SOIL AND GROUND-WATER INVESTIGATION AT FORMER UST SITES

3M DOWNTOWN WAUSAU
AND GREYSTONE FACILITIES
WAUSAU, WISCONSIN

PREPARED FOR

3M ENVIRONMENTAL ENGINEERING AND POLLUTION CONTROL

PREPARED BY

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DECEMBER 1991

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December 11, 1991

Geraghty & Miller, Inc. is submitting this report to 3M Corporation for consulting service performed at the Downtown Wausau, Wisconsin and Greystone Facilities in the Town of Main, Wisconsin. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to ensure that the report meets the highest standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted,
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INTRODUCTION

At the request of 3M Corporation, Geraghty & Miller, Inc. has completed a soil and ground-water investigation at the 3M Downtown Wausau, Wisconsin Roofing Granule Facility and Greystone Roofing Granule Facility in the Town of Main. The locations of the two facilities are presented in Figure 1. The purpose of the investigations was to determine the presence of any affected soil and/or ground water related to former underground storage tanks (USTs) at the facilities. The investigation was proposed in a Work Plan submitted to the Wisconsin Department of Natural Resources (WDNR) during January, 1991. The Work Plan was subsequently approved by the WDNR on May 10, 1991. This report reviews background information and previous investigations at the facilities, describes the methods used during this investigation, summarizes the results of the investigation, and provides recommendations for further activities.

BACKGROUND

The 3M Downtown Wausau Facility is located at 144 Rosecrans Street, Wausau, Wisconsin. Site details are presented in Figure 2. The site topography is relatively flat at an elevation of approximately 1,190 feet above mean sea level (ft msl). Land surface in the vicinity of the Downtown Facility slopes to the northeast, toward the Wisconsin River. The elevation of the Wisconsin River is approximately 1,160 ft msl.

Land use in the vicinity of the Downtown Facility is a mix of industrial, and residential. The Wauleco Facility (a former window manufacturing facility) is located directly south of the Downtown Facility, commercial establishments are located north of the Facility, and private residences are east and west of the Downtown Facility. Water for domestic use in the area is furnished by the City of Wausau.

The 3M Greystone Facility and Quarry are located on North 4th Avenue in the Town of Main, Wisconsin. The details of the Greystone Facility are presented in Figure 3 and the details of the Greystone Quarry are presented in Figure 4. The Greystone Quarry is located

approximately 800 ft southwest of the Greystone Facility. Surface topography near the Greystone Facility and Quarry slopes generally to the northeast, toward the Wisconsin River. Topography at the Greystone Facility is relatively flat, at an elevation of approximately 1,226 ft msl. The Greystone Quarry is located topographically upslope of the Facility, at an elevation of approximately 1,315 ft msl. Land use in the vicinity of the Greystone Facility and Quarry is primarily rural, with several residences present south of the Facility.

PREVIOUS INVESTIGATIONS

In November and December 1989, Bay West, Inc. of St. Paul Minnesota conducted oversight of the removal of 13 USTs at the 3M Downtown Wausau Facility, Greystone Facility, and Greystone Quarry. USTs removed from the Downtown Facility included three 10,000-gallon slate oil tanks, three 12,000-gallon #2 fuel oil tanks and one 500-gallon kerosene tank. The former locations of the tanks at the Downtown Facility are presented in Figure 2. Two pits were excavated to complete the removal of the USTs at the Downtown Facility The area adjacent to the pit associated with the slate oil tanks has been referred to as the "Downtown Slate Oil" area, and the area adjacent to the pit associated with the fuel oil tanks has been referred to as the "Downtown Fuel Oil" area. USTs removed from the Greystone Facility and Quarry included two 3,500-gallon diesel tanks, one 10,000-gallon gasoline tank, one 500-gallon kerosene tank and two 12,000-gallon fuel oil tanks. The former locations of the tanks at the Greystone Facility are presented in Figure 3 and the location of the tank at Greystone Quarry is presented in Figure 4. Two pits were excavated to complete the removal of the USTs at the Greystone Facility and a single pit was excavated to complete the removal of the tank at the Greystone Quarry. The area adjacent to the pit containing the diesel tank, gasoline tank, and kerosene tank has been referred to as the "Greystone Pump Island". The area adjacent to the pit associated with the two fuel oil tanks has been referred to as the "Greystone Fuel Oil" area, and the area adjacent to the pit associated with the single diesel tank at the Quarry has been referred to as the "Greystone Quarry".

Visual inspection, headspace analyses and laboratory analyses of soil samples collected near the former tanks as part of the UST closure activities indicated the presence of petroleum hydrocarbons. Excavation continued near the former tanks until buried utilities or building foundations were approached. Details regarding the excavation activities were presented in the Draft Report by Bay West entitled "Report of the UST Removal/Soil Excavation, 3M Downtown and Greystone Roofing Facilities, Wausau, Wisconsin". The report was dated March 7, 1990.

At the request of 3M Corporation, a subsurface investigation was subsequently conducted at each of the tank excavation pits by Bay West. This preliminary investigation by Bay West was conducted to assess the impact of the apparent releases on the subsurface environment, and involved the completion of sixteen soil borings and the collection, field screening and laboratory analysis of soil samples. The results of the Bay West investigation indicated the presence of diesel and/or fuel oil-affected soil material underlying each of the former tank excavation pits. At a number of the former excavations, soil samples collected from water saturated zones also were found to be apparently affected. However, Bay West subsurface investigations were not designed to fully evaluate the extent and nature of affected subsurface materials at each of the former excavation sites. The results of the investigation conducted by Bay West were presented in a Draft report entitled "Subsurface Investigation Report for 3M Roofing Granule Facilities, Wausau and Town of Main, Wisconsin".

The Wauleco Facility, located south of the 3M Downtown Facility (Figure 2) is the focus of an ongoing soil and ground-water quality investigation. Former occupants of the Facility maintained a dip tank and storage tanks containing pentachlorophenol (PCP) mixed with mineral spirits. This solution was then used as a preservative in the manufacture of wood windows. During former activities at the Wauleco Facility, the wood preservative solution was reportedly discharged to soil and ground water at the property. Wauleco has retained Keystone Environmental to conduct an investigation to define the nature and extent of affected soil and ground water. The results of a portion of the ongoing investigation conducted by Keystone

Environmental on behalf of Wauleco indicates that ground water affected by PCP constituents has apparently migrated into the southern portion of the 3M property.

The present investigation conducted by Geraghty & Miller at the 3M Downtown Facility has subsequently included selected laboratory analyses for mineral spirits, PCP, and the degradation products of PCP.

FIELD INVESTIGATIONS

Consistent with the WDNR-approved work plan, field investigation activities were completed by Geraghty & Miller at the 3M Downtown Wausau Facility, Greystone Facility, and Greystone Quarry. Information collected during the field activities was used to evaluate the nature and extent of potentially affected soil and ground water and to determine site-specific hydrogeologic conditions at the facilities. Field investigation activities included the completion of monitoring well installation borings, installation of monitoring wells, and collection of soil and ground-water samples for laboratory analysis. If an adequate volume of separate-phase hydrocarbon product was present in any of the monitoring wells, a product bail-down test was completed and a sample of the product was collected and submitted for laboratory identification. Selected subsurface soil samples were also collected and submitted for microbiological plating study analysis. The purpose of the plating study analysis was to provide information necessary to evaluate the potential application of bioremediation at the sites, should remediation be necessary. In-situ hydraulic conductivity tests (slug tests) were also completed in selected monitoring wells to estimate site-specific horizontal hydraulic conductivities at the Facility locations.

Field activities conducted at the Downtown Slate Oil area included:

- Completion of four monitoring well borings and installation of four monitoring wells;

- Collection and laboratory analyses of soil and ground-water samples;
- Performance of hydrocarbon product bail-down tests; and
- Collection and laboratory identification of separate phase hydrocarbon product samples.

Field activities conducted at the Downtown Fuel Oil area included:

- Completion of ten monitoring well borings and installation of ten monitoring wells;
- Collection and laboratory analyses of soil and ground-water samples;
- Performance of tests of insitu hydraulic conductivity on selected monitoring wells;
- Performance of hydrocarbon bail-down tests; and
- Collection and laboratory identification of separate-phase hydrocarbon samples;

Field activities conducted at the Greystone Facility and Greystone Quarry included:

- Completion of five monitoring well borings and installation of five monitoring wells;
- Collection and laboratory analyses of soil and ground-water samples; and
- Performance of tests of in-situ hydraulic conductivity on selected monitoring wells.

Prior to the initiation of field activities, underground utilities at each of the sites were located by 3M personnel. The locations of underground utilities at the Downtown Facility is presented in Figure 5. Underground utilities at the Downtown Facility include natural gas, sanitary sewer, storm sewer, water and electric lines. The locations of known utilities at the Greystone Facility are presented in Figure 6. Utilities identified at the Greystone Facility include overhead electric lines, underground electric lines, storm sewers and buried steam lines. No utilities are present near the Greystone Quarry.

COMPLETION OF MONITORING WELL BORINGS

Ground-water monitoring wells were installed within borings at 3M Downtown Facility, Greystone Facility, and Greystone Quarry using conventional hollow stem auger drilling techniques (ASTM 1452). Monitoring well borings were generally completed using 4 1/4-inch inside diameter (ID) hollow stem augers (HSAs) that resulted in an approximately 8 1/4-inch diameter borehole. Potentially affected soil was encountered during the completion of monitoring well borings in the Downtown Slate Oil area. Therefore, 6 1/4-inch ID HSAs (that resulted in an approximate 10-1/4-inch diameter borehole) were used to facilitate the installation of 4-inch diameter monitoring wells in the four monitoring wells installed in the Downtown Slate Oil area. A measurable thickness of floating separate-phase hydrocarbon product collected in several 2-inch diameter monitoring wells installed at the Downtown Fuel Oil area. Therefore, 6-inch diameter monitoring wells were installed to aid in defining the extent of the separate-phase product and to facilitate the potential recovery of the separate-phase product. The 6-inch diameter monitoring wells were completed using 8-1/4-inch ID HSAs (which resulted in an approximate 12-1/4-inch diameter borehole).

Bedrock was encountered while completing the monitoring well boring at the Greystone Quarry. To allow the installation of a monitoring well at the Greystone Quarry, hollow stem augers were advanced through the semi-consolidated upper bedrock surface as far as possible. To prevent potentially affected material in the unconsolidated soils from migrating down the

borehole annulus, temporary 6-inch diameter steel conductor casing was driven into the borehole. A granular bentonite slurry was then placed into the annular space between the temporary 6-inch casing and the unconsolidated material with a tremie pipe. Additional bentonite slurry sealant material was added to the annular space between the 6-inch casing and unconsolidated material and allowed to cure for at least 12 hours. Rotary air hammer drilling techniques were then used to complete the monitoring well boring.

SUBSURFACE SOIL SAMPLING PROCEDURES

Subsurface soil samples were collected continuously from monitoring well borings in 2-ft intervals from the unconsolidated material using standard split-spoon sampling techniques (ASTM 1586). Each soil sample was field screened for the presence of ionizable organic vapors using a Foxboro™ Organic Vapor Analyzer (OVA) Flame Ionization Detector (FID). Soil samples were also visually screened and described by Geraghty & Miller personnel. Soil descriptions were recorded on soil boring logs, which are presented in Appendix A. At least two subsurface soil samples from each monitoring well boring, one soil sample that exhibited the highest FID reading and one soil sample from immediately above the water table, were selected and submitted for laboratory analysis. If there were no OVA readings elevated above background concentrations, soil samples that visually appeared to have the highest potential to be affected by hydrocarbon constituents or were most representative of the material described throughout the borehole were selected for laboratory analysis. The soil samples were submitted to the project laboratory for benzene, ethylbenzene, toluene, xylenes (BTEX), and total petroleum hydrocarbons (TPH) analysis using United States Environmental Protection Agency (USEPA) Analytical Methods 8010/8020 and the Modified USEPA Method 8015, respectively. At the request of WDNR, soil samples collected from monitoring well borings at the Greystone Pump Island and Greystone Fuel Oil areas were submitted for laboratory analysis of Volatile Organic compounds (VOCs), methyl tertiary butyl ether (MTBE), TPH, and total lead.

Soil and ground-water samples were submitted for laboratory analyses of hydrocarbon constituents to Analytical Technologies Inc. (ATI) of Pensacola, Florida or to Enseco Rocky Mountain Analytical Laboratories (RMAL) in Arvada Colorado. The WDNR certification number for ATI is 99832020 and the WDNR certification number for RMAL is 999615430.

To aid in the initial evaluation of potentially applicable remedial technologies, additional soil samples were also collected for microbiological plating studies from monitoring well borings completed at the 3M Downtown Facility, Greystone Facility, and Greystone Quarry. Soil samples of apparently affected and unaffected soil material from above and below the water table were collected to evaluate if indigenous microbial organisms are present, and if so, are the organisms capable of degrading hydrocarbon constituents. Laboratory studies performed on the selected soil samples were designed specifically to:

- Determine if aerobic microbes are present in representative soil samples;
- Determine if the aerobic microbes have adapted to degrade soil affected by diesel fuel and/or mineral spirits;
- Determine if soil pH and moisture content in the soil samples are conducive to support microbiological populations and;
- Determine if soluble inorganic nutrients (ammonia and orthophosphate are present in sufficient quantities to allow for effective bioremediation of hydrocarbon constituents affecting soil and ground water; and

Methods used during the collection of the soil samples for microbiological evaluation were identical to methods used to collect soil samples for other laboratory analyses. Samples collected for microbiological evaluation were submitted to the Geraghty & Miller Treatability Laboratory in Tampa Florida. Sterilized sample containers were provided by the laboratory.

All downhole drilling equipment used during the investigation was decontaminated between successive borings. Drill cuttings were placed on asphalt and were covered with plastic sheeting in the southeastern corner of the 3M Downtown Facility property and at the west edge of the 3M Greystone Facility parking lot. Composite soil samples were collected from both drill cutting stockpiles and submitted to the project laboratory for analysis of BTEX and TPH to evaluate soil cutting disposal options. In addition, a soil sample from cuttings stock-piled at the Downtown Facility was collected and submitted for analysis of phenols (including PCP).

INSTALLATION OF MONITORING WELLS

All ground-water monitoring wells were constructed in accordance with NR 141 Wisconsin Administrative Code. Monitoring wells were generally constructed with 2-inch or 4-inch diameter schedule 40 polyvinyl chloride (PVC) well casing and factory slotted 0.010 inch (10-slot) well screen material. Five monitoring wells installed at the Downtown Fuel Oil Area were constructed with 6-inch schedule 40 PVC well casing and factory slotted 0.015 (15-slot) well screen. The five 6-inch monitoring wells were also constructed with a 2-ft to 5-ft length of unslotted well casing beneath the bottom of the well screen to facilitate the possible installation of a submersible recovery pump. The slotted screen sections used in the monitoring wells were generally 10 ft in length. However, one monitoring well installed in the Downtown Slate Oil area (Monitoring Well DSOMW-1) was equipped with a 15 ft well screen. An effort was made to position each well screen so that a portion of the well screen was above the water table and a portion of the well screen was below the water table. A filter pack consisting of coarse sand was extended from approximately 6 inches below the well screens to approximately 2 ft above the well screens. Filter packs installed within the 6-inch diameter monitoring wells installed at the Downtown Fuel Oil area ranged from 2.5 to 5.5 ft below the bottom of the well screen due to the length of unslotted casing material beneath the screen. An approximate 2-ft thick filter pack seal consisting of fine silica sand was placed above the filter pack. The annular space above the filter pack was filled with granular bentonite or granular bentonite slurry to approximately 2 to 5 ft bls and then overlain with a concrete surface seal at least 24 hours later.

