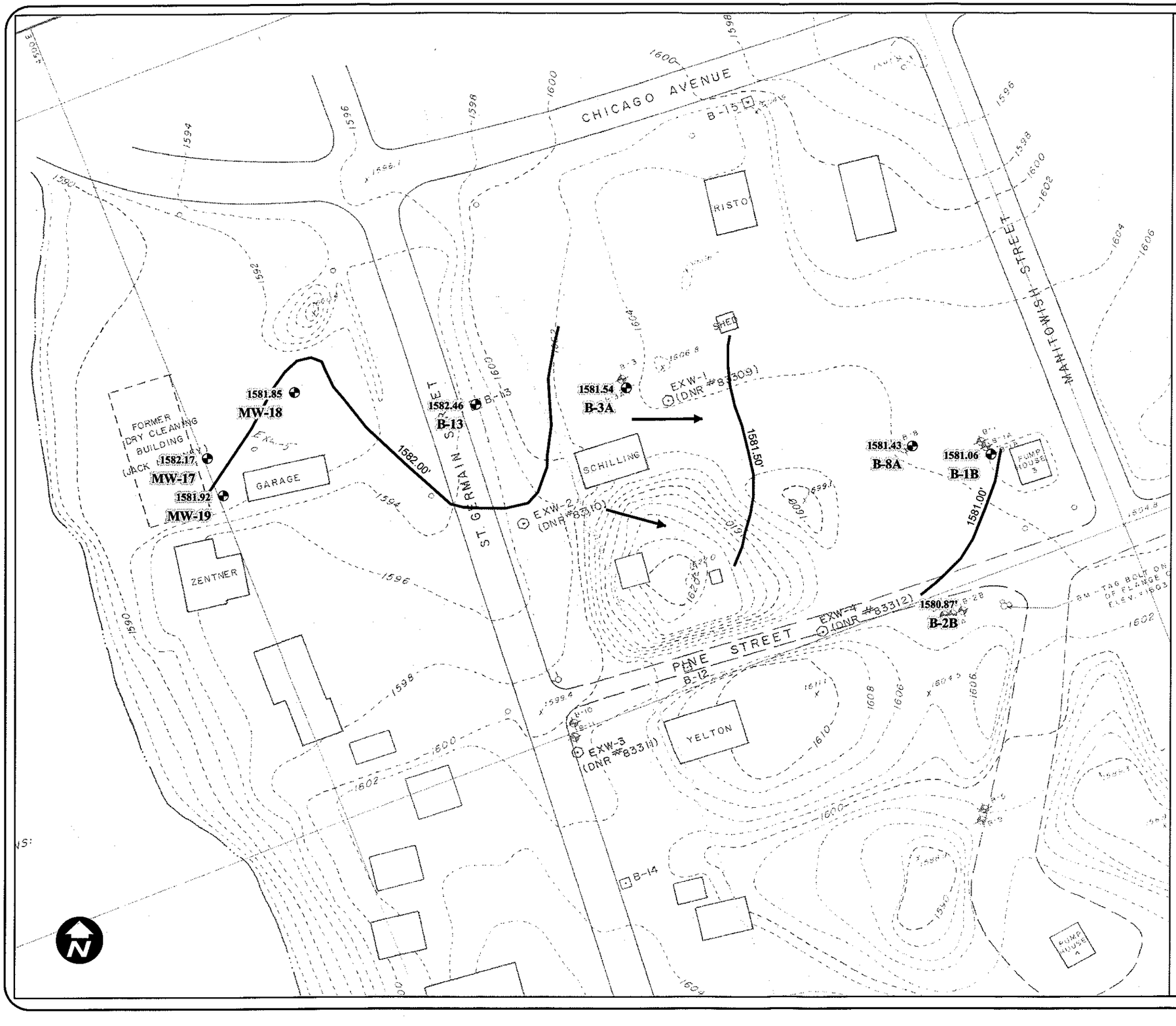


Figure 6
Water Table Contours, 3/22/05 & 3/23/05
Minocqua Cleaners
Minocqua, Wisconsin

Legend

- Monitoring Well with water table elevation
- Water Table Contour
- Groundwater Flow Direction

Notes:

Municipal Well #3 Pumped for 5 hours on March 22 and did not pump on March 23, 2005

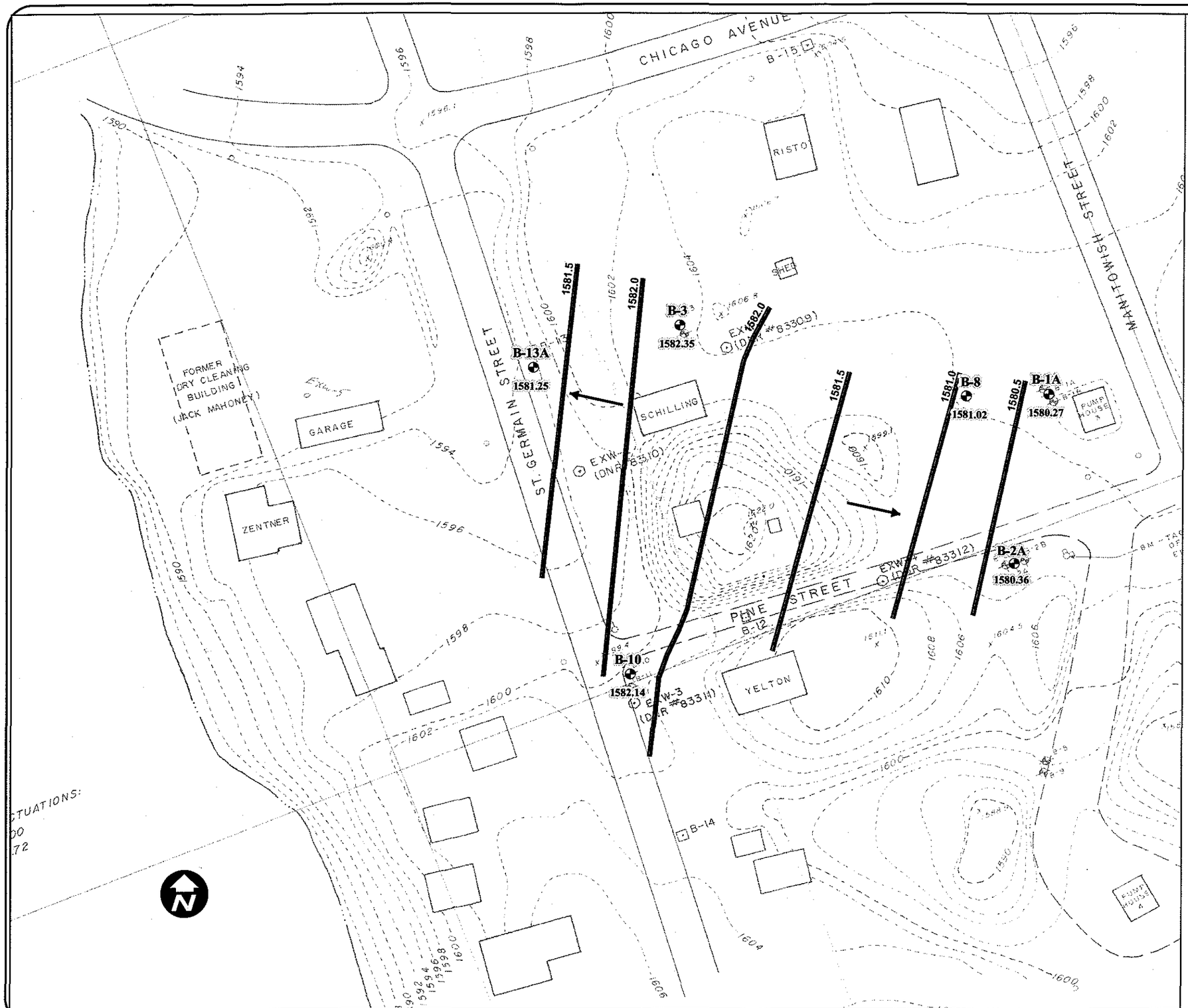
1 inch equals 60 feet

0 30 60 120 Feet

DATE: 6/30/05
DRAFTED: TDP
FILE: FIGURE6.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL

Figure 7
Medium Potentiometric Surface
12/06/04
Minocqua Cleaners
Minocqua, Wisconsin



Legend

- Monitoring Well with potentiometric elevation
- Potentiometric Surface Contour
- Groundwater Flow Direction

Notes:

Piezometers Screened From 55' to 60'

Municipal Well #3 Pumping

1 inch equals 60 feet

0 30 60 120 Feet

DATE: 6/30/05
DRAFTED: TDP
FILE: FIGURE7.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL

Figure 8
Medium Potentiometric Surface
3/22/05 & 3/23/05
Minocqua Cleaners
Minocqua, Wisconsin

Legend

- Monitoring Well with potentiometric elevation
- Potentiometric Surface Contour
- Groundwater Flow Direction

Notes:

Piezometers Screened From 55' to 60'

Municipal Well #3 Pumped for 5 hours on March 22 and did not pump on March 23, 2005

1 inch equals 60 feet

0 30 60 120 Feet

DATE: 6/30/05
DRAFTED: TDP
FILE: FIGURE8.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL

Figure 9
Deep Potentiometric Surface
12/06/04
Minocqua Cleaners
Minocqua, Wisconsin

Legend

- Monitoring Well with potentiometric elevation
- Potentiometric Surface Contour
- Groundwater Flow Direction

Notes:

Piezometers Screened From 85' to 90'

Municipal Well #3 Was Pumping

1 inch equals 60 feet

0 30 60 120 Feet

DATE: 6/30/05
DRAFTED: TDP
FILE: FIGURE9.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL

Figure 10
PCE Isoconcentration Contours
March 22 & 23, 2005
Minocqua Cleaners
Minocqua, Wisconsin

Legend

Monitoring Well with PCE Concentuations

PCE Isoconcentration Contour

Notes:

PCE Concentuations Are In ppb

1 inch equals 60 feet

0 30 60 120 Feet

DATE: 6/30/05
DRAFTED: TDP
FILE: FIGURE10.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL

Figure 11
TCE Isoconcentration Contours
March 22 & 23, 2005
Minocqua Cleaners
Minocqua, Wisconsin

Legend

Monitoring Well with TCE Concentuations

TCE Isoconcentuation Contour

Notes:

TCE Concentuations Are In ppb

1 inch equals 60 feet

0 30 60 120 Feet

DATE: 6/30/05
DRAFTED: TDP
FILE: FIGURE11.MXD
PROJECT NO. 213132

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL

APPENDIX A

Soil Boring Logs
Well Abandonment Forms
Monitoring Well Construction Forms
Monitoring Well Development Forms

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: B-4
County: Oneida
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Minocqua

(2) FACILITY NAME Minocqua Cleaners

Original Well Owner (If Known):
Present Well Owner: Minocqua Cleaners
Street or Route:
City, State, Zip Code: Minocqua, WI
Facility Well No. and/or Name (If Applicable): B-4
WI Unique Well No.:
Reason For Abandonment: Broken
Date of Abandonment: 11/16/04

WELL/DRILLHOLE/BOREHOLE INFORMATION

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

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

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

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface): 34.0
Casing Diameter (in.): 2.00
Casing Depth (ft.): 24.0

Lower Drillhole Diameter (in.): ____

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

(4) Depth to Water (Feet): 12.0

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

If No, Explain ____

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

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

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

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

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	34.0	1 Bag	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
Boart Longyear Company
Signature of Person Doing Work: [signature]
Date Signed: 12-9-04
Street or Route: 101 Alderson Street
Telephone Number: 715-359-7090
City, State, Zip Code: Schofield, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

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

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 5-97

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Minocqua Cleaners		B-8A

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Boart Longyear - P. Dickinson	11/12/2004	11/12/2004	4 1/4 HSA & 6" Mud Rotary

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		B-8A	Feet MSL	Feet MSL	6.0 Inches

Boring Location or Local Grid Origin (Check if estimated: ☐)
State Plane S / C / N
1/4 of 1/4 of Section , T N, R
Lat. ° ' "
Long. ° ' "
Local Grid Location (If applicable) ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
3410-2190	Oneida	44	Minocqua

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			0	TOPSOIL										
				Brn F-M SAND w/Gravel										
1 SS	24 6	4 1 1 1	5							M				
2 SS	24 0	12 1 1 1	10							M				

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

Signature: [signature] Firm: Boart Longyear Company
101 Alderson Street Schofield, WI 54476
Tel: 715-359-7090
Fax: 715-355-5715

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

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A Rev. 5-97

Boring Number B-8A Use only as an attachment to Form 4400-122.

Sample									Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
3 SS	24 4	28 8 6 9	15							M				
4 SS	24 20	28 18 19 32	20							W				

13 14 16 17 18 19 21 22 23 24 25 26 27 28 29 30 31 32

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A Rev. 5-97

Boring Number B-8A Use only as an attachment to Form 4400-122.