A locking steel protective casing was installed within the concrete surface seal. If the well was installed in a high traffic location, a flush-mount protective casing was installed and the PVC well casing was equipped with a lockable water-tight cap to maintain the integrity of the well.

All monitoring wells were developed prior to sampling to minimize the turbidity of water obtained during sampling and to maximize well yield. All well development activities were conducted in accordance with NR 141 Wisconsin Administrative Code. Development was accomplished by alternately surging each well with a clean bailer and polypropylene rope and then bailing or removing water with a portable hand pump. Bailer rope was replaced between successive wells and the bailer or hand pump was decontaminated between wells using a laboratory grade soap solution and distilled water rinse.

The elevations of all monitoring wells were surveyed by Wisconsin Valley Surveyors of Wausau, Wisconsin. The elevations of the ground surface and the top of the PVC riser pipe were measured and recorded at each location and were referenced to the National Geodetic Survey datum to an accuracy of 0.01 ft.

SITE SPECIFIC FIELD INVESTIGATION DETAILS

The following subsections describe the site-specific methods used in each area for the completion of monitoring well borings, collection of soil samples, and installation of monitoring wells.

Downtown Slate Oil Area

Four monitoring wells (DSOMW-1 through DSOMW-4) were installed in monitoring well borings at the Slate Oil Area during the week of May 21, 1991. The locations of the monitoring wells are presented on Figure 7. Monitoring Well Construction Logs are presented in Appendix B. Monitoring Wells DSOMW-1, DSOMW-2, DSOMW-3, and DSOMW-4 were

completed near the former slate oil underground storage tanks at depths ranging from 31.9 ft bls to 34.0 ft bls. Monitoring Well Boring DSOMW-2 was initially drilled using 4-1/2-inch ID HSAs. However, subsurface soil samples recovered from Monitoring Well Boring DSOMW-2 were stained dark grey and exhibited hydrocarbon-like odors, and OVA readings in exceedence of 1000 ppm. Due to the potential for separate-phase hydrocarbon product to be present at this location, the boring was overdrilled using 6 1/4-inch ID HSAs to accommodate the installation of a 4-inch diameter monitoring well. Monitoring Well Borings DSOMW-1 and DSOMW-3 were also completed using 6 1/4-inch ID HSAs to facilitate the installation of 4-inch diameter monitoring wells. Monitoring Wells DSOMW-1 through DSOMW-3 were finished with flushmount protective casings due to considerable vehicle traffic in the area. Monitoring Well Boring DSOMW-4 was completed to provide additional information regarding the lateral extent of the apparently affected soil observed in soil samples collected from Monitoring Well Borings DSOMW-1 through DSOMW-3. Monitoring Well Soil Boring DSOMW-4 was also completed as a 4-inch diameter monitoring well using 6 1/4-inch ID HSAs due to the close proximity to product recovery wells located south of the Downtown Facility on the Wauleco property (Figure 7). Monitoring Well DSOMW-4 was finished with an aboveground lockable steel protective casing.

Downtown Fuel Oil Area

Five ground-water Monitoring Wells (DFOMW-1 through DFOMW-5) were installed in monitoring well borings located near the Downtown Fuel Oil Area during the week of May 20, 1991. The locations of Monitoring Wells DFOMW-1 to DFOMW-5 are presented in Figure 7, and Monitoring Well Construction Logs are presented in Appendix B. Monitoring Well Borings DFOMW-1 through DFOMW-5 were completed to depths ranging from 31 to 32 ft bls. Monitoring Well Borings DFOMW-1 through DFOMW-5 were drilled using 4-1/4-inch ID HSAs and completed with 2-inch diameter PVC well casing and screen. Monitoring Well DFOMW-1 was completed with a flushmount protective casing due to considerable vehicle

traffic. Monitoring Wells DFOMW-2 through DFOMW-5 were completed with aboveground lockable protective steel casings.

Following development and sampling of ground water from Monitoring Wells DFOMW-1 through DFOMW-5 a measurable thickness of separate-phase hydrocarbon product had collected in Monitoring Wells DFOMW-1, DFOMW-3, and DFOMW-5. To aid in defining the lateral extent of the hydrocarbon product and facilitate the recovery of the product, five additional monitoring wells (DFOMW-6 through DFOMW-10) were installed in the Downtown Fuel Oil Area (Figure 7). Monitoring Well Borings DFOMW-6, DFOMW-7, DFOMW-8, DFOMW-9, and DFOMW-10 were completed during the week of July 29, 1991 to depths ranging from 34 to 38 ft bls. Initially, Monitoring Well Borings DFOMW-6 through DFOMW-10 were completed using 4-1/4-inch ID HSAs along with continuous splitspoon sampling techniques to complete a pilot boring. The pilot boring was then overdrilled using 8-1/4-inch ID HSAs to facilitate the installation of 6-inch diameter PVC well casing and 10 ft length of 15 slot PVC well screen. A 2 ft to 5 ft length of PVC piping (sump) was placed below each monitoring well screen and each well was completed with an aboveground lockable steel protective casing.

Greystone Pump Island Area

Three ground-water monitoring wells (GPIMW-1 through GPIMW-3) were installed at the Greystone Pump Island area during the week of May 29, 1991 (Figure 8). Monitoring Well Borings GPIMW-1 through GPIMW-3 were completed to depths ranging from 33 ft bls to 40 ft bls using 4-1/4-inch HSAs and continuous splitspoon sampling techniques. Monitoring Well Construction Logs are presented in Appendix B.

Subsurface soil samples collected from the above three borings exhibited no staining, odor or OVA reading. Monitoring Wells GPIMW-1 through GPIMW-3 were constructed using 2" PVC well casing and screen material and 10 ft lengths of 10 slot well screen. The three

wells were also completed with flushmount protective casings due to considerable vehicle traffic in the area.

Greystone Fuel Oil Area

Monitoring Well Boring GFOMW-1 was completed to a depth of 38 ft bls during the week of May 28, 1991 at Greystone Fuel Oil area (Figure 8). The monitoring well construction log from GFOMW-1 is presented in Appendix B. Monitoring Well Soil Boring GFOMW-1 was installed using 4-1/4-inch ID HSAs and continuous splitspoon sampling techniques consistent with those described previously. Monitoring Well GFOMW-1 was constructed using 2" PVC well casing and screen material and a 10 ft length of screen. The well was also completed with a flushmount protective casing due to the presence of vehicle traffic in the area.

Greystone Quarry Area

One Monitoring Well (GMQMW-1) was installed in a monitoring well boring at the Greystone Quarry Facility during the week of May 28, 1991. The location of the monitoring well boring is presented on Figure 9 and the monitoring well construction log is presented in Appendix B. Monitoring Well Boring GMQMW-1 was completed using 4-1/4 inch HSAs and continuous splitspoon sampling techniques until auger refusal at a depth of 22 ft bls. Air rotary drilling techniques were then implemented using a 6-inch diameter down-hole air hammer to a total depth of 49.5 ft bls. Monitoring Well GMQMW-1 was constructed using 2-inch diameter PVC well casing and screen materials and a 10 ft length of 10 slot well screen. The monitoring well was completed with an above ground lockable steel protective casing.

IN-SITU HYDRAULIC CONDUCTIVITY TESTS

In-situ hydraulic conductivity tests (slug tests) were performed on four monitoring wells installed at the Downtown Facility and three monitoring wells installed at the Greystone Facility

and Quarry. Slug tests are a method of obtaining approximate values of hydraulic conductivity in the horizontal direction in the immediate vicinity of the monitoring well screen. The method consists of displacing a volume of water in the monitoring well instantaneously with an inert solid object (slug) and recording the recovery of the water level through time. The four monitoring wells in which the slug tests were performed at the Downtown Facility included DSOMW-4, DFOMW-1, DFOMW-2, and DFOMW-4. The three monitoring wells in which the slug tests were performed at the Greystone Facility and Quarry included GPIMW-2, GFOMW-1 and GQMW-1. The seven wells were selected based on each monitoring well screened interval being positioned in lithologic units generally representative of all the saturated subsurface materials observed during completion of the drilling activities. In each of the monitoring wells, two tests were performed. One test was performed by introducing a slug into the monitoring well (slug in) and monitoring the recovery of water level through time. Once the water level has recovered to static conditions, a second test was performed by removing the slug from the monitoring well (slug out) and again monitoring the water level recovery through time. Hermit™ In-Situ Model SE1000B Data Loggers and pressure transducers were used to accurately measure and record the water level recovery data. The data were analyzed by the method of Bouwer and Rice (1976) and Bouwer (1989) to obtain the approximate hydraulic conductivity values.

GROUND-WATER SAMPLING

A summary of the laboratory analyses performed on ground-water samples collected during the investigation at the 3M Facilities is presented as Table 1. All ground-water samples collected from the Downtown Facility, Greystone Facility and Greystone Quarry were submitted to ATI or RMAL for analyses of VOCs and TPH. An initial round of ground-water samples collected from the monitoring wells on June 11 and June 12, 1991 was to be analyzed for VOCs and TPH. However, because of a laboratory error, the samples were analyzed for BTEX and TPH. A second round of samples was subsequently collected on July 10 and July 11. The second round of samples was analyzed for a full scan of VOCs. Field measurements including

temperature, electrical conductivity, pH, and redox potential were also recorded from all ground-water samples at the time of sampling. Due to the proximity of a known release of PCP to ground water (Wauleco Facility), ground-water samples collected from monitoring wells located at the Downtown Slate Oil area and Downtown Fuel Oil area were also submitted for laboratory analysis of phenol constituents. In addition, samples of separate-phase hydrocarbon product were collected for product identification from several monitoring wells installed at the Downtown Facility. Separate-phase product samples were collected from DSOMW-1, DFOMW-3 and DFOMW-5 and were analyzed using USEPA Modified Method 8015. Ground-water samples from three monitoring wells GMPIMW-1 through GMPIMW-3 located at the Greystone Facility Pump Island area were also analyzed for dissolved lead. To aid in the design of potential remedial systems, representative ground-water samples from each area were submitted for laboratory analysis of several inorganic parameters and indicator parameters. These parameters included: total dissolved solids (TDS), Chloride (Cl), Sulfate (SO_4), biological oxygen demand (BOD), chemical oxygen demand (COD), Sodium (Na), and the following total and dissolved constituents: calcium (Ca), alkalinity (Alk), iron (Fe), lead (Pb), magnesium (Mg) and manganese (Mn).

Prior to the sampling activities, the depth to ground-water was measured in each monitoring well and recorded in the field notebook. Each monitoring well was then purged of at least three well casing volumes of water. If the well could be purged dry prior to yielding three casing volumes, it was purged dry at least twice. Bottom filling disposal polyethylene bailers and new polypropylene rope were used to purge the wells and to collect the water samples. Bailers and rope were discarded between the sampling of each monitoring well. Ground-water samples from each well were transferred from the bailer into the sample containers provided by the laboratory. Ground-water samples which required analysis for dissolved constituents were filtered in the field using 0.45 μm pore size filters.

Quality Assurance/Quality Control (QA/QC) samples including duplicate samples and field rinsate blanks were also prepared during the field activities. Trip blanks were provided

by the laboratory. For this investigation, the purpose of the duplicate samples was to test the reproducibility of the laboratory chemical analysis. The purpose of the field rinsate blank was to document the laboratory cleaning of the disposable bailer and/or to determine if VOCs or other constituents were present at the sample collection area. The trip blank was used to determine if VOCs had been introduced into the bottles during the shipment or while on-site. Vials for duplicate samples were filled from the same bailers as the sample from the monitoring wells, and the field rinsate blank was collected by pouring distilled water into a new disposable bailer, then transferring the water into the sample vials.

PRODUCT RECOVERY TESTING

Due to density differences between hydrocarbon product and water, capillary effects, and water table fluctuations, the actual saturated thickness of separate-phase liquid hydrocarbons present in subsurface materials can be greatly exaggerated in monitoring wells. Hughes et al. (1988) presented a graphical method for determining true hydrocarbon thickness in a sandy aquifer using hydrocarbon product recovery tests.

Geraghty & Miller staff performed hydrocarbon product recovery tests by bailing as much separate-phase product as possible from the monitoring wells without removing any ground-water from the well. The recovery of the product was then measured with time using a Keck Model KIR-39 hydrocarbon interface probe. Plots of hydrocarbon product recovery versus time were subsequently constructed and analyzed using the graphical method described by Hughes et al. (1988).

FINDINGS

GEOLOGY

Marathon County is situated near the southern margin of the exposed Precambrian shield in Wisconsin. The bedrock in Marathon County is predominantly Precambrian-age igneous and metamorphic rocks with scattered outliers of Paleozoic-age sandstones that unconformably overlie the Precambrian-age rocks (Laberage and Myers, 1983).

At least three glacial advances into Marathon County have been defined (Laberge, 1971). As much as 120 ft of sandy and clayey glacial till overlie the bedrock in some areas. Melt water from receding Pleistocene-age glaciers deposited stratified glacio-fluvial sands and gravel outwash in the river valleys. Although the sands and gravels are not laterally extensive, in places the deposits are over 150 ft thick (Kendy, 1986). Bedrock near the Downtown Facility is anticipated to be present at depths of between 50 and 100 ft bls. Surface soils near the Downtown Facility consist of the Mahtomebi loamy sand. The soil is gently sloping (0 to 6 percent slope) and is excessively drained (SCS, 1989).

Downtown Facility

Subsurface materials encountered during the completion of monitoring well borings at the Downtown Facility include fill material, fine sand to gravel fill material, fine to coarse poorly-sorted to well-sorted sand to silty sand, sandy clay, and lenses of coarse sandy gravel. Subsurface information recorded during the completion of the borings was used to construct four geologic cross-sections of the Downtown Facility. The locations of the geologic cross-sections A to A' through D to D' are presented on Figure 10. Geologic cross-sections A to A' through D to D' are presented as Figures 11 to 14. In general, a layer of fine sand, to sand and gravel fill material was encountered below the asphalt pavement at all of the monitoring well locations

at the Downtown Facility. The thickness of the fill material ranges from approximately 5 ft to over 15 ft across the site. The fill material was thickest at Monitoring Wells DSOMW-1 and DFOMW-1. These two monitoring well borings were completed through the former slate oil excavation pits and fuel oil excavation pits (respectively). Subsurface geologic materials encountered below the fill material included interbedded fine sand to coarse silty sand and gravel (Figure 11 to Figure 14). An approximately 0.5-ft thick layer of sandy clay was encountered during the completion of Monitoring Well Boring DFOMW-5. However, this layer was not encountered at other locations at the Downtown Facility.

The subsurface information at the Downtown Facility recorded during this investigation generally agrees with information recorded previously by Bay West, Inc. However, bedrock reported to have been encountered by Bay West in the Downtown Fuel Oil area, was not encountered during the completion of Monitoring Well Borings DFOMW-1 to DFOMW-10.

Greystone Facility and Quarry

The unconsolidated materials near the Greystone Facility and Quarry range in thickness from less than one foot at the Greystone Quarry to a reported 100 ft to 150 ft at the Wisconsin River, northeast of the Facility. Bedrock in the area consists of Pre-Cambrian-age metamorphosed siltstone. This siltstone is mined and used by 3M Corporation for the manufacture of roofing granules. Soils near the Greystone Facility consist of the Fordum silty loam. This soil is generally poorly drained with slopes ranging from 0 to 1 percent (SCS, 1984).