Sample									Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			33											
			34											
			35											
			36											
			37											
			38											
			39											
			40											
			41											
			42											
			43											
			44											
			45											
			46											
			47											
			48											
			49											
			50											
			51											
			52											

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A Rev. 5-97

Boring Number B-8A Use only as an attachment to Form 4400-122. Page 4 of 4

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			53											
			54											
			55											
			56											
			57											
			58											
			59											
			60											
			61											
			62	EOB 62.0' Well Set 60.0'										

State of Wisconsin
Department of Natural Resources Route To: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other ☐

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 6-97

Facility/Project Name: Minocqua Cleaners	Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: B-8A
Facility License, Permit or Monitoring No.	Grid Origin Location (Check if estimated: ☐) Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well Number
Facility ID: 3410-2190	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 11/15/2004
Type of Well: Well Code 12/pz	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: (Person's Name and Firm): G. Jones; Boart Longyear
Distance Well Is From Waste/Source Boundary ____ ft.	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation ____ ft. MSL
B. Well casing, top elevation 1603.37 ft. MSL
C. Land surface elevation 1600.86 ft. MSL
D. Surface seal, bottom ____ ft. MSL or 1.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☐ No

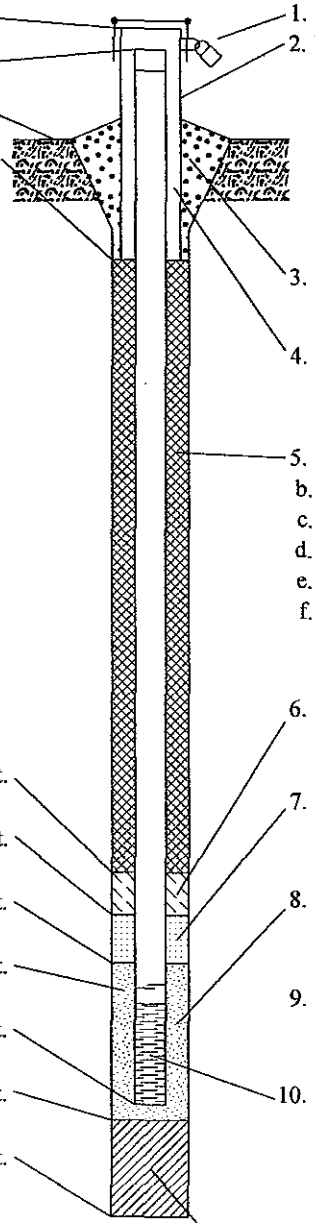
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; Mud Rotary; Other ☒

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

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

17. Source of water (attach analysis): ____

E. Bentonite seal, top ____ ft. MSL or 46.0 ft.
F. Fine sand, top ____ ft. MSL or 51.0 ft.
G. Filter pack, top ____ ft. MSL or 53.0 ft.
H. Screen joint, top ____ ft. MSL or 55.0 ft.
I. Well bottom ____ ft. MSL or 60.0 ft.
J. Filter pack, bottom ____ ft. MSL or 62.0 ft.
K. Borehole, bottom ____ ft. MSL or 62.0 ft.
L. Borehole, diameter 6.0 in.
M. O.D. well casing 2.37 in.
N. I.D. well casing 1.94 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 7.0 ft.
c. Material: Steel ☒ 04; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: ____
3. Surface seal: Bentonite ☒ 30; Concrete ☐ 01; Other ☐
4. Material between well casing and protective pipe: Bentonite ☐ 30; Sand; Other ☒
5. Annular space seal: a. Granular Bentonite ☐ 33
b. ____ Lbs/gal mud weight . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☒ 31
d. ____ % Bentonite . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name and mesh size
a. #7 Badger
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name and mesh size
a. #40 Badger
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23; Flush threaded PVC schedule 80 ☒ 24; Other ☐
10. Screen material: PVC
a. Screen Type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer Boart Longyear
c. Slot size: 0.010 in.
d. Slotted length: 5.0 ft.
11. Backfill material (below filter pack): None ☒ 14; Other ☐

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

Signature: [signature] Firm: Boart Longyear Company, 101 Alderson Street Schofield, WI 54476 Tel: 715-359-7090 Fax: 715-355-5715

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

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 6-97

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

Facility/Project Name	County	Well Name
Minocqua Cleaners	Oneida	B-8A

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
	44		

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 Pumped	☒	

3. Time spent developing well: 90 min.

4. Depth of well (from top of well casing): 62.8 ft.

5. Inside diameter of well: 1.94 in.

6. Volume of water in filter pack and well casing: 37.3 gal.

7. Volume of water removed from well: 110.0 gal.

8. Volume of water added (if any): gal.

9. Source of water added: _____

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

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	20.65 ft.	21.50 ft.
Date b.	11/16/2004	11/16/2004
Time c.	08:00 am	09:30 am
12. Sediment in well bottom	inches	inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe) Brown Cloudy	Clear ☒ 20 Turbid ☐ 25 (Describe) Clear

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

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

16. Well developed by: Person's Name and Firm
G. Jones
Boart Longyear

17. Additional comments on development:

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

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

Signature: _____

Print Name: Ron Thalacker

Firm: Boart Longyear Company

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 6-97

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

Facility/Project Name	County	Well Name
Minocqua Cleaners	Oneida	B-13

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
	44		

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 See "Comments"	☒	

3. Time spent developing well 720 min.

4. Depth of well (from top of well casing) 27.7 ft.

5. Inside diameter of well 4.00 in.

6. Volume of water in filter pack and well casing 13.1 gal.

7. Volume of water removed from well 2730.0 gal.

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

9. Source of water added

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

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	12.92 ft.	18.90 ft.
Date b.	11/08/2004	11/08/2004
Time c.	11:00 am	03:00 pm
12. Sediment in well bottom	inches	inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe) Cloudy Brown	Clear ☒ 20 Turbid ☐ 25 (Describe) Clear

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

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

16. Well developed by: Person's Name and Firm
P. Dickinson
Boart Longyear

17. Additional comments on development:
Development Times Also Include: 11/9/04 Start: 7:00 A.M.; End: 3:00 P.M. Description of Development Method Also Includes: Added 1.5 Gal. LBA. Surged 1 hour. Bailed out sand. Added 1.5 gal. SC200. Surged 1 hour. Pumped to develop well - 300 gallons. Pump test 25 gpm.

Facility Address or Owner/Responsible Party Address

Name:

Firm:

Street:

City/State/Zip:

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

Signature:

Print Name: RON THALACKER

Firm: Boart Longyear Company

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 5-97

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Minocqua Cleaners		B-13A

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Boart Longyear - P. Dickinson	11/11/2004	11/11/2004	4 1/4" HSA & 6" Mud Rotary

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		B-13A	Feet MSL	Feet MSL	6.0 Inches

Boring Location or Local Grid Origin (Check if estimated: ☐)
State Plane S/C/N
1/4 of 1/4 of Section , T N, R
Lat. ° ' "
Long. ° ' "
Local Grid Location (If applicable)
Feet ☐ N Feet ☐ E
Feet ☐ S Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
3410-2190	Oneida	44	Minocqua

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1	EARTH DRILL										
			2											
			3											
			4											
			5											
			6											
			7											
			8											
			9											
			10											
			11											
			12											

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

Signature [signature] Firm Boart Longyear Company
101 Alderson Street Schofield, WI 54476
Tel: 715-359-7090
Fax: 715-355-5715

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

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT

Form 4400-122A Rev. 5-97

Boring Number B-13A Use only as an attachment to Form 4400-122.

Sample									Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			13											
			14											
			15											
			16											
			17											
			18											
			19											
			20											
			21											
			22											
			23											
			24											
			25											
			26											
			27											
			28											
			29											
			30											
			31											
			32											

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT

Form 4400-122A Rev. 5-97

Boring Number B-13A Use only as an attachment to Form 4400-122.

Sample									Soil Properties						
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			33											
			34											
			35											
			36											
			37											
			38											
			39											
			40											
			41											
			42											
			43											
			44											
			45											
			46											
			47											
			48											
			49											
			50											
			51											
			52											

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A Rev. 5-97

Boring Number B-13A Use only as an attachment to Form 4400-122.

Sample									Soil Properties						
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			53											
			54											
			55											
			56											
			57											
			58											
			59											
			60											
			61	EOB 61.0' Well Set 60.0'										

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 6-97

Facility/Project Name: Minocqua Cleaners	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: B-13A
Facility License, Permit or Monitoring No.	Grid Origin Location (Check if estimated: ☐) Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well Number
Facility ID: 3410-2190	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 11/11/2004
Type of Well: Well Code 12/pz	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm) P. Dickinson / Boart Longyear
Distance Well Is From Waste/Source Boundary ____ ft.	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation ____ ft. MSL

B. Well casing, top elevation 1596.33 ft. MSL

C. Land surface elevation 1593.91 ft. MSL

D. Surface seal, bottom ____ ft. MSL or 3.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☒ 41 / Mud Rotary / Other ☒

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

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis):

E. Bentonite seal, top ____ ft. MSL or 45.5 ft.

F. Fine sand, top ____ ft. MSL or 51.5 ft.

G. Filter pack, top ____ ft. MSL or 52.5 ft.

H. Screen joint, top ____ ft. MSL or 55.0 ft.

I. Well bottom ____ ft. MSL or 60.0 ft.

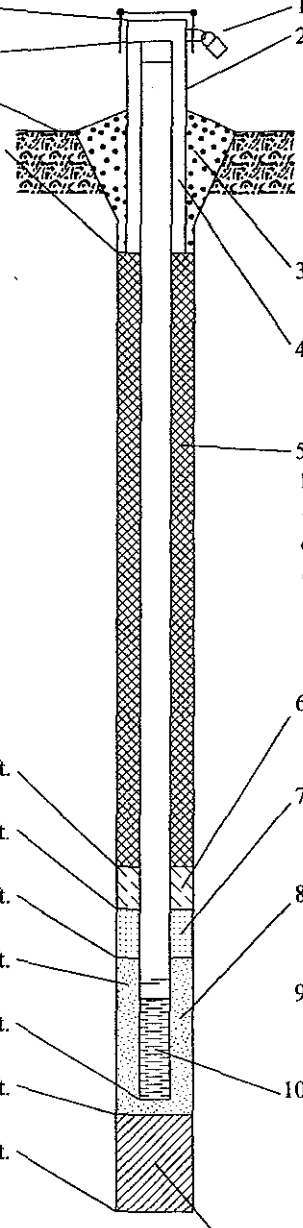
J. Filter pack, bottom ____ ft. MSL or 61.0 ft.

K. Borehole, bottom ____ ft. MSL or 61.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.37 in.

N. I.D. well casing 1.94 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 7.0 ft.
c. Material: Steel ☒ 04 / Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: ____

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

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

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

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

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

8. Filter pack material: Manufacturer, product name and mesh size
a. #40 Badger
b. Volume added ____ ft^3

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

10. Screen material: PVC
a. Screen Type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐
b. Manufacturer Boart Longyear
c. Slot size: 0.010 in.
d. Slotted length: 5.0 ft.

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

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

Signature: [signature] Firm: Boart Longyear Company, 101 Alderson Street Schofield, WI 54476 Tel: 715-359-7090 Fax: 715-355-5715

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

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 6-97

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

Facility/Project Name	County	Well Name
Minocqua Cleaners	Oneida	B-13A

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
	44		

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) 62.4 ft.

5. Inside diameter of well 1.94 in.

6. Volume of water in filter pack and well casing 45.5 gal.

7. Volume of water removed from well 100.0 gal.

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

9. Source of water added _____

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

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	10.98 ft.	10.98 ft.
Date b.	11/12/2004	11/12/2004
Time c.	03:00 pm	05:00 pm
12. Sediment in well bottom	inches	inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15	Clear ☒ 20 Turbid ☐ 25
(Describe)	Muddy Brown	Clear

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

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

16. Well developed by: Person's Name and Firm
J. Flaminio
Boart Longyear

17. Additional comments on development:

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

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

Signature: _____

Print Name: RON THALACKER

Firm: Boart Longyear Company

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 5-97

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Minocqua Cleaners		B-13B

Boring Drilled By (Firm name and name of crew chief)	Date Drilling Started	Date Drilling Completed	Drilling Method
Boart Longyear - P. Dickinson	11/8/2004	11/8/2004	4 1/4" HSA & 6" Mud Rotary

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		B-13B	Feet MSL	Feet MSL	6.0 Inches

Boring Location or Local Grid Origin (Check if estimated: ☐)
State Plane S / C / N
1/4 of 1/4 of Section , T N, R
Lat. ° ' "
Long. ° ' "
Local Grid Location (If applicable)
Feet ☐ N Feet ☐ E
Feet ☐ S Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
3410-2190	Oneida	44	Minocqua

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
1 SS	24 12	2 2 2 3	1	Brn F-M SAND w/Gravel						M				
2 SS	24 4	3 4 4 4	3							M				
3 SS	24 6	2 4 4 4	6							M				
4 SS	24 12	2 3 4 5	8							M				
5 SS	24 4	10 12 12 19	10 11 12							M				

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

Signature: [signature] Firm: Boart Longyear Company
101 Alderson Street Schofield, WI 54476
Tel: 715-359-7090
Fax: 715-355-5715

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

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A Rev. 5-97

Boring Number B-13B Use only as an attachment to Form 4400-122.