Subsurface geologic materials encountered during the completion of monitoring well borings at the Greystone Facility were generally similar in nature to subsurface materials encountered at the Downtown Facility. Subsurface information gained from the completion of the borings was used to construct one geologic cross section of the Greystone Facility. The location of geologic cross section E to E' is presented as Figure 15 and geologic cross section

E to E' is presented as Figure 16. A layer of fine sand to sandy gravel fill was encountered below the asphalt pavement at the Greystone Facility. The thickness of the fill material ranged from approximately 8 ft to 15 ft across the Facility. Underlying the fill material were interbedded lenses of fine to coarse sand and gravel. A thin layer of sandy clay was encountered in monitoring well borings completed near the Greystone Pump Island (Figure 16). Bedrock was not encountered in the monitoring well borings completed at the Greystone Facility.

Monitoring Well Boring GMQMW-1 was completed through the former diesel fuel tank excavation pit near the Greystone Quarry. Approximately 10 ft of fine sand-sized fill material was encountered during the completion of the monitoring well boring. Interbedded units consisting of fine silty sand to clayey silt with gravel were present below the fill material, to a depth of approximately 22 ft bls. Bedrock consisting of gray, bedded, metamorphosed siltstone was encountered at 22 ft bls.

GROUND-WATER FLOW

Regional ground-water flow in the unconsolidated deposits overlying bedrock in Marathon County is generally toward the Wisconsin River (Kendy, 1986). Hydrogeologic reports of more localized ground-water flow at the Wauleco Facility indicate that ground-water flow is generally toward the southeast (Keystone Environmental, 1990).

Downtown Facility

To determine the direction of ground-water flow at the 3M Downtown Wausau and Greystone Facilities, water levels were measured in 19 ground-water monitoring wells installed during the investigation. Six sets of product and/or water level measurements were collected between May 29 and July 10, 1991 at the Downtown Facility. The depth to ground-water measurements and the corresponding ground-water elevations at the Downtown Facility are presented in Table 2. Depth to ground water at the Downtown Facility ranges from

approximately 23 ft bls in Monitoring Well DSOMW-2 to approximately 26 ft bls in Monitoring Well DFOMW-3. Corresponding ground-water elevations range from approximately 1166 ft msl in Monitoring Well DSOMW-2 to 1164 ft msl in Monitoring Well DFOMW-5.

A water table elevation map was constructed using water levels obtained in hydrocarbon product-free wells on May 29, 1991. The ground-water elevations on May 29 at the Downtown Facility are presented as Figure 17. Note that Figure 17 does not include water levels from Monitoring Wells DFOMW-6 to DFOMW-10. These additional monitoring wells were installed from July 29 to August 2. Review of the ground-water elevation data indicates that ground-water flow at the Downtown Facility is generally to the southeast, toward the Wisconsin River. The southeast ground-water flow direction in the area near the Downtown Facility is in general agreement with background hydrogeologic information and site-specific reports concerning the Wauleco Facility (Keystone Environmental, 1990).

Horizontal hydraulic gradients across the Downtown Facility range from approximately 0.008 ft/ft near the Slate Oil area to 0.03 ft/ft near the tank excavation pit at the Fuel Oil area (Figure 17). The steeper hydraulic gradient near the Fuel Oil area may be due to localized ground-water mounding as a result of preferential ground-water recharge adjacent to the on-site building foundations.

Tests of in-situ hydraulic conductivity (slug tests) were performed in several wells at the Downtown Facility. The results of the slug tests are summarized in Table 4 and are included in Appendix C. Hydraulic conductivity values presented in Table 4 include the "slug in" portion of the test, "slug out" portion of the test, and the geometric mean of the tests. Hydraulic conductivities calculated from ground-water monitoring wells at the Downtown Facility range from 6.5×10^{-4} cm/sec to 4.2×10^{-3} cm/sec. The geometric mean of the hydraulic conductivities is 1.8×10^{-3} cm/sec.

The average linear ground-water flow velocity at the Downtown Facility can be estimated by rearranging Darcy's Law as follows:

$$V = \frac{Ki}{n}$$

Where:

V = Average horizontal ground-water flow velocity.

K = Average hydraulic conductivity (assume 1.8×10^{-3} cm/sec)

i = Horizontal hydraulic gradient (assume 0.008 ft/ft near the Slate Oil area to 0.03 ft/ft near the Fuel Oil area)

n = Effective porosity (assume 25 percent)

The resulting average linear horizontal ground-water flow velocity at the Downtown Facility calculated using Darcy's Law ranges from 5×10^{-5} cm/sec (0.2 ft/day) near the Slate Oil area to 2×10^{-4} cm/sec (0.5 ft/day) near the Fuel Oil area.

Greystone Facility and Quarry

Five sets of water levels were also recorded in ground-water monitoring wells installed at the Greystone Facility and Quarry. The depth to ground water and corresponding ground-water elevations are presented in Table 3. Depths to water range from approximately 26 ft bls in GPIMW-1, to over 38 ft bls in GMQMW-1. Corresponding ground-water elevations range from approximately 1287 ft msl in GMQMW-1 to 1197 ft msl in GFOMW-1.

A water table elevation map was constructed for the Greystone Facility using water levels measured on May 29 (Figure 18). Ground-water flow at the Greystone Facility is generally to the northeast, toward the Wisconsin River. Horizontal hydraulic gradients across the Greystone Facility range from approximately 0.011 ft/ft to 0.057 ft/ft. Hydraulic gradients were generally steeper along the southern portion of the site. This is likely attributable to the localized

topographic effects of a hill along the southern portion of the site, and a general flattening of topography in a northern direction.

Slug tests were also performed on Monitoring Well GPIMW-2. The geometric mean of the "slug in" test and "slug out" test is 3.1×10^{-3} cm/sec (Table 4). Assuming an effective porosity of 25 percent, the average linear ground-water velocity calculated at the Greystone Facility using Darcy's Law ranges from 8.5×10^{-6} cm/sec (0.02 ft/day) to 7.1×10^{-4} cm/sec (2.0 ft/day).

LABORATORY RESULTS FROM SOIL SAMPLING

Soil samples collected during the drilling of the monitoring well borings at the Downtown Facility, Greystone Facility and Greystone Quarry were screened in the field for the presence of ionizable organic vapors using an OVA. Selected soil samples (at least two per boring) were also submitted for laboratory analyses of BTEX and TPH.

Downtown Slate Oil Area

The results of the OVA field screening of soil samples collected from Monitoring Well Borings DSOMW-1 to DSOMW-4 are presented in Table 5. Field observations made during the completion of the borings are included on Soil Borings Logs presented in Appendix A. The OVA readings were generally not elevated above background concentrations and soil samples did not usually appear affected within the upper 20 ft of each monitoring well boring completed at the Downtown Slate Oil area (Table 5). However, soil samples collected from Monitoring Well Borings DSMOW-1 to DSOMW-3 near the water table did appear to be visually affected (staining) and vapor concentrations measured with the OVA increased near the water table.

Analytical results from soil samples collected from monitoring well borings at the Downtown Slate Oil area are summarized in Table 6 and the laboratory reports from the samples

are presented in Appendix D. In addition, the results from the laboratory analyses of TPH are presented in cross sections C to C' and D to D' in Figures 13 and 14. The analytical results from the soil samples generally confirm the field observations and results of the field screening with the OVA. Soil samples collected from Monitoring Well Boring DSOMW-4 did not contain detectable levels of BTEX or TPH, and soil samples collected from within 20 ft of the land surface in Monitoring Well Borings DSOMW-1 to DSOMW-3 contained low or undetectable concentrations of BTEX and TPH. However, soil samples collected below approximately 20 ft bls (near the upper surface of the water table) contained detectable levels of ethylbenzene, toluene, and xylenes and detectable concentrations of TPH.

Downtown Fuel Oil Area

The results of the OVA field screening of soil samples collected from Monitoring Well Borings DFOMW-1 to DFOMW-10 are presented in Table 5. Field observations recorded during completion of the borings are presented in Appendix A. Soil samples collected from Monitoring Well Borings DFOMW-2 and DFOMW-4 did not visually appear affected or exhibit OVA readings greater than 10 ppm above background concentrations. In general, soil samples did not visually appear affected and OVA readings were generally not significantly (greater than 10 ppm) elevated above background concentrations within the upper 18 ft of each monitoring well boring advanced in the Fuel Oil area. An exception to this is Boring DFOMW-1, which was completed through the former fuel oil tank excavation, and Monitoring Well Boring DFOMW-10, which was completed near the location of three former asphalt tanks (Figure 7). Samples collected within 14 ft of the land surface from DFOMW-1 and DFOMW-10 appeared visually affected and exhibited OVA readings elevated greater than 10 ppm above background concentrations (Table 5). Soil samples collected within approximately 5 ft of the water table in Monitoring Well Borings DFOMW-3, DFOMW-5, and DFOMW-6 to DFOMW-10 exhibited vapor concentrations measured with the OVA greater than 100 ppm above background concentrations.

Analytical results from soil samples collected from monitoring well borings completed in the Downtown Fuel Oil area are summarized in Table 6 and the laboratory reports are presented in Appendix D. The results of TPH analyses performed on soil samples from the Downtown Fuel Oil Area are also presented on geologic cross sections A to A' and B to B' (Figures 11 and 12). The analytical results from the soil samples generally confirms the results of the OVA screening. Soil samples collected from Monitoring Well Borings DFOMW-2 and DFOMW-4 did not contain detectable concentrations of BTEX or TPH. In addition, soil samples collected from the upper 18 ft of Monitoring Well Borings DFOMW-3 to DFOMW-5 did not contain detectable levels of BTEX or TPH. However, soil samples collected from Monitoring Well Boring DFOMW-1 did contain detectable concentrations of xylene and TPH. Soil samples collected from near the water table from Monitoring Well Borings DFOMW-3 and DFOMW-5 and DFOMW-6 to DFOMW-10 contained detectable concentrations of ethylbenzene, toluene, and xylenes, and concentrations of TPH exceeding 10 ppm (Figure 11).

Greystone Facility and Quarry

The results of the field screening of soil samples collected from monitoring well borings completed at the Greystone Facility and Greystone Quarry are presented in Table 7. Field observations recorded during completion of the monitoring well borings are included on soil boring logs presented in Appendix A. In general, soil samples collected from the Greystone Pump Island area and Greystone Fuel Oil area did not appear visually affected and did not exhibit ionizable vapor concentrations measured with the OVA that were elevated greater than 10 ppm above background concentrations (Table 7). Some elevated OVA readings were detected in soil samples collected from above the bedrock surface in the Monitoring Well Boring GMQMW-1 (completed at the Greystone Quarry).

Analytical results from soil samples collected at the Greystone Facility and Quarry are presented in Table 8 and laboratory sheets are included in Appendix D. The distribution of laboratory results from TPH analyses performed on soil samples from several monitoring well

borings is also presented in geologic cross section E to E', Figure 16. Soil samples collected from the Greystone Facility and Quarry did not contain detectable levels of BTEX. Soil samples collected from Monitoring Well Boring GPIMW-2 and GPIMW-3 did not contain detectable levels of TPH. However, a soil sample collected from GPIMW-1 (depth of 8 ft to 10 ft bls) contained 165 ppm of TPH and a sample collected from GFOMW-1 (depth of 14 ft to 16 ft bls) contained 245 ppm TPH. The soil sample collected from GQMW-1 (depth of 16 ft to 18 ft bls) contained greater than 2000 ppm TPH. However, soil samples collected from deeper than 25 ft bls did not contain detectable levels of TPH. Based on the laboratory results for analysis of TPH, it appears that some affected soil is present in the subsurface materials adjacent to the former tank excavations at the Greystone Facility and Quarry. However, soil samples collected near the water table interface did not contain detectable concentrations of TPH.

SEPARATE-PHASE PRODUCT MEASUREMENTS

Subsequent to the installation of monitoring wells at the Downtown Facility, separate-phase hydrocarbon product was encountered in several wells installed at the Slate Oil area and Fuel Oil area. Product thickness measurements recorded in the monitoring wells are presented in Table 9. Monitoring wells containing separate-phase product at the Slate Oil area include DSOMW-1, DSOMW-2, and DSOMW-3. Of the five wells initially installed at the Downtown Fuel Oil area (DFOMW-1 through DFOMW-5), separate-phase hydrocarbons accumulated in DFOMW-1, DFOMW-3, and DFOMW-5. Additional Monitoring Wells DFOMW-6 to DFOMW-10 were installed to define the extent of product at the Downtown Fuel Oil area during the week of July 29, 1991. Measurable separate-phase product has been subsequently identified in Monitoring Wells DFOMW-6, DFOMW-7, and DFOMW-9. However, it should be noted that several wells installed during May 1991 did not develop separate-phase product until July 1991, and measured product thicknesses increased subsequent to the initial appearance. Therefore, product measurements recorded in Monitoring Wells DFOMW-6 to DFOMW-10 may not yet be indicative of actual product thicknesses near the monitoring well screen. In addition, separate-phase product recorded in Monitoring Well DFOMW-9 may be erroneous due to an

equipment malfunction. Additional product thickness measurements will be obtained to confirm the presence of hydrocarbon product in Monitoring Well DFOMW-9.

LABORATORY RESULTS FROM GROUND-WATER SAMPLING

Two rounds of ground-water samples were collected from the monitoring wells at the Downtown Facility, Greystone Facility, and Greystone Quarry. The list of analytical parameters completed on ground-water samples during the investigation is presented on Table 1. The initial round of ground-water samples was collected on June 11 and June 12, 1991. This round of ground-water samples was to have been analyzed for VOCs and TPH. Because of a laboratory error, the ground-water samples collected on June 11 and 12, 1991 were analyzed for BTEX instead of VOCs. A second round of ground-water samples was subsequently collected for analyses of VOCs from the monitoring wells at the Downtown Facility, Greystone Facility, and Greystone Quarry on July 11 and July 12, 1991. Several ground-water samples were also submitted for analyses of selected inorganic constituents and indicator parameters to provide information necessary to evaluate potential remedial technologies (if deemed necessary). In addition, ground-water samples collected from monitoring wells installed at the Downtown Facility were also submitted for analyses of phenols to evaluate the potential extent of the PCP plume associated with the bordering Wauleco Facility.

Downtown Slate Oil Area

The analytical results of ground-water samples collected from the four monitoring wells installed at the Downtown Slate Oil area are summarized in Table 10. Laboratory data sheets for the samples are included in Appendix E. Note that ground-water samples were collected for analyses of VOCs, inorganic parameters, and indicator parameters only from monitoring wells that did not contain separate-phase product at the time of sampling. Detectable concentrations of benzene, ethylbenzene, and xylenes in ground-water samples from the Downtown Slate Oil Area ranged from below detection to 14 parts per billion (ppb). VOC constituents other than

benzene, ethylbenzene, and xylenes were not detected in ground-water samples from the Slate Oil Area. TPH concentrations detected in ground-water samples ranged from below the analytical detection limit (0.25 ppm to 3 ppm) to 51 ppm (DSOMW-3).

Ground-water samples collected from Monitoring Wells DSOMW-1 and DSOMW-3 contained several phenol compounds at concentrations ranging from 2 ppb to 17 ppb. PCP was not detected in any of the ground-water samples collected from the Slate Oil area. The analytical results of the second round of ground-water samples collected in July 1991 (analyzed for VOCs) generally correlate well with analytical results of the initial round of ground-water samples collected in June 1991 (analyzed for BTEX).

The distribution of benzene, and total BTEX detected in ground-water samples collected on June 12 from monitoring wells in the Slate Oil area is presented in Figure 19. The distribution of TPH and PCP detected in ground-water samples from monitoring wells installed in the Slate Oil area is presented as Figure 20. Based on the distribution of hydrocarbon constituents, it is apparent that affected ground water is present within the former Slate Oil area, and hydraulically downgradient (southeast) of the former tank area. Separate-phase hydrocarbon product was detected in Monitoring Well DSOMW-1 on July 30, 1991 with an observed thickness of 0.79 ft. Separate phase product, with an observed thickness of 0.01 ft, was present in Monitoring Wells DSOMW-2, and DSOMW-3 during water level measurements recorded on July 30 (Table 9).

Downtown Fuel Oil

The analytical results from ground-water samples collected from monitoring wells installed at the Downtown Fuel Oil area are summarized in Table 10. Laboratory data sheets for the ground-water samples are included in Appendix E. Ground-water samples were submitted for VOCs, inorganic parameters, and indicator parameter analysis from monitoring wells that did not contain separate-phase hydrocarbon product at the time of sampling. The

VOC constituents detected in ground-water samples collected from the monitoring wells installed at the Fuel Oil area included benzene, ethylbenzene, xylenes, chloroform, and trichloroethene. No VOC constituents were detected in ground-water samples collected from Monitoring Wells DFOMW-2 and DFOMW-4. Benzene, ethylbenzene, and xylenes were detected in ground-water samples from DFOMW-1 at concentrations ranging from 23 ppb (benzene) to 670 ppb (xylenes). A ground-water sample collected from DFOMW-5 during completion of the June 1991 sampling round contained ethylbenzene, toluene, and xylenes at concentrations ranging from 61 ppb (xylene) to 110 ppb (ethylbenzene). Note that a ground-water sample for VOCs was not collected from Monitoring Well DFOMW-5 in July due to the presence of separate-phase product and a sample was not obtained for VOC analyses from DFOMW-7 in August due to the presence of separate-phase hydrocarbon product in that well. In addition, Monitoring Well DFOMW-3 was not sampled during the investigation for VOCs, TPH, inorganic parameters, or indicator parameters due to the presence of separate-phase hydrocarbon product. Concentrations of TPH in ground-water samples ranged from 3 ppm in DFOMW-1 to 69 ppm in DFOMW-6. Chloroform and trichloroethene were detected (at concentrations of 1.3 ppb and 2.0 ppb) in a ground-water sample collected from DFOMW-9 during August.

The distribution of benzene and total BTEX in ground-water samples collected from monitoring wells at the Downtown Fuel Oil area on June 11 is presented as Figure 19. The distribution of TPH and PCP in ground-water samples from monitoring wells sampled on June 11 is presented on Figure 20. PCP was detected in the ground-water sample collected from DFOMW-5 on June 11 at a concentration of 780 ppb. PCP was subsequently not detected in a ground-water sample collected from DFOMW-5 on July 12 and August 8. However, it should be noted that because of matrix effects encountered during the chemical analyses, the detection limits for ground-water samples analyzed for phenols during the July sampling round exceeded the concentrations detected in the June samples. In addition, the laboratory reported matrix effects during the analyses of the sample collected from Monitoring Well DFOMW-5 during August.

Greystone Facility and Quarry

The analytical results from ground water samples collected from the four monitoring wells installed at the Greystone Facility and the monitoring well installed at the Greystone Quarry are summarized in Table 11. Laboratory sheets for the ground-water samples are included in Appendix E. Ground-water samples collected from the monitoring wells on June 11 and July 12, 1991 at the Greystone Facility and Quarry generally did not contain detectable levels of VOCs (including BTEX) or TPH. The ground-water sample collected from Monitoring Well GFOMW-1 during completion of the initial sampling round contained detectable concentrations of toluene (18 ppb). No VOC constituents were detected in the subsequent ground-water sample collected from Monitoring Well GFOMW-1.

QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

Quality Assurance/Quality Control samples including duplicate samples and field rinsate blanks were prepared during the field activities. Trip blanks were provided by the project laboratory. The results of the duplicate samples are presented on Tables 10 and 11. The analytical results from field rinsate blanks and trip blanks are presented in Table 12. Detectable concentrations of VOCs were not present in any of the field rinsate blanks or trip blanks collected during the investigation. Based on the laboratory results from the field blanks and trip blank samples, the laboratory cleaning of the disposable bailers appears to be adequate, and VOCs were apparently not introduced into the sample bottles during bottle shipment or storage.

PRODUCT RECOVERY TESTING

Separate-phase hydrocarbon thicknesses measurements were performed during June, July and August 1991 at monitoring wells installed at the Downtown Facility. Hydrocarbon product recovery tests were performed on the following monitoring wells installed at the Downtown Facility.

Monitoring Well Number	Date of Recovery Test
DSOMW-1	July 12, 1991
DFOMW-3	June 12, June 26, July 12, 1991
DFOMW-5	July 12, 1991

Plots of hydrocarbon product recovery versus elapsed time since product removal in Monitoring Wells DSOMW-1, DFOMW-3 and DFOMW-5 are presented in Appendix F. The product recovery tests performed on Monitoring Well DFOMW-3 on June 12 and June 27 did not produce usable data (possibly due to a malfunction in the interface probe) and were therefore not analyzed.

Based on the graphical method discussed in Hughes et al. (1988), the saturated mobile hydrocarbon thickness is estimated as the difference between the inflection point on the graph and the total hydrocarbon recovery. Based on the graphs of product recovery versus time presented in Appendix F, it appears likely that approximately 0.02 ft of saturated mobile hydrocarbons are present in the vicinity of the well screen at Monitoring Well DSOMW-1, less than 0.01 ft of mobile hydrocarbons are present in the area of Monitoring Well DFOMW-3, and approximately 0.1 ft of mobile hydrocarbons are present adjacent to Monitoring Well DFOMW-5. It should be noted that the mobile hydrocarbon thickness estimates are not intended for use in calculations of volume of free product present in the subsurface materials.

Samples of separate-phase hydrocarbons from Monitoring Well DSOMW-1, DFOMW-3 and DFOMW-5 were also submitted for laboratory identification. The results of the laboratory analyses are presented on Table 13, and laboratory data sheets are presented in Appendix G. The laboratory identified the hydrocarbon product present in Monitoring Well DFOMW-3 and Monitoring Well DFOMW-5 as Fuel Oil Number 4. The project laboratory was not able to identify the product present in Monitoring Well DSOMW-1.

LABORATORY RESULTS FROM MICROBIOLOGICAL PLATING STUDY SAMPLES

Soil samples were collected from the monitoring well borings and submitted for laboratory analysis to provide information regarding the presence of indigenous microbial populations in the subsurface soil, and if the populations are present, to evaluate whether a portion of the population is capable of degrading hydrocarbon constituents. Microbial populations in environmental samples are variable, and can range from less than 1×10^2 colony forming units per gram of sample (cfu/gm) to greater than 1×10^9 cfu/gm. Typical soil populations range from 1×10^4 cfu/gm to 1×10^6 cfu/gm. These values should be interpreted broadly as they are numbers associated with viable microbes that have been extracted from soil and are capable of growing on a general nutrient medium. There is no medium capable of influencing growth of all potential microorganisms indigenous to soil. Microbial spores, if present, require a period of acclimation before growth will begin. Therefore, results of the plating study sampling should be interpreted as a population minimum with true microbial numbers potentially one to two orders of magnitude greater than the results of the plating study.

Soil samples submitted for microbiological plating studies were also analyzed for TPH, Ammonia, percent moisture and pH. Note that TPH was analyzed using USEPA Method 418.1. Soil samples analyzed for TPH in other portions of the investigation utilized USEPA Modified Method 8015. The optimal range of pH values in soil is 6.0 to 8.0 for microbial growth. The optimal range in soil moisture for microbial growth (necessary to maintain cell turgidity, transport nutrients and maintain biological processes) is generally between 10 percent and 25 percent (on a weight basis). Ammonia and o-phosphate are nutrients necessary to sustain the growth of microbial populations.

Downtown Slate Oil

Two soil samples collected from the Downtown Slate Oil area were submitted for microbiological plating studies. The soil samples were collected from Monitoring Well Boring DSOMW-2 (depth of 28 ft bls to 30 ft bls) and from Monitoring Well Boring DSOMW-3 (depth of 16 ft bls to 18 ft bls). The microbiological plating study results are summarized in Table 14. The laboratory data sheets from the microbiological plating study samples are presented in Appendix H. Included on Table 14 are the results of the total heterotrophic and diesel and mineral spirit degrading aerobic microbial population studies. Also included in Table 14 are the results of other analyses performed on the samples including TPH, soil pH, percent moisture and soluble ammonia and o-phosphate. Review of the data indicates that heterotrophic microbes were not detected in either of the two soil samples collected from the Downtown Slate Oil area. The lack of microbial populations in Soil Sample DSOMW-2 (28-30 ft bls) may be due to the presence of separate-phase product (toxic concentrations) reported in that soil sample. A lack of microbial populations in Soil Sample DSOMW-3 (16-18 ft bls) is unclear, however, the soil moisture present in the sample was outside the optional range of 10 percent to 25 percent.

Downtown Fuel Oil Area

The results from the four microbiological plating study samples collected from the Downtown Fuel Oil area are also included in Table 14. Laboratory reports from the soil samples are presented in Appendix H. Total heterotrophic aerobic microbes, diesel degrading aerobic microbes, and mineral spirits degrading aerobic microbe populations were detected in soil samples collected from Monitoring Well Boring DFOMW-3 (depth of 30 to 32 ft bls) and Monitoring Well Boring DFOMW-5 (22 to 26 ft bls). These results indicate that these soil samples contain heterotrophic microbial populations that have adapted to utilize diesel fuel as a carbon source, and that soil sample DFOMW-5 (22-26 ft bls) also contains a microbial population capable of using mineral spirits as a carbon source. However, two soil samples

collected from Monitoring Well Boring DFOMW-1 did not contain detectable population of heterotrophic microbes (Table 14). Again, a possible reason for the lack of microbes in the soil sample collected from Monitoring Well Boring DFOMW-1 was the relatively high concentrations of TPH detected in the soil samples.

Greystone Facility and Quarry

The results from five microbiological plating study samples collected from the Greystone Facility and Quarry are presented in Table 15. Laboratory reports from the soil samples are presented in Appendix G. Total heterotrophic microbes were detected in all of the soil samples collected from the Monitoring Well Borings completed at the Greystone Facility and Quarry. Microbes capable of utilizing diesel fuel as a carbon source were detected in all of the samples, with the exception of the soil sample from Monitoring Well Boring GPIMW-2 (depth of 10 ft bls to 14 ft bls). However, the soil sample from Monitoring Well Boring GPIMW-2 contained TPH at a relatively low concentration (5 ppm, analyzed by USEPA Method 418.1) which may not be conducive to promoting substantial activity of hydrocarbon degrading microbes.

SUMMARY

Soil and ground-water investigations have been completed at the 3M Downtown Wausau Facility, and the Greystone Facility and Greystone Quarry near the Town of Main. Investigation activities at the Downtown Wausau Facility were implemented near the former Slate Oil tank area and near the former Fuel Oil tank area. Investigation activities at the Greystone Facility were focussed on the former Greystone Pump Island area and the former Fuel Oil tank area. Investigation activities at the Greystone Quarry were implemented at a former diesel tank excavation near the Quarry. Field investigation activities included the completion of monitoring well borings, installation of monitoring wells, collection of soil samples, ground-water samples, and hydrocarbon product samples for laboratory analyses, and performance of in-situ hydraulic conductivity tests in several monitoring wells.

DOWNTOWN FACILITY

Subsurface materials encountered during the completion of monitoring well borings at the Downtown Facility included fine sand to gravel fill and fine to coarse silty sand to gravel. Depth to ground-water at the Downtown Facility ranges from approximately 23 ft bls to approximately 26 ft bls. Ground-water flow across the Facility is generally to the southeast, toward the Wisconsin River. The average linear ground-water flow velocity (calculated using Darcy's Law) ranges from approximately 5 x 10^{-5} cm/sec (0.2 ft/day) to approximately 2 x 10^{-4} cm/sec (0.5 ft/day).

Downtown Slate Oil Area

Four monitoring wells (Monitoring Wells DSOMW-1 through DSOMW-4) were installed near the Downtown Slate Oil area. Soil samples from one monitoring well boring completed furthest from the Slate Oil area (DSOMW-4) did not visually appear affected and did not exhibit significantly (greater than 10 ppm) elevated OVA meter readings. Soil samples collected from the upper 20 ft from three monitoring well borings advanced directly through the former slate oil tank excavation pit (DSOMW-1) or near the former tank excavation pit (DSOMW-2 and DSOMW-3) generally did not appear visually affected or exhibit significantly elevated OVA readings. However, soil samples collected near the water table interface appeared stained and exhibited elevated OVA readings. Soil samples submitted for laboratory analyses contained detectable levels of ethyl benzene, toluene and xylene, and TPH. Ground-water samples collected from Monitoring Well DSOMW-4 did not contain detectable concentrations of BTEX or TPH. However, ground-water samples collected from the Monitoring Wells DSOMW-1 and DSOMW-3 (installed hydraulically down-gradient from the former excavation pit) contained detectable concentrations of BTEX and TPH. Monitoring Wells DSOMW-1 through DSOMW-3 have subsequently developed measurable thicknesses of separate-phase hydrocarbon product. A hydrocarbon product recovery test was performed on Monitoring Well DSOMW-1. Based on the results of the test, an estimated thickness of free phase 0.02 ft of hydrocarbon is present

near the former tank excavation pit. Soil samples collected for microbiological plating studies from monitoring well borings completed in the Slate Oil area did not contain significant concentrations of heterotrophic aerobic microbes.

Downtown Fuel Oil Area

A total of 10 monitoring wells were installed near the Downtown Fuel Oil area (DFOMW-1 through DFOMW-10). Initially, five monitoring wells (DFOMW-1 through DFOMW-5) were installed near the Downtown Fuel Oil area to evaluate site conditions. However, subsequent to the appearance separate-phase hydrocarbon product in three of the five monitoring wells, an additional five monitoring wells (DFOMW-6 through DFOMW-10) were installed to aid in delineating the apparent extent of separate-phase hydrocarbon product. Soil samples collected from two monitoring well borings that were in cross and upgradient portions from the former fuel oil tank excavation pit (DFOMW-2 and DFOMW-4) did not appear visually affected, exhibit significantly elevated OVA readings or contain detectable concentrations of BTEX or TPH. Soil samples collected from monitoring well borings that were positioned hydraulically down-gradient of the former tank excavation pit generally did appear visually affected and exhibited elevated OVA readings near the water table. Soil samples from above approximately 18 ft did not contain detectable levels of BTEX or TPH. However, ethyl benzene, toluene and xylene and TPH were detected in soil samples collected near the water table interface. Soil samples from Monitoring Well DFOMW-1 (completed through the former fuel oil tank excavation), and Monitoring Well DFOMW-10 (positioned near former asphalt tanks) generally appeared visually affected and contained detectable concentrations of BTEX and TPH.

Ground-water samples collected from the Monitoring Wells DFOMW-2 and DFOMW-4 did not contain detectable concentrations of BTEX or TPH. Ground-water samples collected from the monitoring wells installed in the former UST excavation pit and down-gradient from the former tank locations did contain detectable concentrations of BTEX and TPH. A water

sample collected from Monitoring Well DFOMW-5 in June contained PCP at a concentration of 780 ppb.

Hydrocarbon product recovery tests were performed on two monitoring wells containing separate-phase hydrocarbon product in the Downtown Fuel Oil area (Monitoring Wells DFOMW-3 and DFOMW-5). The results of the product recovery tests indicate that less than 0.01 ft of separate-phase hydrocarbon product is likely present in DFOMW-3 approximately 0.1 ft of separate-phase hydrocarbon product is present in Monitoring Well DFOMW-5.

The results of the microbiological analyses performed on soil samples from a portion of the Downtown Fuel Oil area indicate that a heterotrophic microbial population is present in the subsurface materials that has adapted to utilize diesel fuel as a carbon source. However, the results of the microbiological analysis of two soil samples collected from the soil boring placed through the former tank excavation pit (highly impacted with hydrocarbon constituents) indicated that detectable concentrations of heterotrophic microbes were not present.