Sample: Number and Type	Sample: Length Att. & Recovered (in)	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: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
6 SS	24 3	6 4 3 3	17							W				
7 SS	24 3	7 4 1 2	27							W				

13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A Rev. 5-97

Boring Number B-13B Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
8 SS	24 8	8 5 5 7	38							W				
9 SS	24 9	9 7 10 12	47							W				

33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A Rev. 5-97

Boring Number B-13B Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
10 SS	24 14	14 13 21 25	57–58							W				
11 SS	24 14	10 8 16 10	67–68							W				

53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT

Form 4400-122A Rev. 5-97

Boring Number B-13B Use only as an attachment to Form 4400-122.

Sample										Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
12 SS	24 14	9 14 14 17	77 78							W				
13 SS	24 10	24 19 23 25	87 88							W				
			73 74 75 76 79 80 81 82 83 84 85 86 89 90 91	EOB 91.0' Well Set 90.0'										

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 6-97

Facility/Project Name: Minocqua Cleaners	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: B-13B
Facility License, Permit or Monitoring No.	Grid Origin Location (Check if estimated: ☐) Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well Number
Facility ID: 3410-2190	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 11/10/2004
Type of Well: Well Code 12/pz	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	Well Installed By: (Person's Name and Firm) P. Dickinson; Boart Longyear
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	

A. Protective pipe, top elevation ____ ft. MSL

B. Well casing, top elevation 1596.16 ft. MSL

C. Land surface elevation 1594.10 ft. MSL

D. Surface seal, bottom ____ ft. MSL or 3.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 5 0; Hollow Stem Auger ☒ 4 1; Mud Rotary; Other ☒

15. Drilling fluid used: Water ☐ 0 2 Air ☐ 0 1 Drilling Mud ☐ 0 3 None ☐ 9 9

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis): ____

E. Bentonite seal, top ____ ft. MSL or 76.0 ft.

F. Fine sand, top ____ ft. MSL or 81.0 ft.

G. Filter pack, top ____ ft. MSL or 83.0 ft.

H. Screen joint, top ____ ft. MSL or 85.0 ft.

I. Well bottom ____ ft. MSL or 90.0 ft.

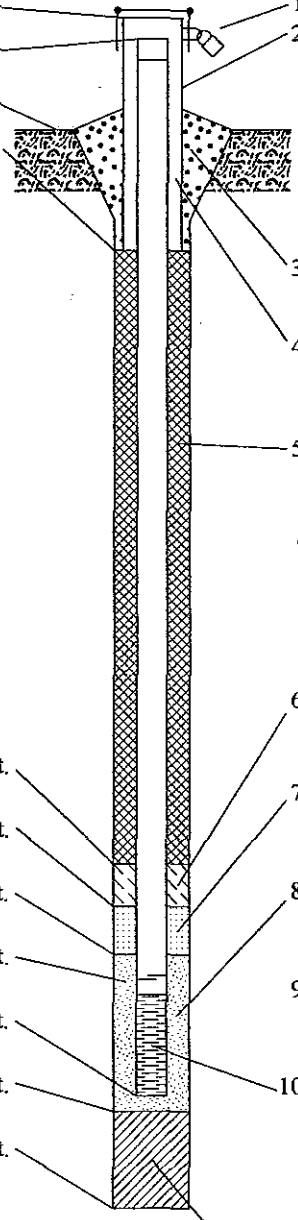
J. Filter pack, bottom ____ ft. MSL or 91.0 ft.

K. Borehole, bottom ____ ft. MSL or 91.0 ft.

L. Borehole, diameter 6.0 in.

M. O.D. well casing 2.37 in.

N. I.D. well casing 1.94 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 7.0 ft.
c. Material: Steel ☒ 0 4; Other ☐
d. Additional protection? ☐ Yes ☒ No
If yes, describe: ____

3. Surface seal: Bentonite ☒ 3 0; Concrete ☐ 0 1; Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 3 0; Sand; Other ☒

5. Annular space seal: a. Granular Bentonite ☐ 3 3
b. ____ Lbs/gal mud weight . Bentonite-sand slurry ☐ 3 5
c. ____ Lbs/gal mud weight . . . Bentonite slurry ☒ 3 1
d. ____ % Bentonite . . . Bentonite-cement grout ☐ 5 0
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 0 1; Tremie pumped ☒ 0 2; Gravity ☐ 0 8

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

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

8. Filter pack material: Manufacturer, product name and mesh size
a. #40 Badger
b. Volume added ____ ft^3

9. Well casing: Flush threaded PVC schedule 40 ☐ 2 3; Flush threaded PVC schedule 80 ☒ 2 4; Other ☐

10. Screen material: PVC
a. Screen Type: Factory cut ☒ 1 1; Continuous slot ☐ 0 1; Other ☐
b. Manufacturer Boart Longyear
c. Slot size: 0.010 in.
d. Slotted length: 5.0 ft.

11. Backfill material (below filter pack): None ☒ 1 4; Other ☐

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

Signature: ____ Firm: Boart Longyear Company, 101 Alderson Street Schofield, WI 54476 Tel: 715-359-7090 Fax: 715-355-5715

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

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 6-97

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

Facility/Project Name	County	Well Name
Minocqua Cleaners	Oneida	B-13B

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
	44		

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) 93.4 ft.

5. Inside diameter of well 1.94 in.

6. Volume of water in filter pack and well casing 69.4 gal.

7. Volume of water removed from well 110.0 gal.

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

9. Source of water added _____

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

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	14.97 ft.	14.97 ft.
Date b.	11/12/2004	11/12/2004
Time c.	12:00 pm	03:00 pm
12. Sediment in well bottom	inches	inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe) Slightly Muddy	Clear ☒ 20 Turbid ☐ 25 (Describe) Clear

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

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

16. Well developed by: Person's Name and Firm
J. Flaminio
Boart Longyear

17. Additional comments on development:

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

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

Signature: _____

Print Name: RON THALACKER

Firm: Boart Longyear Company

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 6-97

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

Facility/Project Name	County	Well Name
Minocqua Cleaners	Oneida	EW-5

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
	44		

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 375 min.

4. Depth of well (from top of well casing) 40.4 ft.

5. Inside diameter of well 8.00 in.

6. Volume of water in filter pack and well casing 27.5 gal.

7. Volume of water removed from well 2000.0 gal.

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

9. Source of water added _____

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

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	9.30 ft.	9.30 ft.
Date	b.	12/07/2004	12/07/2004
Time	c.	12:30 pm	05:00 pm
12. Sediment in well bottom		inches	inches
13. Water clarity		Clear ☐ 10 Turbid ☒ 15	Clear ☒ 20 Turbid ☐ 25
(Describe)		Turbid Brown	Clear

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

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

16. Well developed by: Person's Name and Firm
R. Radke
Boart Longyear

17. Additional comments on development:
Development Times Also Include: 12/10/04 Start: 10:45 A.M., End: 1:30 P.M. Sand at 29.2'. Bailed 1/2 of drum of sand & gravel out after pumping sand at 33.0'.

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

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

Signature: Ron Thalecker

Print Name: Ron Thalecker

Firm: Boart Longyear Company

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 6-97

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

Facility/Project Name	County	Well Name
Minocqua Cleaners	Oneida	EW-2

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
	44		

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 800 min.

4. Depth of well (from top of well casing) 83.8 ft.

5. Inside diameter of well 10.00 in.

6. Volume of water in filter pack and well casing 61.5 gal.

7. Volume of water removed from well 2000.0 gal.

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

9. Source of water added _____

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

		Before Development	After Development
11. Depth to Water (from top of well casing)	a.	14.30 ft.	14.30 ft.
Date	b.	12/07/2004	12/07/2004
Time	c.	07:30 am	12:30 pm
12. Sediment in well bottom		inches	inches
13. Water clarity		Clear ☐ 10 Turbid ☒ 15	Clear ☒ 20 Turbid ☐ 25
(Describe)		Turbid Brown	Clear

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

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

16. Well developed by: Person's Name and Firm
R. Radke
Boart Longyear

17. Additional comments on development:
Development Times Also Include: 12/9/04 Start: 3:45 P.M., End: 5:15 P.M.; 12/10/04 Start: 6:30 A.M., End: 10:30 A.M.; 12/10/04 Start: 1:40 P.M., End: 4:30 P.M. Bailed 1/4 drum of sand. Small gravel.

Facility Address or Owner/Responsible Party Address

Name: _____

Firm: _____

Street: _____

City/State/Zip: _____

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

Signature: _____

Print Name: Ron Imlocker

Firm: Boart Longyear Company

NOTE: See instructions for more information including a list of county codes and well type codes.

APPENDIX B

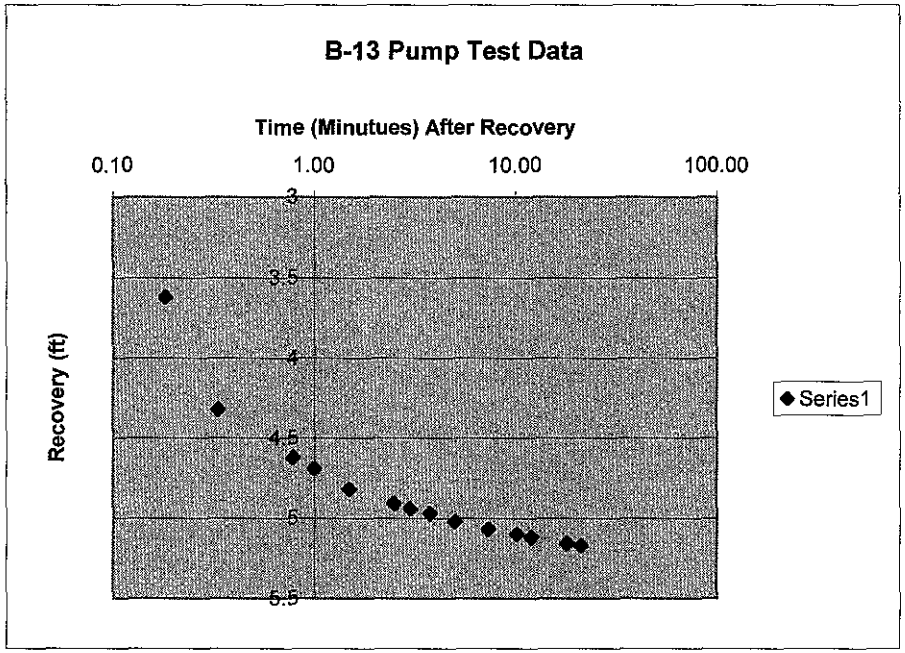
Pump Test Data

B-13 Pump Test Recovery Data
Former Minocqua Cleaners
Minocqua, WI

Test Date: 11/9/2004

Pumping Well Data

Recovery Time (Seconds)	Recovery Time (Minutes)	Drawdown (Feet)	Recovery (Feet)
0	0	5.36	0
11	0.18	1.74	3.62
20	0.33	1.04	4.32
47	0.78	0.74	4.62
60	1	0.67	4.69
90	1.5	0.54	4.82
150	2.5	0.45	4.91
180	3	0.42	4.94
225	3.75	0.39	4.97
300	5	0.34	5.02
440	7.33	0.29	5.07
610	10.17	0.26	5.1
720	12.00	0.24	5.12
1080	18.00	0.2	5.16
1270	21.17	0.19	5.17



Formula T = 264 * Q/^S

Q = Pump Rate

^S = Change in Drawdown over one log cycle

Q = Average Pumping rate was 21.9 gpm T = 264 * 21.9 gpm/0.41ft T = 14101.46 gpd/ft

^S = 0.41 ft

APPENDIX C

Laboratory Reports - Soil

CTLaboratories

1230 Lange Court
Baraboo, WI 53913-3109
Phone: (800) 228-3012
Fax: (608) 356-2766
www.ctlaboratories.com

ANALYTICAL REPORT

MSA PROFESSIONAL SERVICES
KEN GRADALL
1230 SOUTH BLVD
BARABOO, WI 53913

Project Name: MINOQUA CLEANERS
Contract #: 1362
Project #: 213132
Folder #: 44141
Purchase Order #:
Arrival Temperature: See COC

Report Date: 11/17/2004
Date Received: 11/15/2004

Reprint Date:

CTI LAB#: 285763 Sample Description: B-13B 5-7' Sampled: 11/8/2004 1500

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
Inorganic Results										
Solids, Percent	91.9	%	N/A	N/A	1.0			11/15/2004	CJB	EPA 5030A
Organic Results										
Acetone	<0.33	mg/kg	0.33	1.2	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0054	mg/kg	0.0054	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.014	mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromochloromethane	<0.015	mg/kg	0.015	0.051	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromodichloromethane	<0.015	mg/kg	0.015	0.051	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromoform	<0.015	mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromomethane	<0.024	mg/kg	0.024	0.082	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Butanone	<0.23	mg/kg	0.23	0.74	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Butylbenzene	<0.0087	mg/kg	0.0087	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
sec-Butylbenzene	<0.0076	mg/kg	0.0076	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
tert-Butylbenzene	<0.0087	mg/kg	0.0087	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon disulfide	<0.032	mg/kg	0.032	0.11	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon tetrachloride	<0.0098	mg/kg	0.0098	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chlorobenzene	<0.013	mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromochloromethane	<0.0065	mg/kg	0.0065	0.023	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroethane	<0.017	mg/kg	0.017	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroform	<0.0098	mg/kg	0.0098	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloromethane	<0.012	mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Chlorotoluene	<0.0054	mg/kg	0.0054	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Chlorotoluene	<0.011	mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromo-3-chloropropane	<0.015	mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

WI DNR Lab Certification Number: 157066030
DATCP Certification Number: 105-000289
LA NELAP Certification Number: 04091

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285763 Sample Description: B-13B 5-7' Sampled: 11/8/2004 1500

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,2-Dibromoethane	<0.014	mg/kg	0.014	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromomethane	<0.0098	mg/kg	0.0098	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichlorobenzene	<0.0054	mg/kg	0.0054	0.016	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichlorobenzene	<0.012	mg/kg	0.012	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,4-Dichlorobenzene	<0.0098	mg/kg	0.0098	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dichlorodifluoromethane	<0.014	mg/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethane	<0.014	mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloroethane	<0.0087	mg/kg	0.0087	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethene	<0.014	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,2-Dichloroethene	<0.012	mg/kg	0.012	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,2-Dichloroethene	<0.017	mg/kg	0.017	0.058	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloropropane	<0.0076	mg/kg	0.0076	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichloropropane	<0.012	mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2,2-Dichloropropane	<0.011	mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloropropene	<0.014	mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,3-Dichloropropene	<0.016	mg/kg	0.016	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,3-Dichloropropene	<0.0098	mg/kg	0.0098	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Diisopropyl ether	<0.0087	mg/kg	0.0087	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Ethylbenzene	<0.0076	mg/kg	0.0076	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Hexachlorobutadiene	<0.014	mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Hexanone	<0.21	mg/kg	0.21	0.71	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Isopropylbenzene	<0.012	mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
p-Isopropyltoluene	<0.014	mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methyl tert-butyl ether	<0.0065	mg/kg	0.0065	0.020	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Methyl-2-pentanone	<0.13	mg/kg	0.13	0.45	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methylene chloride	<0.027	mg/kg	0.027	0.088	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Naphthalene	<0.013	mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Propylbenzene	<0.0054	mg/kg	0.0054	0.017	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Styrene	<0.0087	mg/kg	0.0087	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1,2-Tetrachloroethane	<0.013	mg/kg	0.013	0.044	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2,2-Tetrachloroethane	<0.0087	mg/kg	0.0087	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrachloroethene	0.076	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrahydrofuran	<0.17	mg/kg	0.17	0.58	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Toluene	<0.0076	mg/kg	0.0076	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichlorobenzene	<0.014	mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trichlorobenzene	<0.012	mg/kg	0.012	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1-Trichloroethane	<0.0098	mg/kg	0.0098	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285763 Sample Description: B-13B 5-7' Sampled: 11/8/2004 1500

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,1,2-Trichloroethane	<0.013	mg/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.016	mg/kg	0.016	0.053	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane	<0.011	mg/kg	0.011	0.035	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane	<0.018	mg/kg	0.018	0.061	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.0087	mg/kg	0.0087	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.0087	mg/kg	0.0087	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Vinyl chloride	<0.012	mg/kg	0.012	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene	<0.021	mg/kg	0.021	0.067	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene	<0.013	mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

CTI LAB#: 285764 Sample Description: B-13B 10-12' Sampled: 11/8/2004 1515

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
Inorganic Results										
Solids, Percent	95.7	%	N/A	N/A	1.0			11/15/2004	CJB	EPA 5030A
Organic Results										
Acetone	<0.31	mg/kg	0.31	1.1	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0052	mg/kg	0.0052	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.014	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromochloromethane	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromodichloromethane	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromoform	<0.015	mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromomethane	<0.023	mg/kg	0.023	0.078	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Butanone	<0.22	mg/kg	0.22	0.71	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Butylbenzene	<0.0084	mg/kg	0.0084	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
sec-Butylbenzene	<0.0073	mg/kg	0.0073	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
tert-Butylbenzene	<0.0084	mg/kg	0.0084	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon disulfide	<0.030	mg/kg	0.030	0.10	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon tetrachloride	<0.0094	mg/kg	0.0094	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chlorobenzene	<0.013	mg/kg	0.013	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromochloromethane	<0.0063	mg/kg	0.0063	0.022	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroethane	<0.017	mg/kg	0.017	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroform	<0.0094	mg/kg	0.0094	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloromethane	<0.011	mg/kg	0.011	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Chlorotoluene	<0.0052	mg/kg	0.0052	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Chlorotoluene	<0.010	mg/kg	0.010	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285764 Sample Description: B-13B 10-12' Sampled: 11/8/2004 1515

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,2-Dibromo-3-chloropropane	<0.015	mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromoethane	<0.014	mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromomethane	<0.0094	mg/kg	0.0094	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichlorobenzene	<0.0052	mg/kg	0.0052	0.016	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichlorobenzene	<0.011	mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,4-Dichlorobenzene	<0.0094	mg/kg	0.0094	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dichlorodifluoromethane	<0.014	mg/kg	0.014	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethane	<0.014	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloroethane	<0.0084	mg/kg	0.0084	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethene	<0.014	mg/kg	0.014	0.044	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,2-Dichloroethene	<0.011	mg/kg	0.011	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,2-Dichloroethene	<0.017	mg/kg	0.017	0.055	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloropropane	<0.0073	mg/kg	0.0073	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichloropropane	<0.011	mg/kg	0.011	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2,2-Dichloropropane	<0.010	mg/kg	0.010	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloropropene	<0.014	mg/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,3-Dichloropropene	<0.016	mg/kg	0.016	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,3-Dichloropropene	<0.0094	mg/kg	0.0094	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Diisopropyl ether	<0.0084	mg/kg	0.0084	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Ethylbenzene	<0.0073	mg/kg	0.0073	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Hexachlorobutadiene	<0.014	mg/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Hexanone	<0.20	mg/kg	0.20	0.68	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Isopropylbenzene	<0.011	mg/kg	0.011	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
p-Isopropyltoluene	<0.014	mg/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methyl tert-butyl ether	<0.0063	mg/kg	0.0063	0.019	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Methyl-2-pentanone	<0.13	mg/kg	0.13	0.43	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methylene chloride	<0.026	mg/kg	0.026	0.085	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Naphthalene	<0.013	mg/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Propylbenzene	<0.0052	mg/kg	0.0052	0.017	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Styrene	<0.0084	mg/kg	0.0084	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1,2-Tetrachloroethane	<0.013	mg/kg	0.013	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2,2-Tetrachloroethane	<0.0084	mg/kg	0.0084	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrachloroethene	<0.014	mg/kg	0.014	0.044	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrahydrofuran	<0.17	mg/kg	0.17	0.55	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Toluene	<0.0073	mg/kg	0.0073	0.024	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichlorobenzene	<0.014	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trichlorobenzene	<0.011	mg/kg	0.011	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285764 Sample Description: B-13B 10-12' Sampled: 11/8/2004 1515

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,1,1-Trichloroethane	<0.0094	mg/kg	0.0094	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2-Trichloroethane	<0.013	mg/kg	0.013	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.016	mg/kg	0.016	0.051	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane	<0.010	mg/kg	0.010	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane	<0.018	mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.0084	mg/kg	0.0084	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.0084	mg/kg	0.0084	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Vinyl chloride	<0.011	mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene	<0.020	mg/kg	0.020	0.065	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene	<0.013	mg/kg	0.013	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

CTI LAB#: 285765 Sample Description: B-13B 37-39' Sampled: 11/10/2004 0930

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
Inorganic Results										
Solids, Percent	87.8	%	N/A	N/A	1.0			11/15/2004	CJB	EPA 5030A
Organic Results										
Acetone	<0.34	mg/kg	0.34	1.3	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0057	mg/kg	0.0057	0.019	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.015	mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromochloromethane	<0.016	mg/kg	0.016	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromodichloromethane	<0.016	mg/kg	0.016	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromoform	<0.016	mg/kg	0.016	0.055	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromomethane	<0.025	mg/kg	0.025	0.085	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Butanone	<0.24	mg/kg	0.24	0.77	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Butylbenzene	<0.0091	mg/kg	0.0091	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
sec-Butylbenzene	<0.0080	mg/kg	0.0080	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
tert-Butylbenzene	<0.0091	mg/kg	0.0091	0.031	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon disulfide	<0.033	mg/kg	0.033	0.11	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon tetrachloride	<0.010	mg/kg	0.010	0.035	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chlorobenzene	<0.014	mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromochloromethane	<0.0068	mg/kg	0.0068	0.024	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroethane	<0.018	mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroform	<0.010	mg/kg	0.010	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloromethane	<0.013	mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Chlorotoluene	<0.0057	mg/kg	0.0057	0.019	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285765 Sample Description: B-13B 37-39' Sampled: 11/10/2004 0930

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
4-Chlorotoluene	<0.011	mg/kg	0.011	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromo-3-chloropropane	<0.016	mg/kg	0.016	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromoethane	<0.015	mg/kg	0.015	0.051	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromomethane	<0.010	mg/kg	0.010	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichlorobenzene	<0.0057	mg/kg	0.0057	0.017	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichlorobenzene	<0.013	mg/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,4-Dichlorobenzene	<0.010	mg/kg	0.010	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dichlorodifluoromethane	<0.015	mg/kg	0.015	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethane	<0.015	mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloroethane	<0.0091	mg/kg	0.0091	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethene	<0.015	mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,2-Dichloroethene	<0.013	mg/kg	0.013	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,2-Dichloroethene	<0.018	mg/kg	0.018	0.060	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloropropane	<0.0080	mg/kg	0.0080	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichloropropane	<0.013	mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2,2-Dichloropropane	<0.011	mg/kg	0.011	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloropropene	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,3-Dichloropropene	<0.017	mg/kg	0.017	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,3-Dichloropropene	<0.010	mg/kg	0.010	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Diisopropyl ether	<0.0091	mg/kg	0.0091	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Ethylbenzene	<0.0080	mg/kg	0.0080	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Hexachlorobutadiene	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Hexanone	<0.22	mg/kg	0.22	0.74	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Isopropylbenzene	<0.013	mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
p-Isopropyltoluene	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methyl tert-butyl ether	<0.0068	mg/kg	0.0068	0.021	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Methyl-2-pentanone	<0.14	mg/kg	0.14	0.47	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methylene chloride	<0.028	mg/kg	0.028	0.092	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Naphthalene	<0.014	mg/kg	0.014	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Propylbenzene	<0.0057	mg/kg	0.0057	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Styrene	<0.0091	mg/kg	0.0091	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1,2-Tetrachloroethane	<0.014	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2,2-Tetrachloroethane	<0.0091	mg/kg	0.0091	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrachloroethene	<0.015	mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrahydrofuran	<0.18	mg/kg	0.18	0.60	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Toluene	<0.0080	mg/kg	0.0080	0.026	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichlorobenzene	<0.015	mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285765 Sample Description: B-13B 37-39' Sampled: 11/10/2004 0930

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,2,4-Trichlorobenzene	<0.013	mg/kg	0.013	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1-Trichloroethane	<0.010	mg/kg	0.010	0.035	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2-Trichloroethane	<0.014	mg/kg	0.014	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.017	mg/kg	0.017	0.056	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane	<0.011	mg/kg	0.011	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane	<0.019	mg/kg	0.019	0.064	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.0091	mg/kg	0.0091	0.031	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.0091	mg/kg	0.0091	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Vinyl chloride	<0.013	mg/kg	0.013	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene	<0.022	mg/kg	0.022	0.071	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene	<0.014	mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

CTI LAB#: 285766 Sample Description: B-13A DRILL CUTTINGS Sampled: 11/11/2004 1800

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
Inorganic Results										
Solids, Percent	73.5	%	N/A	N/A	1.0			11/15/2004	CJB	EPA 5030A
Organic Results										
Acetone	<0.41	mg/kg	0.41	1.5	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0068	mg/kg	0.0068	0.023	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.018	mg/kg	0.018	0.060	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromochloromethane	<0.019	mg/kg	0.019	0.064	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromodichloromethane	<0.019	mg/kg	0.019	0.064	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromoform	<0.019	mg/kg	0.019	0.065	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromomethane	<0.030	mg/kg	0.030	0.10	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Butanone	<0.29	mg/kg	0.29	0.93	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Butylbenzene	<0.011	mg/kg	0.011	0.035	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
sec-Butylbenzene	<0.0095	mg/kg	0.0095	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
tert-Butylbenzene	<0.011	mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon disulfide	<0.039	mg/kg	0.039	0.13	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon tetrachloride	<0.012	mg/kg	0.012	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chlorobenzene	<0.016	mg/kg	0.016	0.056	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromochloromethane	<0.0082	mg/kg	0.0082	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroethane	<0.022	mg/kg	0.022	0.071	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroform	<0.012	mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloromethane	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

WI DNR Lab Certification Number: 157066030
DATCP Certification Number: 105-000289
LA NELAP Certification Number: 04091

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285766 Sample Description: B-13A DRILL CUTTINGS Sampled: 11/11/2004 1800