GREYSTONE FACILITY AND GREYSTONE QUARRY

Subsurface geologic materials encountered during the completion of monitoring well borings at the Greystone Facility consisted of sand to sandy gravel fill material and interbedded fine to coarse sand with gravel. Subsurface geologic materials encountered at the Greystone Quarry included fine sand fill material overlying interbedded fine silty sand to clayey silt with gravel. Bedrock consisting of metamorphosed siltstone was encountered in the monitoring well boring completed at the Greystone Quarry at a depth of 22 ft bls. Depth to ground-water at the Greystone Facility is approximately 26 ft bls and ground-water flow at the Facility is generally to the northeast. The average linear ground-water flow velocity at the Greystone Facility (calculated using Darcy's Law) ranges from approximately 8.5×10^{-6} cm/sec (0.2 ft/day) to 7.1×10^{-4} ft/sec (2.0 ft/day). Depth to ground-water in the monitoring well installed at the Greystone Quarry is approximately 38 ft bls.

Greystone Pump Island

Three ground water monitoring wells were installed near the Greystone Pump Island area (GPIMW-1 through GPIMW-3). One monitoring well (GPIMW-1) was installed through the former pump island tank excavation pit, and two wells (GPIMW-2 and GPIMW-3) were installed northeast of the former pump island excavation pit. Soil samples collected from the two monitoring well borings completed northeast from the former pit did not appear visually affected, exhibit OVA readings elevated greater than 1 ppm above background concentrations or contain detectable concentrations of VOCs or TPH. Soil samples collected from Monitoring Well Boring GPIMW-1 completed through the former tank excavation indicated detectable TPH concentrations at 8 to 10 ft bls; TPH was not detected in the deeper soil sample collected from 26 to 28 ft bls. VOCs were not detected in any of the soil samples. In addition, ground-water samples collected from the three monitoring wells installed at the Greystone Pump Island area did not contain detectable concentrations of VOCs or TPH. Soil samples collected from the monitoring well borings that were submitted for microbiological plating study analyses contained heterotrophic microbes capable of using diesel fuel as a carbon source.

Five soil borings were previously completed near the Greystone Pump Island by Bay West, Inc. The only soil samples containing hydrocarbon constituents were collected from the boring completed through the former tank excavation.

Greystone Fuel Oil Area

One ground-water monitoring well (GFOMW-1) was installed through the former fuel oil tank excavation pit at the Greystone Fuel Oil area. Soil samples collected from the monitoring well boring did not appear visually affected and did not exhibit OVA readings detectable above background concentrations. Analytical results from soil samples indicated detectable TPH concentrations to a depth of 16 ft bls. A sample collected from a deeper portion

of the boring (26 ft bls to 28 ft bls) did not contain detectable concentrations of TPH. No VOCs were detected in the soil samples. A ground-water sample collected from the monitoring well during the completion of the first sampling round (June) contained toluene at a concentration of 18 ppb. However, the ground-water sample collected from this well during the second sampling round (July 1991) did not contain detectable levels of toluene or other VOCs. Samples for microbiological plating studies were not collected from the borings; however, the Greystone Fuel Oil area is located within approximately 150 ft of the pump island. Considering it proximity to the pump island area and the nature of the constituents detected in soil samples, it is likely that heterotrophic microbes are also present at the Greystone Fuel Oil area.

Soil samples collected from one soil boring completed through the former tank excavation previously by Bay West and submitted for laboratory analysis contained detectable concentrations of total hydrocarbons, but no detectable VOCs.

Greystone Quarry

One ground-water monitoring well (GMQMW-1) was completed through the former diesel tank excavation pit near the Greystone Quarry. Soil samples collected from the monitoring well boring did not visually appear affected, but exhibited OVA readings that were slightly above background concentrations. A sample collected from the interval of 16 to 18 ft bls did not contain detectable concentrations of BTEX, but did contain detectable concentrations of TPH. Ground-water samples collected from the monitoring well did not contain detectable concentrations of VOCs or TPH. A soil sample collected for microbiological evaluation contained heterotrophic microbes capable of using diesel fuel as a carbon source.

Three soil borings were also completed through and near the former Greystone Quarry excavation pit by Bay West, Inc. Soil samples collected from borings completed east and south of the former excavation did not contain detectable concentrations of hydrocarbon constituents.

RECOMMENDATIONS

The soil and ground-water investigation at the 3M Downtown Wausau Facility Slate Oil area and Fuel Oil area has documented the presence of separate-phase hydrocarbon product, affected soils and affected ground water. Immediate action is required to recover the separate-phase hydrocarbon product on the basis that the product is acting as a continual source of hydrocarbon constituents to ground water. Remediation of hydrocarbon-affected soil and ground water is proposed for implementation at the facility.

The soil and ground-water investigations at the 3M Greystone Facility and Greystone Quarry document the presence of localized areas of affected soil adjacent to former UST excavation pits at the facility.

Based on the results of the soil and ground-water investigations at the 3M Facilities, Geraghty & Miller has developed recommendations for the completion of additional site activities. Site-specific recommendations are included in the following subsections.

DOWNTOWN SLATE OIL AREA

Evaluation of the results of the soil and ground-water investigation at the Downtown Slate Oil area indicates the presence of separate-phase hydrocarbon product, affected soil, and affected ground water. Recommendations for additional investigation activities and remediation of the area include the following three steps:

Step 1 Periodic bailing of separate-phase hydrocarbon product from Monitoring Wells DSOMW-1, DSOMW-2 and DSOMW-3.

Step 2 Perform a vacuum enhanced aquifer pumping test. Evaluate the pumping test data and then use available data to prepare a remedial action plan (RAP).

These recommendations for the Downtown Slate Oil Area are more fully discussed in the following sections.

Bail Separate-Phase Hydrocarbon Product from Monitoring Wells

Separate-phase hydrocarbon product has been detected in Monitoring Wells DSOMW-1, DSOMW-2 and DSOMW-3. A product recovery test performed in Monitoring Well DSOMW-1 indicates that approximately 0.02 ft of separate-phase hydrocarbon product is likely present in the formation adjacent to the monitoring well screen. It is recommended that hydrocarbon product removal in the interim be accomplished through periodic bailing of product from Monitoring Wells DSOMW-1, DSOMW-2, and DSOMW-3. Separate-phase hydrocarbon product levels in the three monitoring wells will be measured periodically and the volume of product recovered will be recorded to aid in determining the effectiveness of the product bailing activities.

Perform an Vacuum Enhanced Aquifer Pumping Test and Prepare A RAP

To obtain information on the physical hydrogeology needed to develop an appropriate Remedial Action Plan (RAP), it is recommended that a vacuum-enhanced aquifer pumping test be completed at the Slate Oil area.

The primary goal of the vacuum-enhanced aquifer pumping test will be to evaluate the response of the aquifer to the application of a vacuum and to the extraction of ground water from a recovery well. This data will be used to determine the number, location, and design of

any additional extraction wells in the area (if necessary). The following parameters will be monitored during the test:

- Ground-water extraction rate;
- Concentrations of hydrocarbon constituents in the extracted ground water;
- Air and hydrocarbon vapor extraction rate;
- Chemical composition of the air and hydrocarbon vapor discharge;
- Vacuum in surrounding monitoring wells; and
- Water-table depression in surrounding monitoring wells.

Information gathered during the test will also aid in the design of a ground-water/hydrocarbon product extraction system for the Slate Oil Area. It is currently anticipated that one or more of the existing 4-inch PVC water-table monitoring wells will likely be utilized as a vacuum enhanced ground-water extraction well. The vacuum enhanced aquifer pumping test will consist of initially pumping ground-water/separate phase product from an extraction well and measuring the water-table depression in surrounding monitoring wells. After water levels reach an equilibrium, a vacuum will also be applied to the extraction well. The air and hydrocarbon vapor discharge will be monitored using an OVA, MSA™ Explosimeter, O_2 meter and CO_2 meter.

The vacuum-enhanced aquifer pumping test is expected to be completed within a total time period of one to two days. Ground-water extraction and air extraction activities will likely continue for a period of 12 to 24 hours, then the recovery of the aquifer will be monitored for an additional 12 to 24 hours. However, the actual duration of the tests will be based on the response of the aquifer to the test. Water levels and background pressure potentials in the surrounding monitoring wells, and the pumping well will be measured for a period prior to the test and throughout the test to evaluate aquifer response.

Following the completion of the vacuum-enhanced aquifer pumping test, and review of other relevant information (including the results of the ongoing investigation conducted by Keystone Environmental at the Wauleco Facility), an evaluation of the completeness of the data and screening of potentially applicable remedial actions will be conducted. Based on this evaluation, a RAP will be prepared for the Slate Oil area and submitted to 3M Corporation.

DOWNTOWN FUEL OIL AREA

The results of the soil and ground-water investigation at the Downtown Fuel Oil area indicate the presence of separate-phase hydrocarbon product, affected soil and ground-water. Recommendations for additional investigations and remediation include the following two steps:

Step 1: Begin to recover separate-phase hydrocarbon product detected in monitoring wells.

Step 2: Perform a soil venting/bioventing design test. Use available data to prepare a RAP.

These two recommendations for the Fuel Oil Area steps are more fully discussed in the following sections.

Recover Separate-Phase Hydrocarbon Product from Monitoring Wells

Measurable thicknesses of separate-phase hydrocarbon product have been detected in Monitoring Wells DFOMW-1, DFOMW-3, DFOMW-5, DFOMW-6, DFOMW-7 and DFOMW-9. It is recommended that the separate-phase hydrocarbon product removal be accomplished through the combined use of a Petro-Belt™ Model PB-8 product recovery system, a Petro-Trap™ hydrocarbon product skimmer system, and periodic bailing of other existing monitoring wells that contain separate phase product. The use of the Petro-Belt™ system is

limited to 4-inch or larger diameter monitoring wells and the configuration of the system necessitates the use of a weather-proof structure to house the system during the winter months. It will therefore not be possible to install belt-type product recovery systems in 2-inch diameter Monitoring Wells DFOMW-1 through DFOMW-5. Therefore, it is anticipated that the belt-type product recovery system will be installed in Monitoring Well DFOMW-7 and may be periodically relocated to Monitoring Well DFOMW-6 or DFOMW-9 (as necessary). A Petro-Trap™ product skimmer system can be installed in 2-inch diameter or larger monitoring wells. It is anticipated that a Petro-Trap™ skimmer system will be installed in Monitoring Wells DFOMW-3 and DFOMW-5. A Petro-Trap™ system may later be transferred to Monitoring Well DFOMW-1 (as necessary). Other monitoring wells at the Fuel Oil Area that contain product will be bailed periodically to recover separate-phase product. The volume of product recovered from the monitoring wells will be recorded and product levels in the monitoring wells will be periodically measured to evaluate the effectiveness of the recovery systems. Adjustments/modifications will be made to the systems as necessary.

Perform a Soil Venting/Bioventing Design Test and Prepare A RAP

Laboratory results indicate the presence of BETX compounds in ground water and subsurface materials at the Downtown Fuel Oil area. An aquifer pumping test in the Downtown Fuel Oil area is not recommended at this time due to the potential for drawing PCP-affected ground water from the Wauleco Facility onto 3M property. However, microbiological plating studies completed on soil samples from portion of the Downtown Fuel Oil area indicate that bioremediation may be a potentially effective means of addressing hydrocarbon-affected materials in the subsurface, if concentrations of oxygen and nutrients existing in the subsurface are amended. Additional information is necessary to fully evaluate the potential use of bioremediation to address affected soil at the Downtown Fuel Oil area. A soil venting/bioventing design test is recommended to provide information regarding the potential efficiency and zone of influence of a soil venting/bioventing system, soil permeability, and subsurface air pathways and potential levels of VOCs discharged from such a system.

Concentrations of CO_2 and O_2 measured during the design test will also provide additional information regarding ongoing bioactivity in the subsurface.

The design test will consist of introducing a vacuum to one or more monitoring wells with a portable blower and measuring the negative pressure potential in surrounding monitoring wells. Air emissions from the design test will be monitored using an OVA, MSA™ Explosimeter, O_2 meter and CO_2 meter.

Following the completion of the soil venting/bioventing design tests and review of other information (including site specific monitoring associated with separate-phase hydrocarbon product recovery and information from the investigation at the Wauleco Facility), potentially applicable remedial actions for affected soil and ground water at the Downtown Fuel Oil area will be screened. Based on this evaluation, a RAP will be prepared and submitted to 3M Corporation for the Downtown Fuel Oil area.

GREYSTONE FACILITY AND GREYSTONE QUARRY

Evaluation of the results of the soil and ground-water investigations at the Greystone Facility (Pump Island area and Fuel Oil area) and the Greystone Quarry indicates the presence of hydrocarbon affected soil. Review of soil and ground-water samples collected during the investigation indicates that the affected soil appears to be localized and does not extend to the water table. Ground water in the area of these investigations does not appear to be affected. In addition, considering the site stratigraphy (sand sized material) it is not expected that any hydrocarbon constituents released from the former tanks would migrate laterally to a substantially greater extent then vertically. Considering that soil samples collected with depth at the Greystone Pump Island and Fuel Oil Areas did not contain detectable concentrations of BTEX or TPH, it is considered unlikely that hydrocarbon constituents migrated substantially in a lateral direction.

Microbiological plating study results indicate the presence of aerobic microbes in soil samples that have adapted to use hydrocarbons as a carbon source. Therefore, it is expected that ongoing degradation will further reduce the levels of hydrocarbon constituents in the subsurface. Based on the apparently localized presence of hydrocarbon affected soil, unaffected ground water, and documented natural bioactivity, no further action is recommended at the Greystone Facility or Quarry.