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
2-Chlorotoluene	<0.0068	mg/kg	0.0068	0.023	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Chlorotoluene	<0.014	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromo-3-chloropropane	<0.019	mg/kg	0.019	0.063	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromoethane	<0.018	mg/kg	0.018	0.061	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromomethane	<0.012	mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichlorobenzene	<0.0068	mg/kg	0.0068	0.020	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichlorobenzene	<0.015	mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,4-Dichlorobenzene	<0.012	mg/kg	0.012	0.039	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dichlorodifluoromethane	<0.018	mg/kg	0.018	0.056	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethane	<0.018	mg/kg	0.018	0.060	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloroethane	<0.011	mg/kg	0.011	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethene	<0.018	mg/kg	0.018	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,2-Dichloroethene	<0.015	mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,2-Dichloroethene	<0.022	mg/kg	0.022	0.072	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloropropane	<0.0095	mg/kg	0.0095	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichloropropane	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2,2-Dichloropropane	<0.014	mg/kg	0.014	0.046	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloropropene	<0.018	mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,3-Dichloropropene	<0.020	mg/kg	0.020	0.068	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,3-Dichloropropene	<0.012	mg/kg	0.012	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Diisopropyl ether	<0.011	mg/kg	0.011	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Ethylbenzene	<0.0095	mg/kg	0.0095	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Hexachlorobutadiene	<0.018	mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Hexanone	<0.26	mg/kg	0.26	0.88	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Isopropylbenzene	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
p-Isopropyltoluene	<0.018	mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methyl tert-butyl ether	<0.0082	mg/kg	0.0082	0.024	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Methyl-2-pentanone	<0.16	mg/kg	0.16	0.56	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methylene chloride	<0.034	mg/kg	0.034	0.11	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Naphthalene	<0.016	mg/kg	0.016	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Propylbenzene	<0.0068	mg/kg	0.0068	0.022	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Styrene	<0.011	mg/kg	0.011	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1,2-Tetrachloroethane	<0.016	mg/kg	0.016	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2,2-Tetrachloroethane	<0.011	mg/kg	0.011	0.035	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrachloroethene	<0.018	mg/kg	0.018	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrahydrofuran	<0.22	mg/kg	0.22	0.72	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Toluene	<0.0095	mg/kg	0.0095	0.031	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285766 Sample Description: B-13A DRILL CUTTINGS Sampled: 11/11/2004 1800

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
1,2,3-Trichlorobenzene	<0.018	mg/kg	0.018	0.060	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trichlorobenzene	<0.015	mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1-Trichloroethane	<0.012	mg/kg	0.012	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2-Trichloroethane	<0.016	mg/kg	0.016	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.020	mg/kg	0.020	0.067	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane	<0.014	mg/kg	0.014	0.044	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane	<0.023	mg/kg	0.023	0.076	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.011	mg/kg	0.011	0.037	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.011	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Vinyl chloride	<0.015	mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene	<0.026	mg/kg	0.026	0.084	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene	<0.016	mg/kg	0.016	0.056	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

CTI LAB#: 285767 Sample Description: B-8A 20-22 Sampled: 11/12/2004 1315

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
Inorganic Results										
Solids, Percent	85.0	%	N/A	N/A	1.0			11/15/2004	CJB	EPA 5030A
Organic Results										
Acetone	<0.35	mg/kg	0.35	1.3	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Benzene	<0.0059	mg/kg	0.0059	0.020	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromobenzene	<0.015	mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromochloromethane	<0.016	mg/kg	0.016	0.055	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromodichloromethane	<0.016	mg/kg	0.016	0.055	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromoform	<0.016	mg/kg	0.016	0.056	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Bromomethane	<0.026	mg/kg	0.026	0.088	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Butanone	<0.25	mg/kg	0.25	0.80	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Butylbenzene	<0.0094	mg/kg	0.0094	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
sec-Butylbenzene	<0.0082	mg/kg	0.0082	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
tert-Butylbenzene	<0.0094	mg/kg	0.0094	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon disulfide	<0.034	mg/kg	0.034	0.11	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Carbon tetrachloride	<0.011	mg/kg	0.011	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chlorobenzene	<0.014	mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromochloromethane	<0.0070	mg/kg	0.0070	0.025	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroethane	<0.019	mg/kg	0.019	0.061	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Chloroform	<0.011	mg/kg	0.011	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

WI DNR Lab Certification Number: 157066030
DATCP Certification Number: 105-000289
LA NELAP Certification Number: 04091

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285767 Sample Description: B-8A 20-22 Sampled: 11/12/2004 1315

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
Chloromethane	<0.013	mg/kg	0.013	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Chlorotoluene	<0.0059	mg/kg	0.0059	0.020	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Chlorotoluene	<0.012	mg/kg	0.012	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromo-3-chloropropane	<0.016	mg/kg	0.016	0.054	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dibromoethane	<0.015	mg/kg	0.015	0.053	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dibromomethane	<0.011	mg/kg	0.011	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichlorobenzene	<0.0059	mg/kg	0.0059	0.018	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichlorobenzene	<0.013	mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,4-Dichlorobenzene	<0.011	mg/kg	0.011	0.034	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Dichlorodifluoromethane	<0.015	mg/kg	0.015	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethane	<0.015	mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloroethane	<0.0094	mg/kg	0.0094	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloroethene	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,2-Dichloroethene	<0.013	mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,2-Dichloroethene	<0.019	mg/kg	0.019	0.062	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2-Dichloropropane	<0.0082	mg/kg	0.0082	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3-Dichloropropane	<0.013	mg/kg	0.013	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2,2-Dichloropropane	<0.012	mg/kg	0.012	0.040	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1-Dichloropropene	<0.015	mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
cis-1,3-Dichloropropene	<0.018	mg/kg	0.018	0.059	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
trans-1,3-Dichloropropene	<0.011	mg/kg	0.011	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Diisopropyl ether	<0.0094	mg/kg	0.0094	0.033	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Ethylbenzene	0.031	mg/kg	0.0082	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Hexachlorobutadiene	<0.015	mg/kg	0.015	0.050	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
2-Hexanone	<0.22	mg/kg	0.22	0.76	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Isopropylbenzene	<0.013	mg/kg	0.013	0.042	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
p-Isopropyltoluene	36	mg/kg	1.5	5.0	100.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methyl tert-butyl ether	<0.0070	mg/kg	0.0070	0.021	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
4-Methyl-2-pentanone	<0.14	mg/kg	0.14	0.48	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Methylene chloride	0.032	mg/kg	0.029	* 0.095	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Naphthalene	<0.014	mg/kg	0.014	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
n-Propylbenzene	<0.0059	mg/kg	0.0059	0.019	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Styrene	<0.0094	mg/kg	0.0094	0.029	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1,2-Tetrachloroethane	<0.014	mg/kg	0.014	0.047	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2,2-Tetrachloroethane	<0.0094	mg/kg	0.0094	0.030	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrachloroethene	<0.015	mg/kg	0.015	0.049	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Tetrahydrofuran	<0.19	mg/kg	0.19	0.62	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Solid sample results reported on a Dry Weight Basis

CTI LAB#: 285767 Sample Description: B-8A 20-22 Sampled: 11/12/2004 1315

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date	Analysis Date	Analyst	Method
Toluene	0.20	mg/kg	0.0082	0.027	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichlorobenzene	<0.015	mg/kg	0.015	0.052	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trichlorobenzene	<0.013	mg/kg	0.013	0.045	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,1-Trichloroethane	<0.011	mg/kg	0.011	0.036	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,1,2-Trichloroethane	<0.014	mg/kg	0.014	0.043	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichloroethene	<0.018	mg/kg	0.018	0.057	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Trichlorofluoromethane	<0.012	mg/kg	0.012	0.038	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,3-Trichloropropane	<0.020	mg/kg	0.020	0.066	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,2,4-Trimethylbenzene	<0.0094	mg/kg	0.0094	0.032	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
1,3,5-Trimethylbenzene	<0.0094	mg/kg	0.0094	0.028	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
Vinyl chloride	<0.013	mg/kg	0.013	0.041	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
m & p-Xylene	<0.022	mg/kg	0.022	0.073	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B
o-Xylene	<0.014	mg/kg	0.014	0.048	1.0		11/15/2004	11/16/2004	GRB	EPA 8260B

Notes regarding entire Chain of Custody:

Notes: * Indicates Value in between LOD and LOQ.
All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

Submitted by: _____

QC Qualifiers

Code	Description
A	Analyte averaged calibration criteria within acceptable limits.
B	Analyte detected in associated Method Blank.
C	Toxicity present in BOD sample.
D	Diluted Out.
E	Safe, No Total Coliform detected.
F	Unsafe, Total Coliform detected, no E. Coli detected.
G	Unsafe, Total Coliform detected and E. Coli detected.
H	Holding time exceeded.
J	Estimated value.
L	Significant peaks were detected outside the chromatographic window.
M	Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits.
N	Insufficient BOD oxygen depletion.
O	Complete BOD oxygen depletion.
P	Concentration of analyte differs more than 40% between primary and confirmation analysis.
Q	Laboratory Control Sample outside acceptance limits.
R	See Narrative at end of report.
S	Surrogate standard recovery outside acceptance limits due to apparent matrix effects.
T	Sample received with improper preservation or temperature.
V	Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference.
W	Sample amount received was below program minimum.
X	Analyte exceeded calibration range.
Y	Replicate/Duplicate precision outside acceptance limits.
Z	Calibration criteria exceeded.

UST Chain of Custody

CTLaboratories

1230 Lange Court, Baraboo, WI 53913
608-356-2760 Tel. Fx 608-356-2766
www.ctlaboratories.com

Page ____ of ____

Company Name: MSA

Project Contact: Ken Gradall
Telephone: 608-356-2771
Project Name: Minoqua Cleaners
Project Number: 21312
Project Location: WI
Sampled By: Ken Gradall

Regulatory Program:
UST RCRA SDWA NPDES
Solid Waste Other ____

Folder #: 44141
Company: MSA PROFESSIONAL S
Project: MINOQUA CLEANERS
Logged By: AWK PM: ETK

Ice Present: (Yes) No
Temperature 7.2
Initials AWK
Date 11/15/04 Time 8:37
Cooler # 1160

Mail Report To: Ken Gradall
Company: MSA
Address: 1230 South Blvd.
City/State/Zip: Baraboo, WI 53913
Invoice To: Above
Address:
City/State/Zip:
PO No.
Contract No.

Turnaround Time
(Normal) RUSH* Date Needed ____
*Notify Lab prior to sending in RUSH
Surcharges 24 hr 200% 2-3 days 100% 4-9 days 50%
Surcharges subject to change without notice.

Landfill License Number ____

Collection Date	Collection Time	Field Screen	Field ID	Grab/ ~~Comp~~	Sample ID	Filt'd Y/N	WDNR Well ID #	**Matrix:	DRO	GRO	GRO/PVOC	PVOC	LEAD	CADIUM	VOC ~~8021 HSA~~ 8260	PAH	%SOLIDS			Total No of Containers	Total No of Cont. Rec'd	Preservation*	Client Special Instructions: / Lab ID #
							Fill in Spaces with Bottles per Test																	
11/4/04	3:00	0			~~B-13B 5-7'~~																		
	~~3:10~~	~~0~~			B-13B 5-7'			S							X					2	2	F	285763
	3:15	0			B-13B 10-12'			S							X					2	2	F	285764
11/10/04	9:30				B-18B 37-39			S							X					2		F	285765
11/10/04	6:00				B-13A Drill Cuttings			S							X					2		F	285766
11/12/04	1:15	56			B&A 30-32			S							X					2		F	285767

Relinquished By:	Date/Time	Received by:	Date/Time
Ken Gradall	11/15/04 8:30		
Relinquished By:	Date/Time	Received by:	Date/Time
			11/15/04 8:57

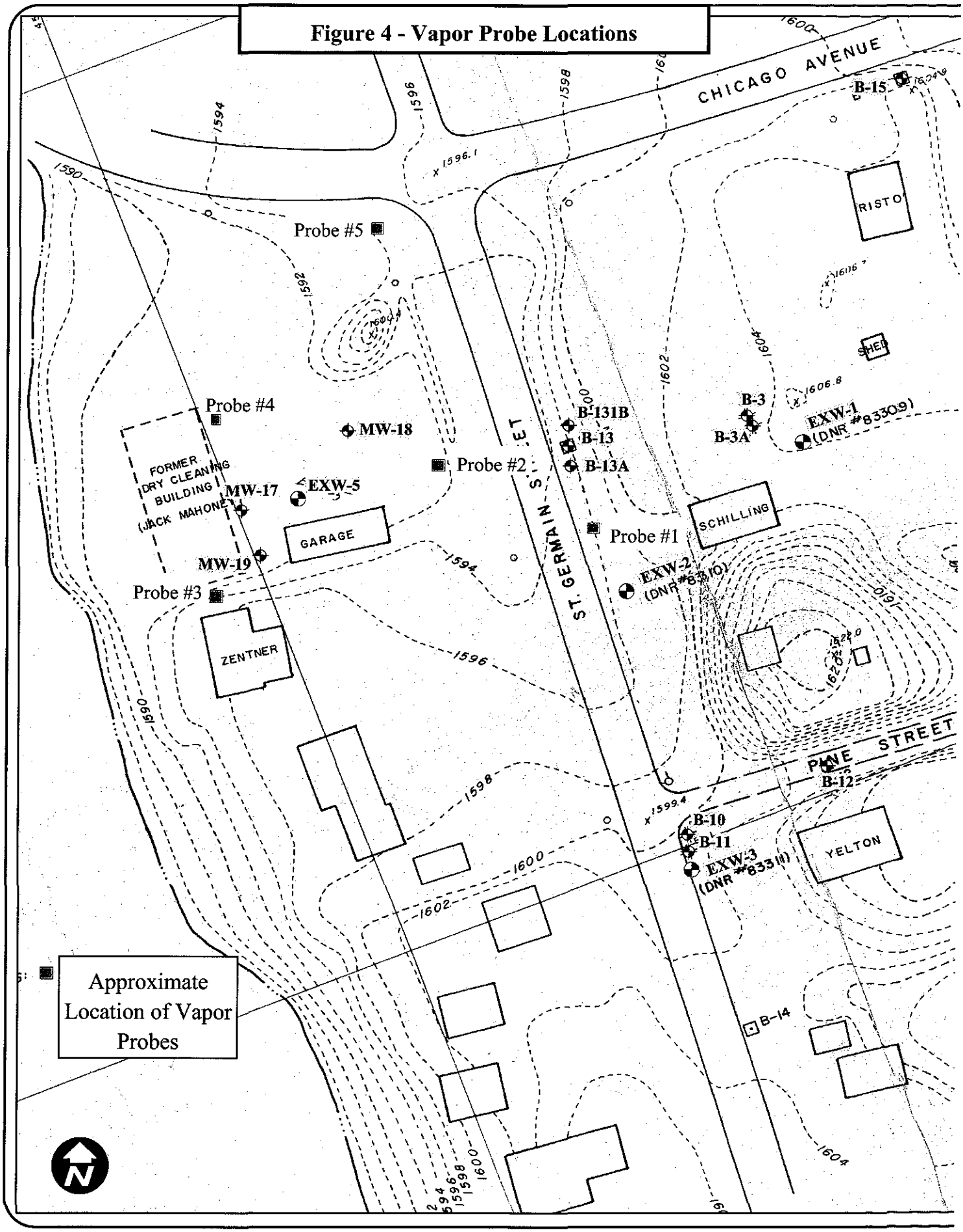
**Matrix
S - Soil A - Air Slg - Sludge M - Misc Waste
GW - Groundwater SW - Surface Water
WW - Wastewater DW - Drinking Water

* Preservation Code
A=None B=HCL
C=H2SO4
D=HNO3 E=Encore
F=Methanol
G=NaOH
O=Other ____

APPENDIX D

Vapor Probe Construction Forms

Figure 4 - Vapor Probe Locations



State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Minocqua Cleaners	Local Grid Location of Well: ____ ft. ☐N ☐S, ____ ft. ☐E ☐W	Well Name: VP-1
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ____ ° ____ ' ____ " Long. ____ ° ____ ' ____ " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 8/10/2005 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____ T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Geiss Inc. Jeff Annis
Distance from Waste/Source ____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number

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 0.0 ft.

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

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☐ 41
Direct Push 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, if required):

E. Bentonite seal, top ____ ft. MSL or 2.0 ft.
F. ~~Fine sand, top~~ ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 6' ft.
H. Screen joint, top ____ ft. MSL or 5' ft.
I. Well bottom ____ ft. MSL or 10' ft.
J. Filter pack, bottom ____ ft. MSL or 10' ft.
K. Borehole, bottom ____ ft. MSL or 10' ft.
L. Borehole, diameter 2.0 in.
M. O.D. well casing 1.5 in.
N. I.D. well casing 1.0 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04
Other ☐
d. Additional protection? ☐ Yes ☐ No
If yes, describe: ____
3. Surface seal: Bentonite ☒ 30
Concrete ☐ 01
Other ☐
4. Material between well casing and protective pipe:
Bentonite ☐ 30
Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☑ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01
Tremie pumped ☐ 02
Gravity ☑ 08
6. Bentonite seal: a. Bentonite granules ☑ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite chips ☐ 32
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23
Flush threaded PVC schedule 80 ☐ 24
Other ☐
10. Screen material: Sch 40 PVC
a. Screen type: Factory cut ☒ 11
Continuous slot ☐ 01
Other ☐
b. Manufacturer CENTURY
c. Slot size: 0.01 in.
d. Slotted length: 5 ft.
11. Backfill material (below filter pack): None ☒ 14
Other ☐

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

Signature: J. F. Annis | Firm: Geiss Inc.

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

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: MIRACQUA CLEANERS	Local Grid Location of Well: ____ ft. ☐N ☐S ____ ft. ☐E ☐W	Well Name: VP-2
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ____ ° ' " Long. ____ ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 07/08/2005 (m m d d y y y y)
Type of Well: Well Code 1	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____ T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: GEISS INC. JEFF ANNIS
Distance from Waste/Source ____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known / Gov. Lot Number	

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 0.6 ft.

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

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☐ 41
DIRECT PUSH 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, if required):

E. Bentonite seal, top ____ ft. MSL or 0.6 ft.
F. ~~Fine sand, top~~ ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 6' ft.
H. Screen joint, top ____ ft. MSL or 5' ft.
I. Well bottom ____ ft. MSL or 10' ft.
J. Filter pack, bottom ____ ft. MSL or 10' ft.
K. Borehole, bottom ____ ft. MSL or 10' ft.
L. Borehole, diameter 2.0 in.
M. O.D. well casing 1.5 in.
N. I.D. well casing 1.0 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ____ in.
b. Length: ____ ft.
c. Material: ____ Steel ☐ 04 Other ☐
d. Additional protection? ☐ Yes ☐ No
If yes, describe: ____
3. Surface seal: ____ Bentonite ☒ 30 Concrete ☐ 01 Other ☐
4. Material between well casing and protective pipe: ____ Bentonite ☐ 30 Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite chips ☐ 32
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. #30 RED FLINT
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #30 RED FLINT
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐
10. Screen material: SCH 40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
b. Manufacturer CENTURY
c. Slot size: 0.01 in.
d. Slotted length: 5 ft.
11. Backfill material (below filter pack): None ☒ 14 Other ☐

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

Signature: J.F. Annis Firm: GEISS INC.

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

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Minocqua Cleaners	Local Grid Location of Well: _____ ft. ☐N ☐S _____ ft. ☐E ☐W	Well Name: VP-3
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. _____ ° _____ ' _____ " Long. _____ ° _____ ' _____ " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 07/08/2005 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Geiss Inc / Jeff Annis
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number

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 0.0 ft.

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

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Direct Push / 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, if required):

E. Bentonite seal, top _____ ft. MSL or 0.0 ft.
F. ~~Fine sand, top~~ _____ ft. MSL or _____ ft.
G. Filter pack, top _____ ft. MSL or 1.5' ft.
H. Screen joint, top _____ ft. MSL or 2.5' ft.
I. Well bottom _____ ft. MSL or 5.5' ft.
J. Filter pack, bottom _____ ft. MSL or 5.5' ft.
K. Borehole, bottom _____ ft. MSL or 5.5' ft.
L. Borehole, diameter 2.0 in.
M. O.D. well casing 1.5 in.
N. I.D. well casing 1.0 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04 / Other ☐
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____
3. Surface seal: Bentonite ☒ 30 / Concrete ☐ 01 / Other ☐
4. Material between well casing and protective pipe: Bentonite ☐ 30 / Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐
10. Screen material: Sch 40 PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐
b. Manufacturer: Century
c. Slot size: 0.01 in.
d. Slotted length: 5 ft.
11. Backfill material (below filter pack): None ☒ 14 / Other ☐

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

Signature: J. F. Annis | Firm: Geiss Inc.

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

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Mivocqua Cleaners	Local Grid Location of Well: ____ ft. ☐N ☐S ____ ft. ☐E ☐W	Well Name: VP-4
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ____ ° ____ ' ____ " Long. ____ ° ____ ' ____ " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 07/08/2005 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Geiss Inc. / Jeff Annis
Distance from Waste/Source ____ ft.	Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
		Gov. Lot Number

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 0.0 ft.

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

13. Sieve analysis performed? ☐ Yes ☐ No

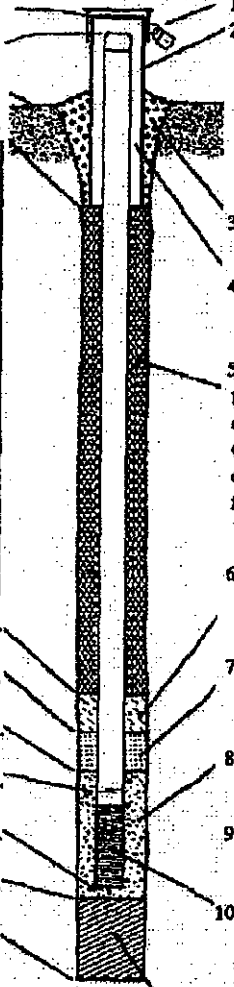
14. Drilling method used: Rotary ☐ 50
Direct Push — Hollow Stem Auger ☐ 41
Other ☒

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, if required):

E. Bentonite seal, top _____ ft. MSL or 0.0 ft.
F. Fine sand, top _____ ft. MSL or _____ ft.
G. Filter pack, top _____ ft. MSL or 1' ft.
H. Screen joint, top _____ ft. MSL or 2' ft.
I. Well bottom _____ ft. MSL or 7' ft.
J. Filter pack, bottom _____ ft. MSL or 7' ft.
K. Borehole, bottom _____ ft. MSL or 7' ft.
L. Borehole, diameter 2.0 in.
M. O.D. well casing 1.5 in.
N. I.D. well casing 1.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04 Other ☐
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____
3. Surface seal: Bentonite ☒ 30 Concrete ☐ 01 Other ☐
4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐
10. Screen material: Sch 40 PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
b. Manufacturer Century
c. Slot size: 0.01 in.
d. Slotted length: 5 ft.
11. Backfill material (below filter pack): None ☒ 14 Other ☐

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

Signature: J.F. Annis | Firm: Geiss Inc.

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

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: MINOCQUA CLEANERS	Local Grid Location of Well ☐ N. ☐ S. ____ ft. ☐ E. ☐ W. ____ ft.	Well Name: VP-5
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 07/08/2005 (m m d d y y y y)
Type of Well / Well Code: 1	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E. ☐ W.	Well Installed By: Name (first, last) and Firm: GEISS INC / JEFF ANNIS
Distance from Waste/Source ____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number

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 0.0 ft.

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

13. Sieve analysis performed? ☐ Yes ☐ No

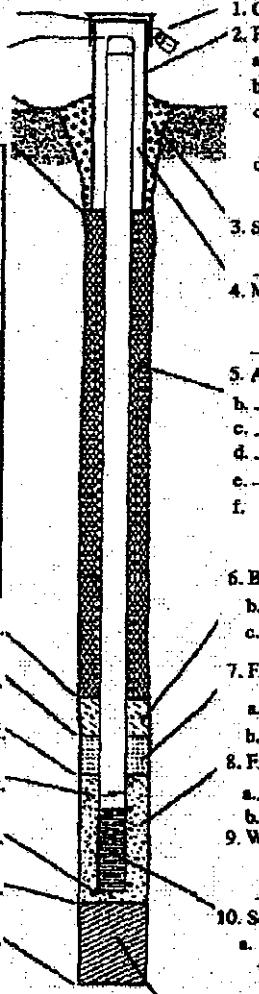
14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☐ 41
DIRECT PUSH Other ☒

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, if required):

E. Bentonite seal, top ____ ft. MSL or 0.0 ft.
F. ~~Fine sand, top~~ ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 1' ft.
H. Screen joint, top ____ ft. MSL or 2' ft.
I. Well bottom ____ ft. MSL or 7' ft.
J. Filter pack, bottom ____ ft. MSL or 7' ft.
K. Borehole, bottom ____ ft. MSL or 7' ft.
L. Borehole, diameter 2.0 in.
M. O.D. well casing 1.5 in.
N. I.D. well casing 1.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ____ in.
b. Length: ____ ft.
c. Material: Steel ☐ 04
Other ☐
d. Additional protection? ☐ Yes ☐ No
If yes, describe: ____
3. Surface seal: Bentonite ☒ 30
Concrete ☐ 01
Other ☐
4. Material between well casing and protective pipe:
Bentonite ☐ 30
Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01
Tremie pumped ☐ 02
Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite chips ☐ 32
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. #30 Red Flint
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23
Flush threaded PVC schedule 80 ☐ 24
Other ☐
10. Screen material: Sch 40 PVC
a. Screen type: Factory cut ☒ 11
Continuous slot ☐ 01
Other ☐
b. Manufacturer ____
c. Slot size: 0.01 in.
d. Slotted length: 5 ft.
11. Backfill material (below filter pack): None ☒ 14
Other ☐