939-3MII/report.rpt

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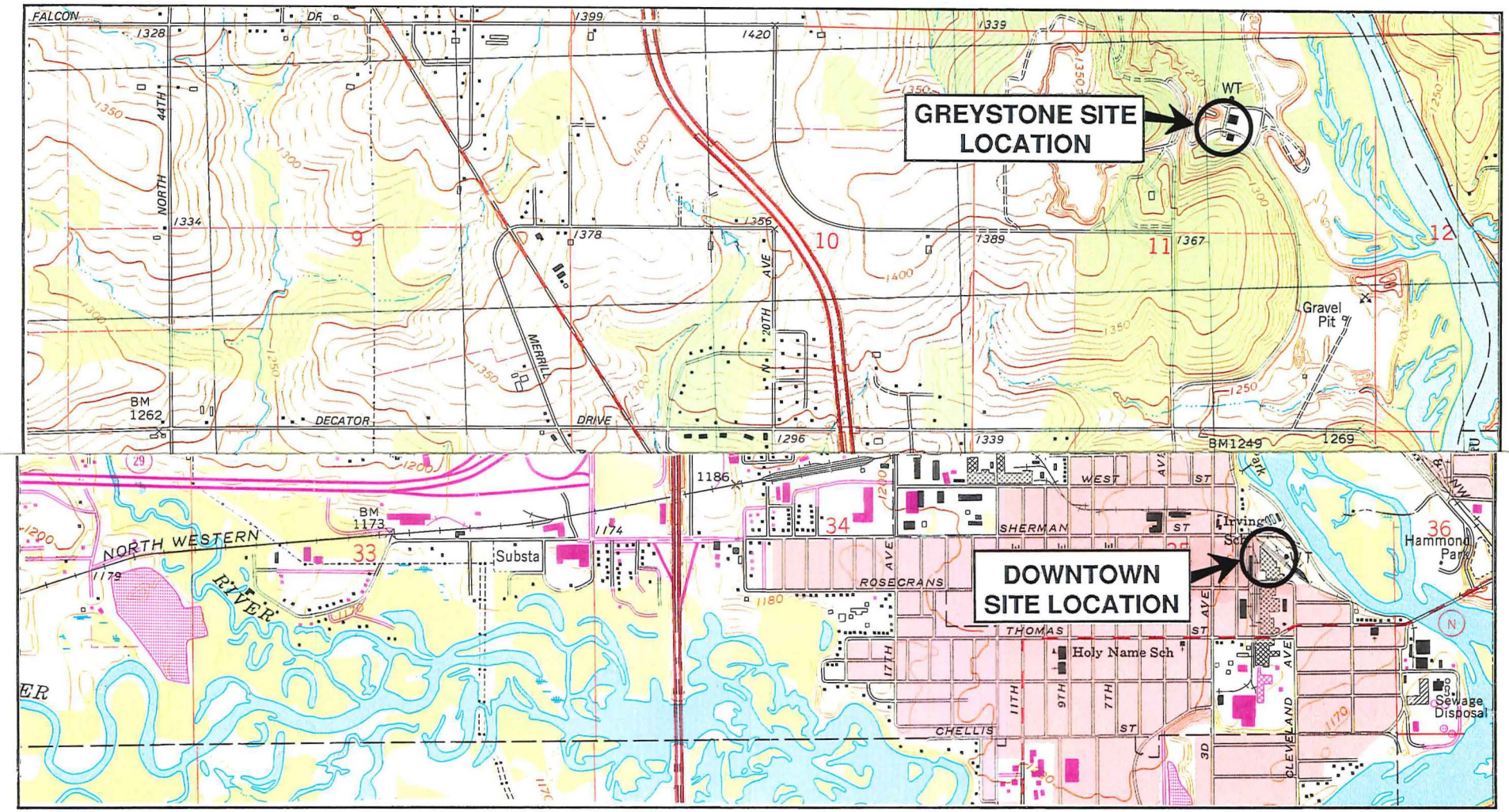
939-3MII/report.rpt



SOURCE: Composite of USGS 7.5 Minute Topographic Maps, BROKAW and WAUSAU WEST, WISCONSIN Quadrangle, 1978

N

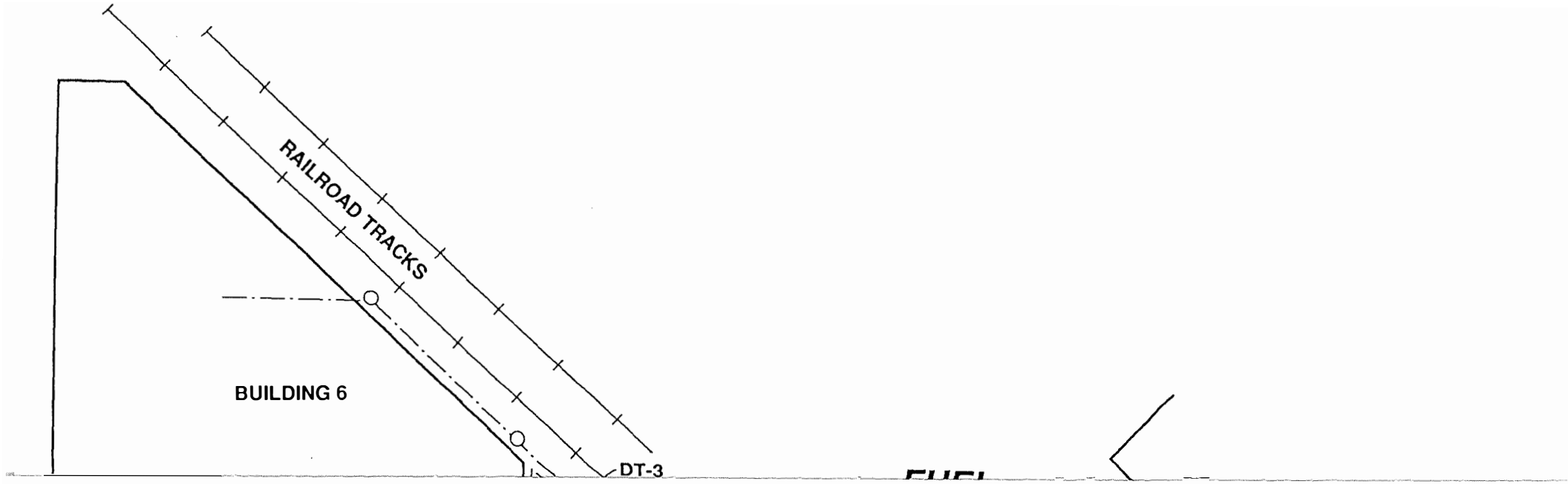
0 1000 2000 4000

SCALE IN FEET

WISCONSIN

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 1
SITE LOCATION MAP
3M - WAUSAU
WAUSAU, WISCONSIN
WI21201 - 0003.04



LEGEND

- STORM SEWER
- SANITARY SEWER
- MANHOLE/CATCH BASIN
- EXCAVATED UNDERGROUND STORAGE TANK LOCATION
- UNDERGROUND STORAGE TANK LOCATION
- APPROXIMATE LIMIT OF EXCAVATION

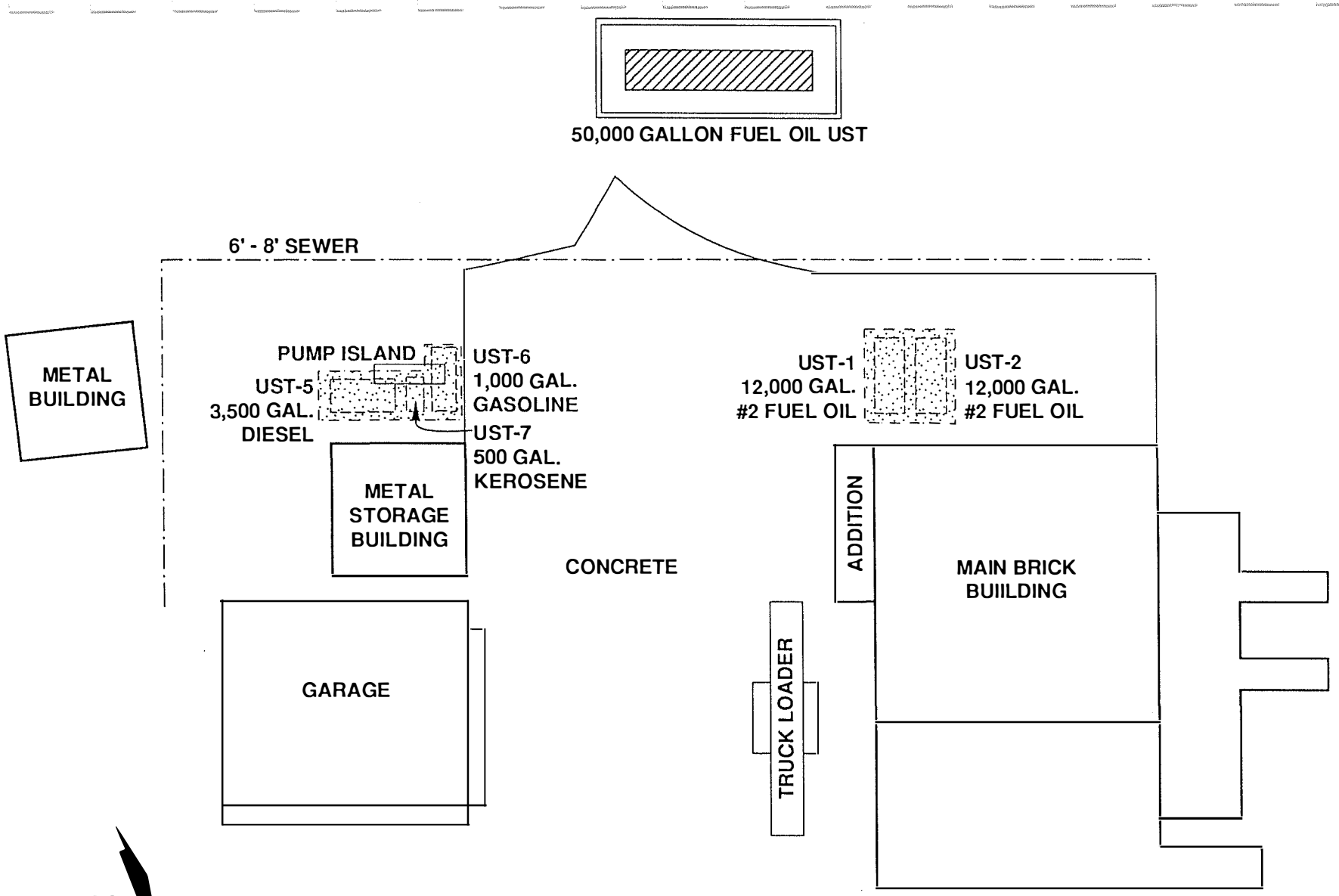
N

0 25 50 100

SCALE IN FEET

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 2
SITE DETAILS
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21201 - 0003.01



Modified from Bay West March 7, 1990 Report

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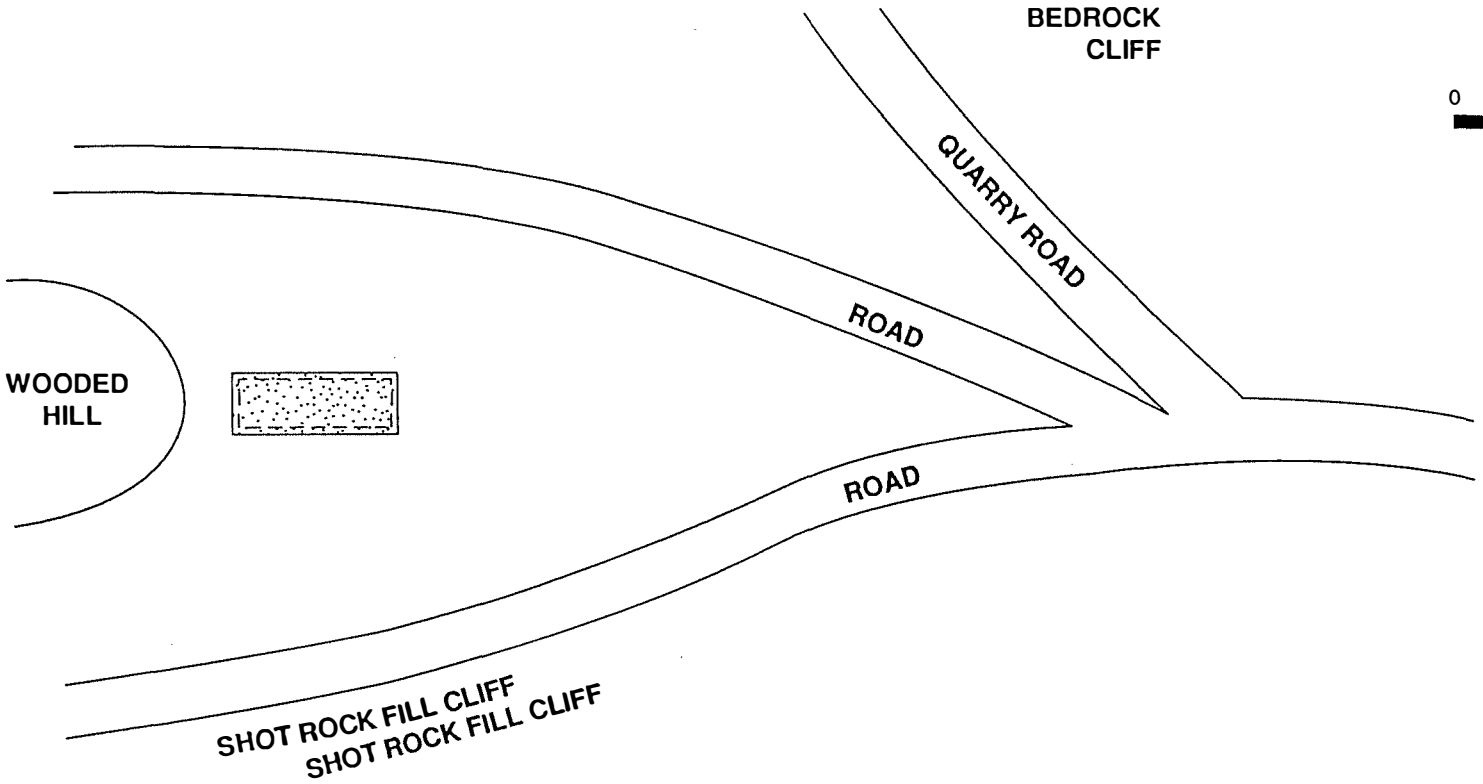
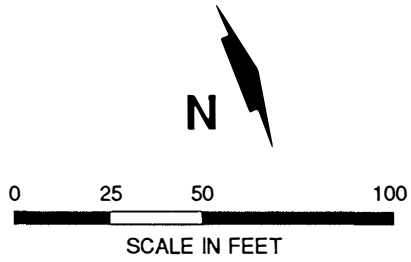
Environmental Services

FIGURE 3
FACILITY LAYOUT - GREYSTONE
3M - WAUSAU
WAUSAU, WISCONSIN
WI21201 - 0003.02





Modified from Bay West March 7, 1990 Report

LEGEND

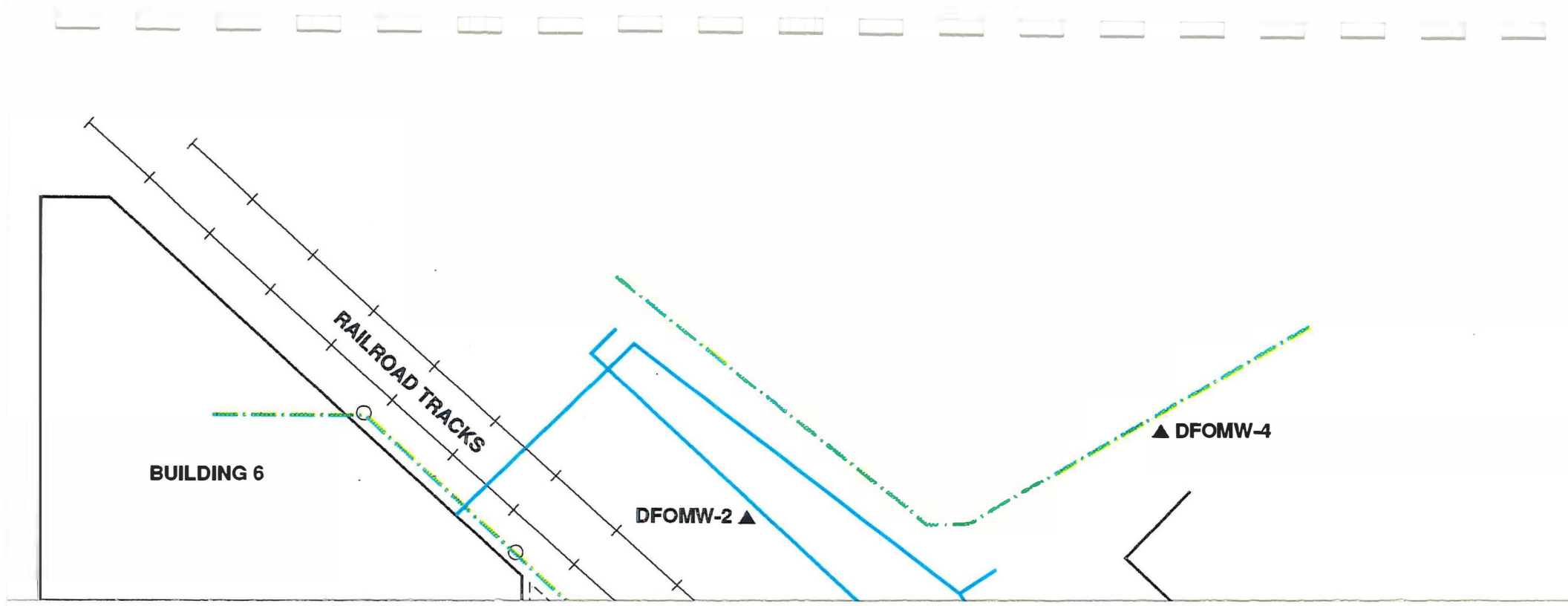
APPROXIMATE LOCATION OF EXCAVATED 3,500 GALLON UNDERGROUND DIESEL STORAGE TANK

APPROXIMATE LIMIT OF EXCAVATION

NOTE: GREYSTONE FACILITY IS APPROXIMATELY 800 FEET SOUTHEAST FROM GREYSTONE QUARRY

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 4
SITE DETAILS
GREYSTONE QUARRY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21201 - 0003.03