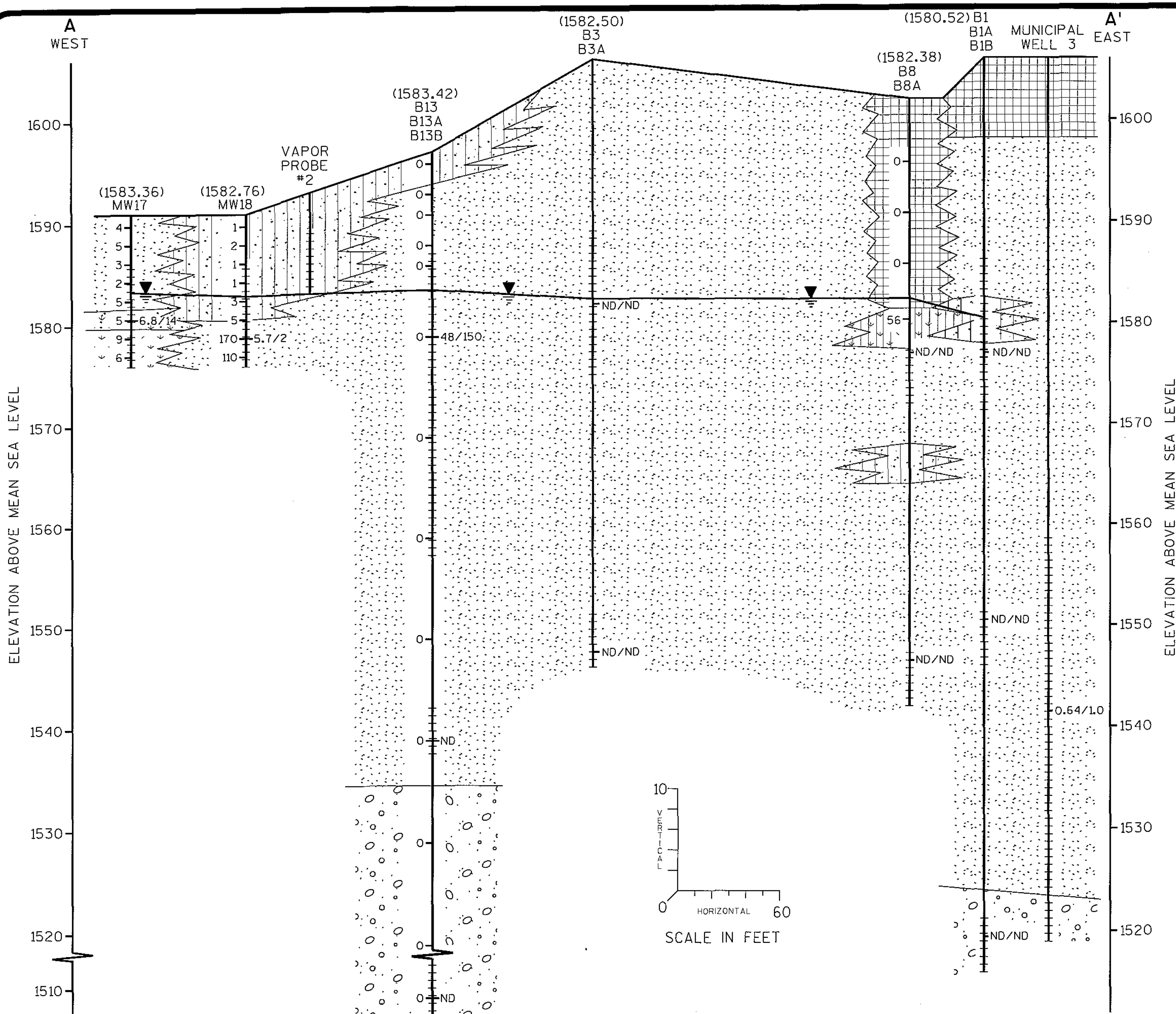
I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: L.F. Annis | Firm: GEISS INC.

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

APPENDIX E

Geologic Cross Sections



LEGEND

- FILL - BROWN FINE SAND, WITH SILT AND GRAVEL
- GLACIAL OUTWASH, BROWN FINE-MEDIUM SAND, TRACE TO SOME GRAVEL
- BROWN-REDDISH BROWN SILTY FINE SAND
- BLACK ORGANIC SILT
- BROWN FINE TO MEDIUM SAND WITH TRACE OF PEAT
- DARK BROWN PEAT WITH SAND AND TRACE OF CLAY
- BROWN FINE TO COARSE GRAVEL, SAND WITH VARYING AMOUNTS OF GRAVEL AND COBBLES

(1583.36) ← GROUNDWATER ELEVATION
MW17 ← WELL OR BORING I.D.
10 — 6.8/14 ← GROUNDWATER CONCENTRATIONS OF PCE/TCE ON 12/6/04 IN μg/L. ND = NOT DETECTED.
SCREENED INTERVAL IN WELL
22 — PID UNITS
GROUNDWATER ELEVATION

GEOLOGIC CROSS SECTION A-A'

MINOQUA CLEANERS
MINOCQUA, WISCONSIN

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770
© MSA PROFESSIONAL SERVICES

DRAWN BY RHM	DATE 3-30-06	SHEET ---- of ----	
CHECKED BY	SCALE AS NOTED	FILE NO. 213132BD	

B
NORTH

B'
SOUTH

(1582.29)
B10
B11

(1583.16)
B5
B9

MUNICIPAL
WELL 4

(1583.36)
MW19

VAPOR
PROBE 3

(1583.36)
MW17

4 5 3 2 5 9 6
2 7 7 1 60 45 10 22

6.8/14

71/20

ND/ND

ND/ND

ND/ND

ND/ND

ELEVATION ABOVE MEAN SEA LEVEL

1600
1590
1580
1570
1560
1550
1540
1530
1520

LEGEND

- FILL - BROWN FINE SAND, WITH SILT AND GRAVEL
- GLACIAL OUTWASH, BROWN FINE- MEDIUM SAND, TRACE TO SOME GRAVEL
- BROWN-REDDISH BROWN SILTY FINE SAND
- BROWN FINE TO MEDIUM SAND WITH TRACE OF PEAT
- DARK BROWN PEAT WITH SAND AND TRACE OF CLAY

(1583.36) — GROUNDWATER ELEVATION
MW17 — WELL OR BORING I.D.
4 71/20 — GROUNDWATER CONCENTRATIONS OF PCE/TCE ON 12/6/04 IN µg/L. ND = NOT DETECTED.
9 — SCREENED INTERVAL IN WELL
PID UNITS
GROUNDWATER ELEVATION

10 VERTICAL
0 HORIZONTAL 60
SCALE IN FEET

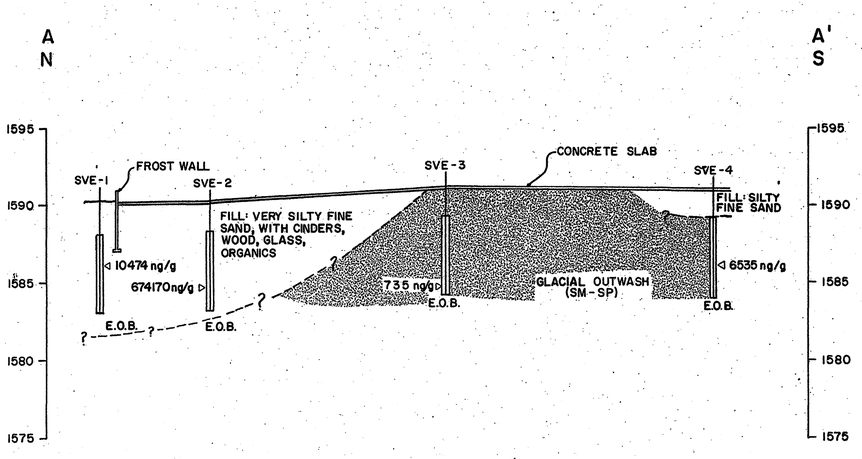
GEOLOGIC CROSS SECTION B-B'

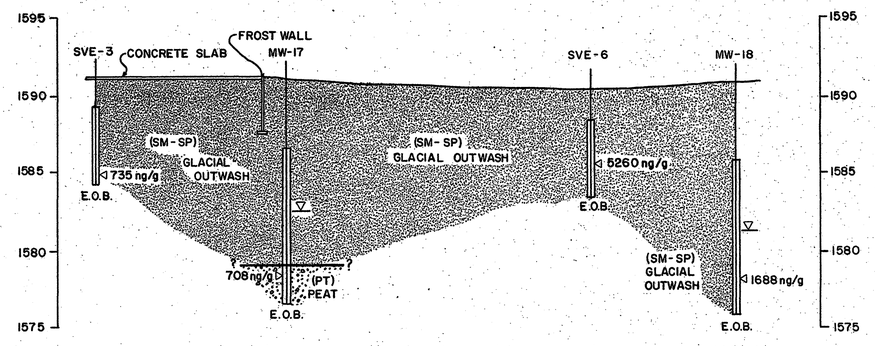
MINOQUA CLEANERS
MINOCQUA, WISCONSIN

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770

DRAWN BY RHM DATE 3-30-06 SHEET ____ of ____
CHECKED BY SCALE AS NOTED FILE NO. 213132AF

4-17-06
2:00 PM
$FILES

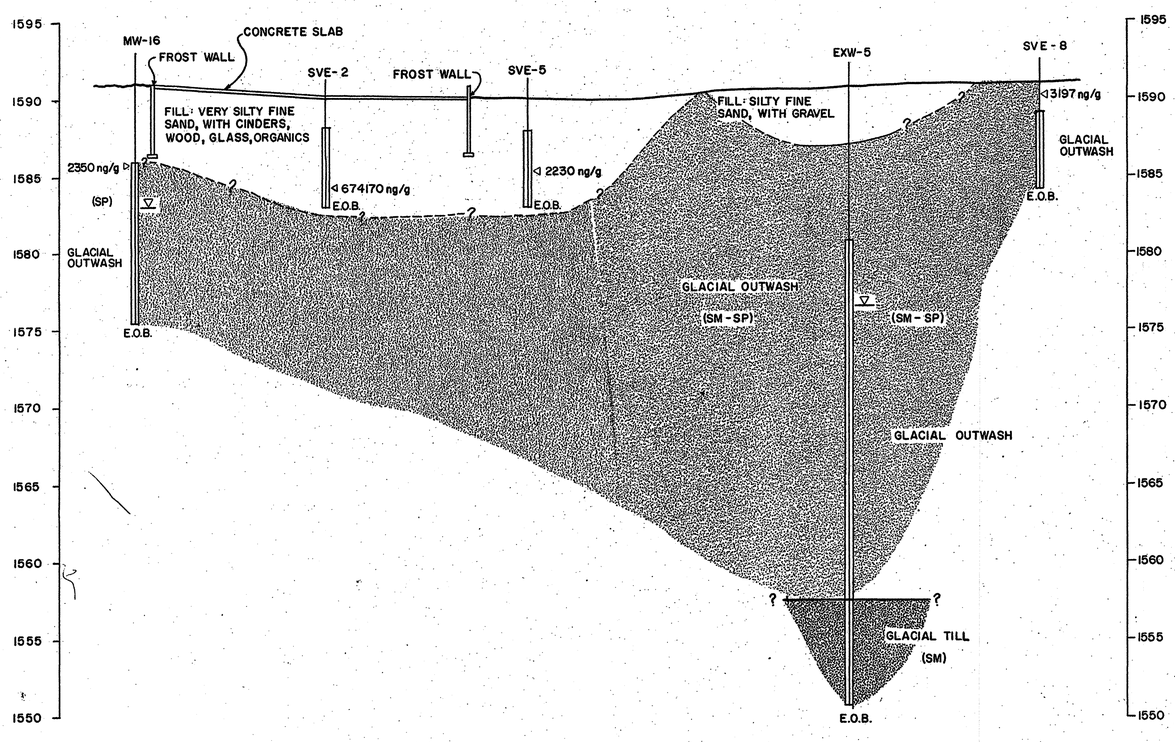




B
NW

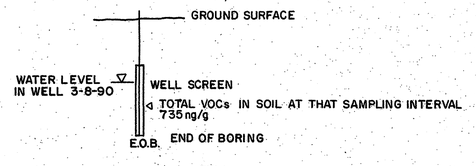
B'
SE

ELEVATION (USGS DATUM)



LEGEND

SYMBOL	USCS CLASSIFICATION	DESCRIPTION
	SM	FILL
	SM–SP	GLACIAL OUTWASH–VERY FINE TO FINE SAND, TRACE GRAVEL AND SILT
	SM	GLACIAL TILL–SILTY FINE TO COARSE SAND, LITTLE COARSE GRAVEL, TRACE COBBLES
	PT	PEAT–TRACE MEDIUM SAND AND CLAY



NOTES: 1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. IN-SITU, THE TRANSITION MAY BE GRADUAL. SOIL CONDITIONS BETWEEN BORINGS MAY VARY.
2.) PUMPING RATE OF EXW-5 ON 3-8-90 WAS 85 GPM
3.) DEPTH AND CONSTRUCTION OF THE FROST WALL IS APPROXIMATE.