UNDERGROUND ELECTRIC

GAS LINE

WATER LINE

STORM SEWER

SANITARY SEWER

MANHOLE/CATCH BASIN

EXCAVATED UNDERGROUND STORAGE TANK LOCATION

UNDERGROUND STORAGE TANK LOCATION (ABANDONED IN-PLACE)

DFOMW-1 ▲ MONITORING WELL

NOTE: LOCATION OF UTILITIES BASED ON AS-BUILT PLANT SCHEMATICS, DEPTHS ARE UNKNOWN

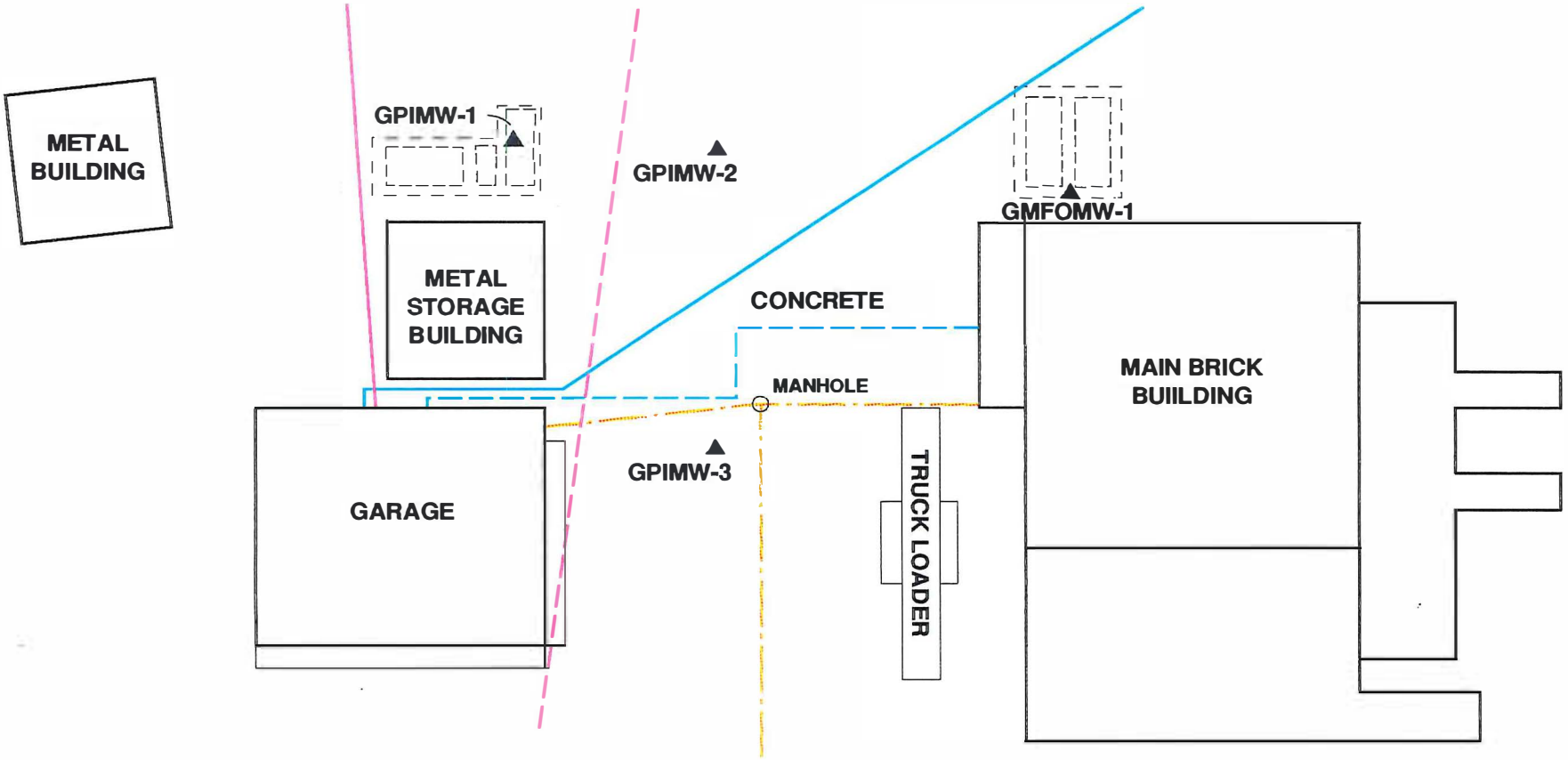
N

0 25 50 100

SCALE IN FEET

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 5
APPROXIMATE LOCATION OF UNDERGROUND UTILITIES
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.02



LEGEND

- OVERHEAD POWER LINE
- UNDERGROUND POWER LINE
- UNDERGROUND STEAMLINE
- UNDERGROUND WATER LINE
- UNDERGROUND SEWER LINE
- GPIMW-1 ▲ MONITORING WELL
- EXCAVATED UNDERGROUND TANK LOCATION

NOTE: LOCATION OF UTILITIES BASED ON AS-BUILT PLANT SCHEMATICS, DEPTHS ARE UNKNOWN

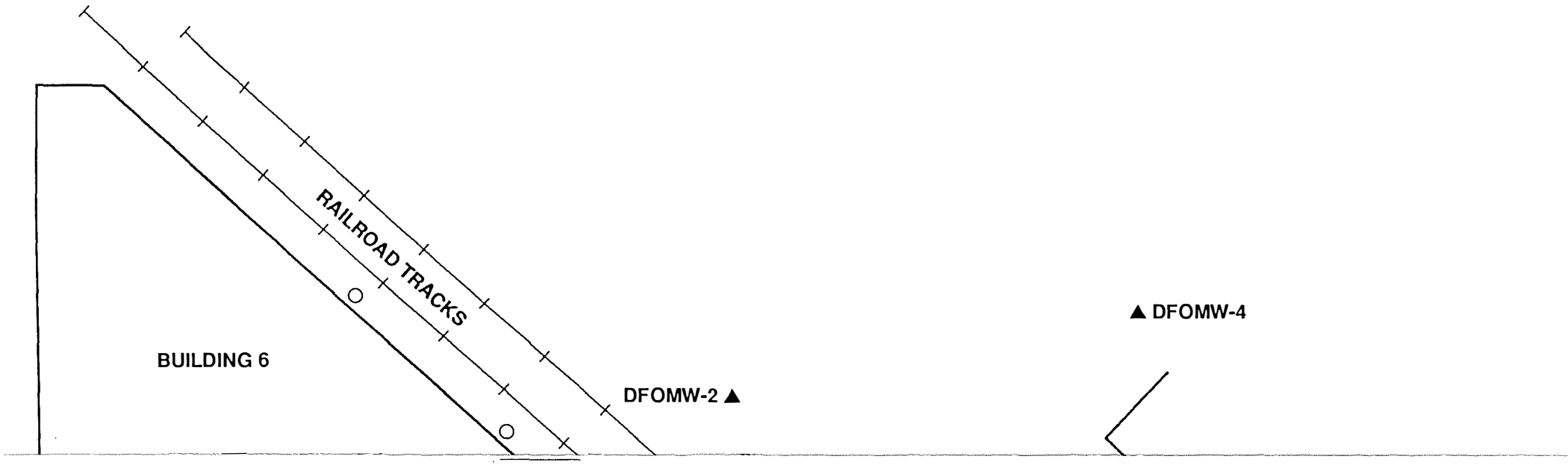
N

0 25 50 100

SCALE IN FEET

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 6
APPROXIMATE LOCATION OF UTILITIES
GREYSTONE FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.09



DFOMW-1 ▲ MONITORING WELL

EXCAVATED UNDERGROUND STORAGE TANK LOCATION

UNDERGROUND STORAGE TANK LOCATION

MANHOLE/CATCH BASIN

N

0 25 50 100

SCALE IN FEET

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Environmental Services

FIGURE 7
LOCATION OF MONITORING WELLS
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.08

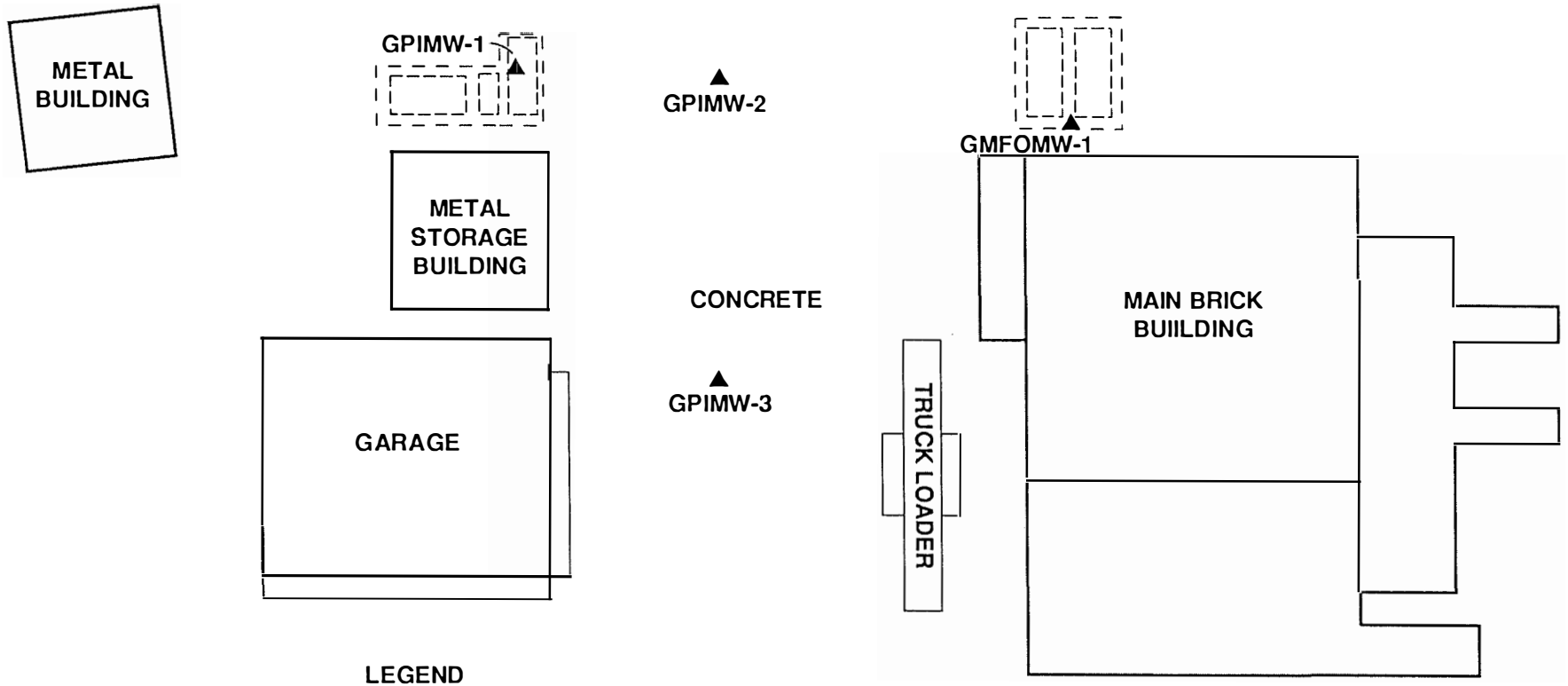

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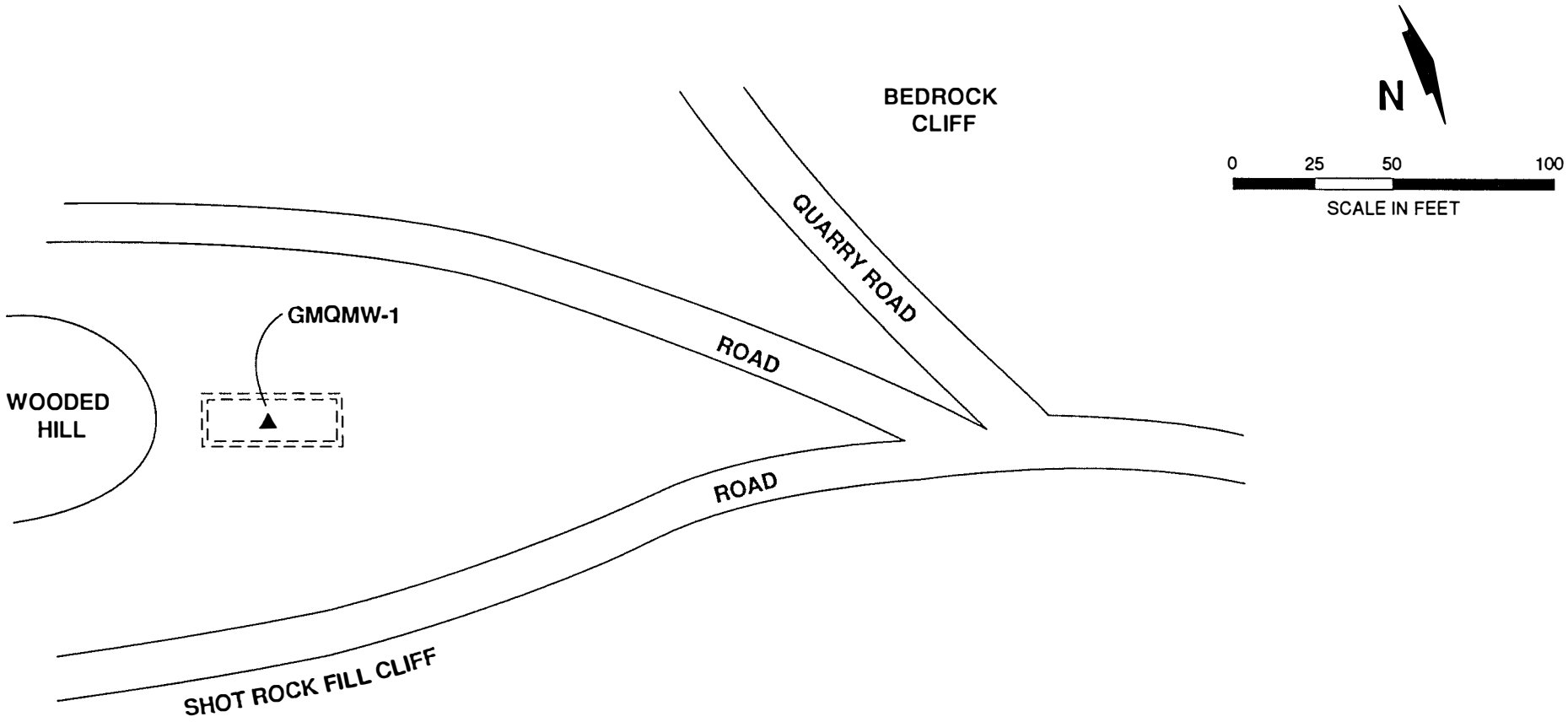
FIGURE 8
LOCATION OF MONITORING WELLS
GREYSTONE FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.05



Modified from Bay West March 7, 1990 Report.