HORIZONTAL: 1"= 10'
VERTICAL: 1"= 5'
VERTICAL EXAGGERATION = X2

STS Consultants Ltd.
Consulting Engineers

MINOCQUA CLEANERS
REMEDIAL ACTION DESIGN PLAN
WISC. DEPT. NATURAL RESOURCES

GEOLOGIC CROSS-SECTIONS
A-A', B-B', C-C'

REVISIONS NO.	DESCRIPTION	DATE	BY

DRAWN BY	DATE	SCALE	STS PROJECT NO.
G.S.H.	3-26-90	AS NOTED	17076XF
CHECKED BY	DATE	SHEET NO.	
P.L-E.	3-26-90	17076XF-9CD	

APPENDIX F

Municipal Well #3 and #4
Well Construction Reports

FAX

LAKELAND SANITARY DISTRICT NO. 1
8780 MORGAN ROAD
MINOCQUA, WI 54548-9797

PHONE: 715-356-4454
FAX: 715-358-8830
E-MAIL: www.sandist@nnex.net

FROM: Ron Groth

TO: Ken

DATE: 3/28/06 **TIME:** _____

NUMBER OF PAGES: 1
(INCLUDING COVER LETTER)

MESSAGE

Dec 6th, 2004

#3 well RAN from 7:00 am - 2:00 pm

Dec 7th, 2004

#3 well RAN from 6:00 AM - 12:15 pm

MARCH 22ND 2005

#3 well ran from 9:00 am - 2:00 pm

MARCH 23RD 2005

#3 well ran from 4:00 pm - 8:00 pm

August 31st - Sept 1st 2005

#3 RAN From 4:30 pm 8-31 to

1:30 am 9-1-05

FEB 14th + 15th

#3 RAN From 9:00pm on the 14th to 2:00am on the 15th. RAN For 10 minutes when Sampling on the 15th.

FAX

LAKELAND SANITARY DISTRICT NO. 1
8780 MORGAN ROAD
MINOCQUA, WI 54548-9797

PHONE: 715-356-4454
FAX: 715-358-8830
E-MAIL: www.sandist@nnex.net

FROM: Ron Groth

TO: Ken

DATE: 4/3/06 **TIME:**

NUMBER OF PAGES: 1
(INCLUDING COVER LETTER)

MESSAGE

#4 well

- Feb 6th + 7th 2004 #4 didn't run.
- Info on #3 well may have been wrong these are the correct Numbers.

  MARCH 22ND, 2005 - #3 didn't run. #4 9:00 AM - 2:30pm.

  MARCH 23RD #3 - 3:00 AM - 9:00 AM. #4 - 4:00 pm - 8:30 pm

- August 31, 2005 - #4 - 4:30 AM - 11:00 AM.
- Sept 1st - #4 - 10:00 AM - 5:15 pm.
- FEB 14th 2006 - #4 - 7:30 am - 12:50 pm
- FEB 15th - I don't have the chart, probably from around noon - 6:00 pm.

Well Construction Reports

Help

WI Unique Well No:	BG531	**High Capacity Well No:**	83300
County Well Location:		**DNR Region:**	Northern
County:	Oneida	**Muni Type:**	T
Municipality:	MINOCQUA	**Completion Date:**	01/01/1963 **mm/dd/yyyy**
DNR Received Date:		**Constructor:**	LAYNE CHRISTENSEN COMPANY
Constructor Address:	W229 N5005 DUPLAINVI	**Constructor City:**	PEWAUKEE
Constructor State:	WI	**Constructor Zip:**	53072
Status:	New Well	**Original Year:**	
Replacement Reason:		**Previous WI Well No:**	
Replacement WI Well No:		**Construction Type:**	1
Other Const. Type:		**Category:**	Municipal/Community
Well Depth:	95 **ft**	**# Services:**	
Facility Type:		**Highest Point on Property:**	
In Floodplain:		**Rotary - Mud Circulation:**	
Rotary - Air:		**Rotary - Foam:**	
Reverse Rotary:		**Cable Tool Bit:**	
Cable Bit Diameter:	**in**	**Temp Outer Casing:**	
Temp Casing Diameter:	**in**	**Temp Casing Removed:**	
Why not removed?:		**Other Drilling method:**	
Other Drilling Description:		**Screen Diameter:**	20 **inches**
Screen Description:		**Screen From:**	47 **feet**
Screen To:	87 **feet**	**Sealant Method:**	
Static Water level:	27 feet	**Pumping level:**	39 **feet**
Pumping at:	250	**Pumping units:**	Minutes
For:	0 **Hour(s)**	**Well Starting Depth:**	0 inches
Developed:		**Disinfected:**	
Capped:		**Proper Seal:**	
Seal Description:		**Contractor Signed on:**	
Rig Operator Signed on:		**Geologic Log Number:**	ON31
Common Well Number:	003	**Calculated Specific Capacity:**	20.8
DNR Facility ID:	744011620	**Well Name:**	MANITOWISH STREET WELL #3
Water Quality Comments:		**Water Quantity Comments:**	
Drilling Difficulty:		**Other Driller Comments:**	REHABBED IN 1977
Exception Areas:	Landfill	**Exception Area Comments:**	

Distances in Feet to Nearest Objects

No Records returned

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Drillhole Dimensions

Diameter (in)	From Depth (ft.)	To Depth (ft.)
46	0	47
19	47	95

Download

Casing & Liner

Diameter (inches)	Description	From Depth (ft.)	To Depth (ft.)
30		0	47
20		0	47

Download

Grout or Other Sealant Materials

Kind of Sealing Material	From Depth (ft.)	To Depth (ft.)	Amount	Units
CEMENT	0	47		

Download

Geology

Geology	Geology Description	Driller's Description	USGS Code	From Depth (feet)	To Depth (feet)
--Y-	Sand & Gravel;	SAND @ GRAVEL		0	75
--G-	Gravel/Cobbles/Boulders/Stones;	GRAVEL		75	95

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Samples

No Records returned

Download

- Abandonment (0 Rows)
- Variances (0 Rows)
- Rehabilitation/Redevelopment (0 Rows)

- **Return Links**
  - DNR Drinking Water System

- **Other DNR information on this Well**
  - Public Water Supply System
  - High Capacity Well Data
  - Groundwater Retrieval Network Data

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Well Construction Reports

Help

WI Unique Well No:	BG532	**High Capacity Well No:**	83301
County Well Location:		**DNR Region:**	Northern
County:	Oneida	**Muni Type:**	T
Municipality:	MINOCQUA	**Completion Date:**	06/30/1982 **mm/dd/yyyy**
DNR Received Date:		**Constructor:**	MILLER WELL AND PUMP CO
Constructor Address:		**Constructor City:**	
Constructor State:		**Constructor Zip:**	
Status:	New Well	**Original Year:**	
Replacement Reason:		**Previous WI Well No:**	
Replacement WI Well No:		**Construction Type:**	1
Other Const. Type:		**Category:**	Municipal/Community
Well Depth:	90 ft	**# Services:**	
Facility Type:		**Highest Point on Property:**	
In Floodplain:		**Rotary - Mud Circulation:**	
Rotary - Air:		**Rotary - Foam:**	
Reverse Rotary:		**Cable Tool Bit:**	
Cable Bit Diameter:	in	**Temp Outer Casing:**	
Temp Casing Diameter:	in	**Temp Casing Removed:**	
Why not removed?:		**Other Drilling method:**	
Other Drilling Description:		**Screen Diameter:**	20 **inches**
Screen Description:	SS SCREEN	**Screen From:**	69 **feet**
Screen To:	89 **feet**	**Sealant Method:**	
Static Water level:	18 feet	**Pumping level:**	48 **feet**
Pumping at:	800	**Pumping units:**	Minutes
For:	24 **Hour(s)**	**Well Starting Depth:**	0 inches
Developed:		**Disinfected:**	
Capped:		**Proper Seal:**	
Seal Description:		**Contractor Signed on:**	
Rig Operator Signed on:		**Geologic Log Number:**	
Common Well Number:	004	**Calculated Specific Capacity:**	26.7
DNR Facility ID:	744011620	**Well Name:**	CEDAR & MANITOWISH STREETS WELL #4
Water Quality Comments:		**Water Quantity Comments:**	
Drilling Difficulty:		**Other Driller Comments:**	
Exception Areas:	Landfill	**Exception Area Comments:**	

Distances in Feet to Nearest Objects

No Records returned

Download

Drillhole Dimensions

Diameter (in)	From Depth (ft.)	To Depth (ft.)
36	0	90

Download

Casing & Liner

Diameter (inches)	Description	From Depth (ft.)	To Depth (ft.)
30		0	61
20		1.5	69

Download

Grout or Other Sealant Materials

Kind of Sealing Material	From Depth (ft.)	To Depth (ft.)	Amount	Units
CEMENT	0	61		

Download

Geology

Geology	Geology Description	Driller's Description	USGS Code	From Depth (feet)	To Depth (feet)
--Y-	Sand & Gravel;	SAND @ GRAVEL		0	90

Download

Samples

No Records returned

Download

- Abandonment (0 Rows)
- Variances (0 Rows)
- Rehabilitation/Redevelopment (0 Rows)

- **Other DNR information on this Well**
  - Public Water Supply System
  - High Capacity Well Data
  - Groundwater Retrieval Network Data

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http://www.dnr.state.wi.us

APPENDIX G

Flow Meter Information

North Pole Reps
4452 Slater Rd
Eagan , MN 55122
Phone: 651-882-5190
Cell: 612-703-1063
FAX: 651-882-5190
www.northpolereps.com

Date	July 19, 2004
Quotation No.	**04-0719-51**
Reference	**Flow Meter - MSA**
Terms	30 Days (upon approved credit)
Estimated Delivery	2 Weeks ARO

Kristi Du Bois P.E.
MSA Professional Services, Inc.
1230 South Boulevard
Baraboo, WI 53913

Item	Qty	Part No.	Description	Unit Price	Ext. Price
			FLOW METER REPLACEMENT		
1	1	FM656	Sparling MAG Flow Meter 6", TEFZEL liner (solvent compatible) Model FM656, 40-400 gpm Totalizer and Current Flow readings	$3,397.00	$3,397.00
1	1	SMC100M	Sparling EX Delta Flow Meter, Vortex Model 4" size, 40-400 gpm. Note: Pipe reducer needed for this flow meter, will provide accurate flows. Totalizer and Current Flow readings	$2,475.00	$2,475.00
			Shipping and Handling Estimated	$30.00	$30.00
			WE DO APPRECIATE THE OPPORTUNITY TO WORK WITH YOU ON THIS PROJECT!		

This Quotation is valid for 90 Days

By: _____
Jeff Petricka
Owner-Sr. Sales Engineer

North Pole Reps
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Eagan , MN 55122
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Cell: 612-703-1063
FAX: 651-882-5190
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Toshiba has been marketing Electromagnetic Flowmeters (Magmeter) since the late 1960's. Toshiba magmeters are the result of a wealth of experience and engineering expertise. We have won accolades in all areas of the industry. A full lineup of products covering meter size from 2.5mm(1/10inch) to 3000mm(120inch), as well as various liner materials to accommodate diverse fluids. This makes fluid measurements possible in almost any application.

Toshiba, a recognized leader in flowmeter technology, introduces the LF400 Series Magnetic Flowmeters. These cost-effective flowmeters combine superior noise immunity with high purity ceramic detection unit liners, allowing precise measurement in a wide range of applications.

6" Model Price; Stainless Steel Internals, Local Display, Price $3,395

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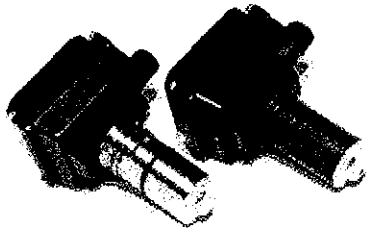
www.northpolereps.com

FLOW METER OPTIONS 6"

The Ultra Mag is a non-intrusive electromagnetic flow meter with unique lining technology. Here are the product specifications and design features for the Ultra Mag:

- Accuracy of +/-0.5% of actual flow
- Repeatability of +/-0.05%
- Rangeability from 0.2 FPS to 49 FPS
- Non-intrusive measurement
- NSF-approved, fusion-bonded epoxy liner: the UltraLiner
- Full field coil for greater accuracy over a wider flow range.
- Microprocessor-based signal converter for hard-to-reach areas
- Pre-programmed and pre-calibrated to user's specific applications
- Meter is wet calibrated in NIST traceable calibration facility
- Test mode and self-diagnostics
- Hart Protocol compatible
- Forward and reverse flow outputs and totalization
- CSA approved
- Line sizes from 2" to 48"

6" Model Quoted Price: $3,010
6" line, flow 40-400 gpm, local totalizer. 4 weeks delivery



Fixed Length Insertion Magmeter

- » Low-flow performance and accuracy superior to any mechanical flow sensor
- » No moving parts to wear out
- » Dedicated fittings for simplicity
- » Retainer clip automatically sets correct depth
- » Meter extends only about 1/8 of pipe diameter, minimizing potential for clogging with debris
- » Simple pulse train output can be used with any processing module, or sent directly to a PLC
- » Available for pipe sizes 1" to 8", in brass, 316 stainless, and PVC

6" Model Quoted Price $1,440.00

316 SST Body, Viton O-Rings, PVDF Insulator, Ductile Iron Saddle, Wall Mount Indicator Totalizer, PC3 Power Supply. 2 weeks for delivery