LEGEND

GMQMW-1▲ MONITORING WELL

APPROXIMATE LOCATION OF EXCAVATED 3,500 GALLON DIESEL UNDERGROUND STORAGE TANK

NOTE: GREYSTONE FACILITY IS APPROXIMATELY 800 FEET SOUTHEAST FROM GREYSTONE QUARRY

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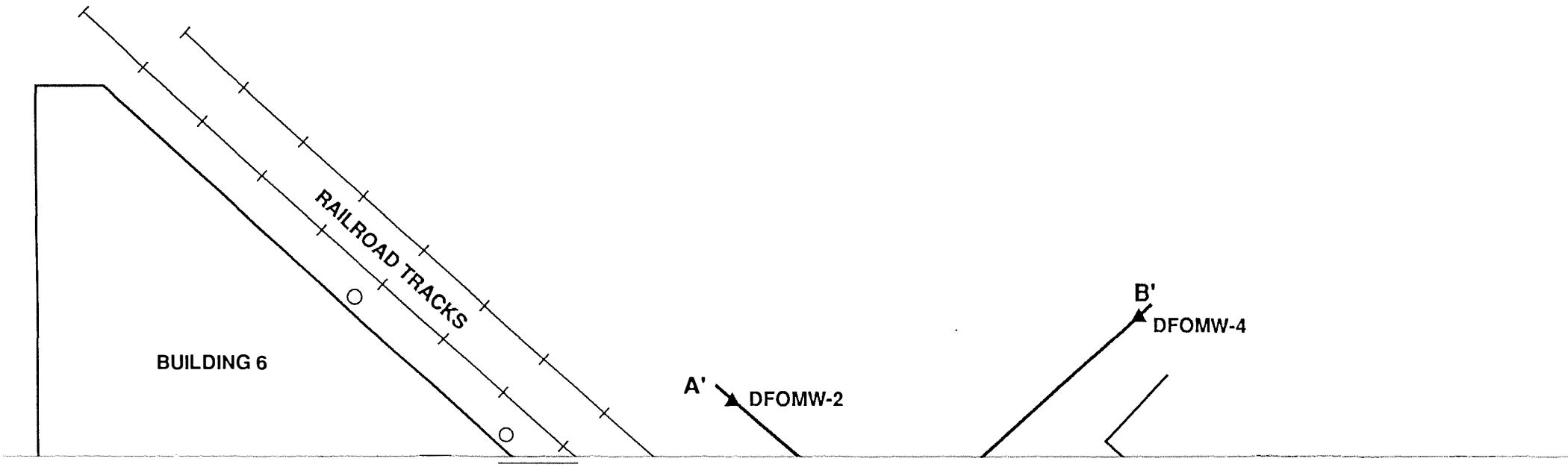
FIGURE 9
LOCATION OF MONITORING WELL
GREYSTONE QUARRY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 -0294.03



DFOMW-1 ▲ MONITORING WELL

EXCAVATED UNDERGROUND STORAGE TANK LOCATION

UNDERGROUND STORAGE TANK LOCATION

MANHOLE/CATCH BASIN

A —— A' CROSS SECTION LOCATION

N

0 25 50 100

SCALE IN FEET

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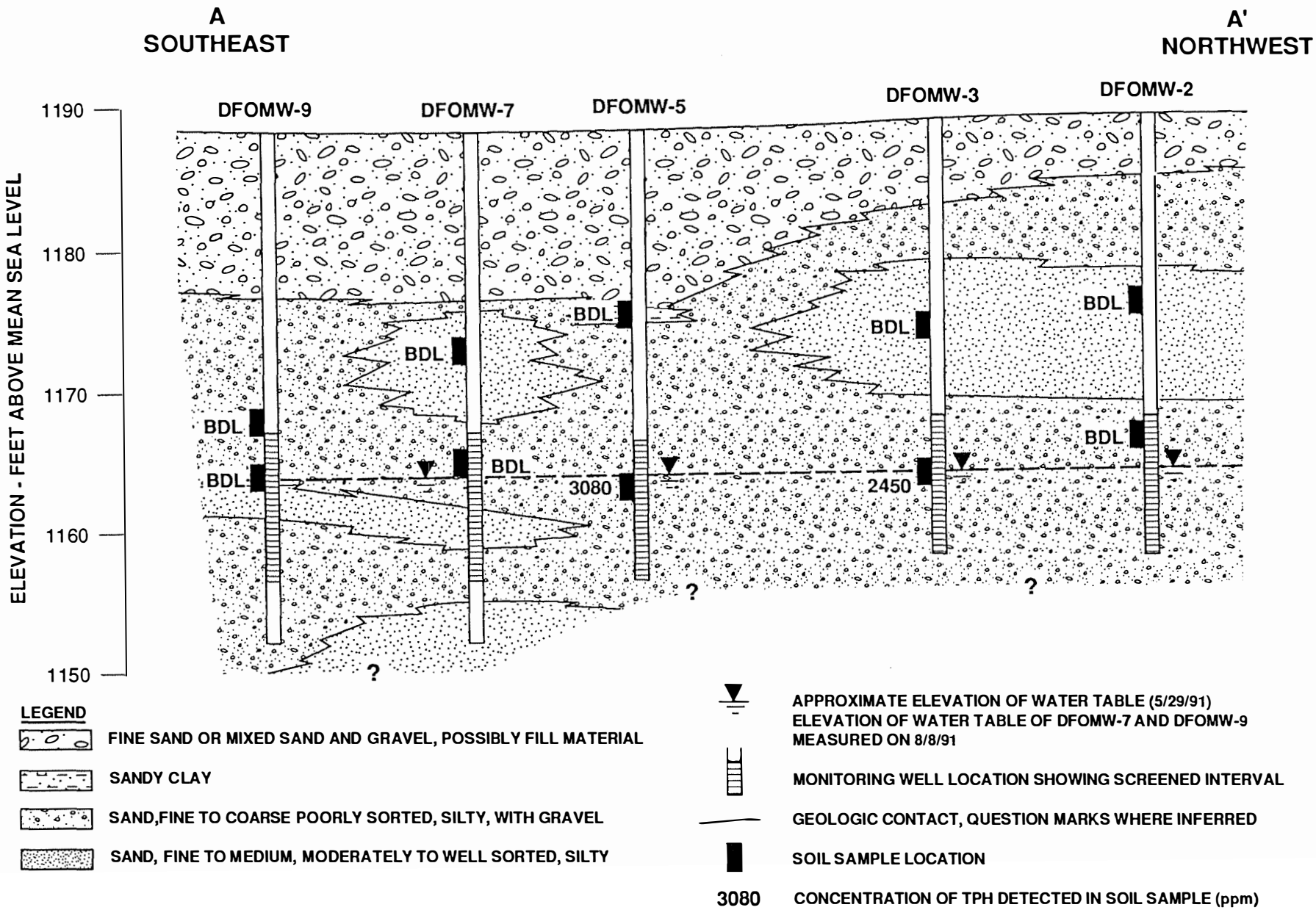
FIGURE 10
LOCATION OF GEOLOGIC CROSS SECTIONS
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0003.15



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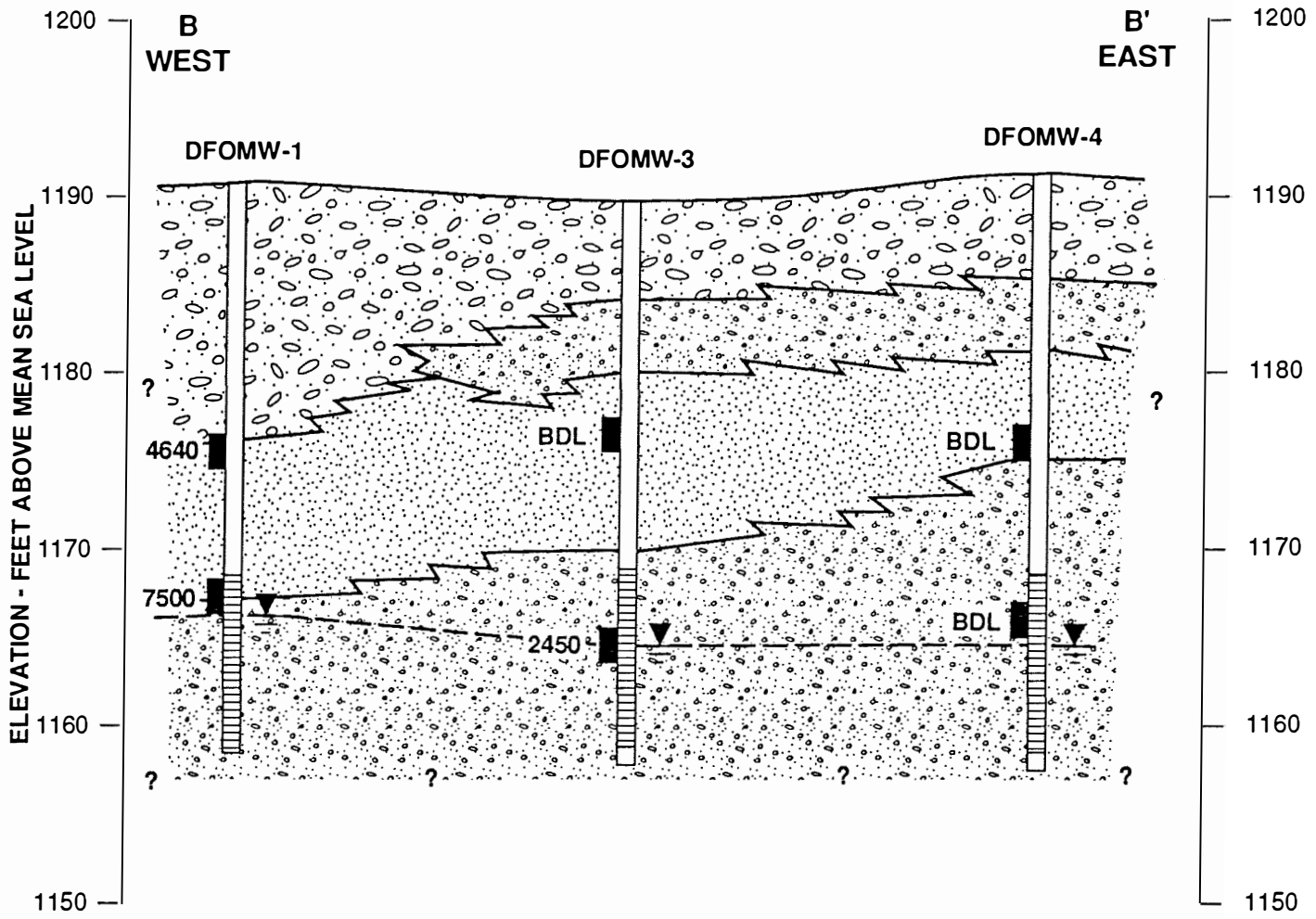
Environmental Services

NOTE: THE DEPTH AND THICKNESS OF THE SUB-SURFACE UNITS ON THE CROSS SECTION WERE GENERALIZED FROM AND INTERPOLATED BETWEEN WELL BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE INDICATED LOCATIONS.

FIGURE 11
GEOLOGIC CROSS SECTION A-A'
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI212.02 - 0295.06



LEGEND

- FINE SAND OR SAND AND GRAVEL, POSSIBLY FILL MATERIAL
- SANDY CLAY
- SAND, FINE TO COARSE POORLY SORTED, SILTY, WITH GRAVEL
- SAND, FINE TO MEDIUM, MODERATELY TO WELL SORTED, SILTY
- APPROXIMATE ELEVATION OF WATER TABLE (5/29/91)
- MONITORING WELL LOCATION SHOWING SCREENED INTERVAL
- GEOLOGIC CONTACT (QUESTION MARKS WHERE INFERRED)
- SOIL SAMPLE LOCATION
- 2450 CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLE(ppm)
- BDL BELOW ANALYTICAL DETECTION LIMIT

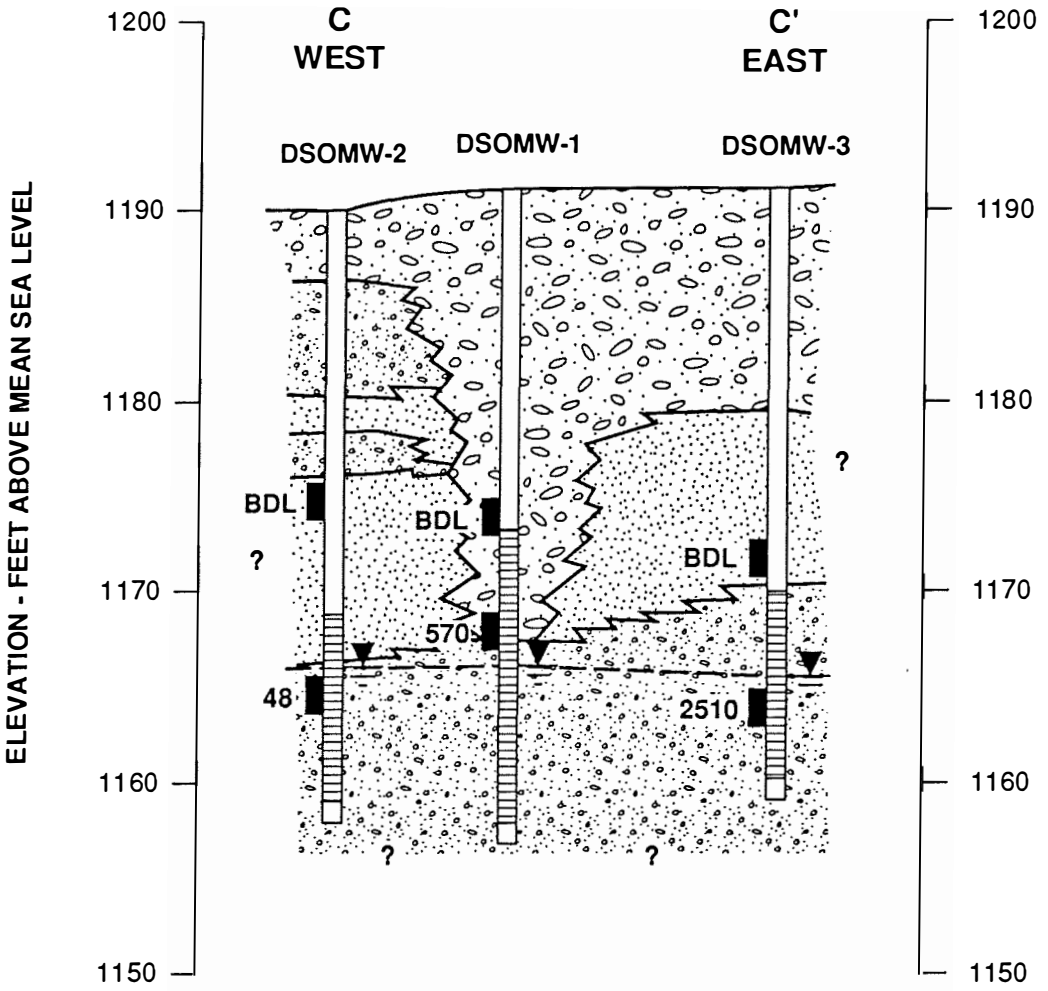
NOTE: THE DEPTH AND THICKNESS OF THE SUBSURFACE UNITS ON THE CROSS SECTION WERE GENERALIZED FROM AND INTERPOLATED BERWEEN WELL BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE INDICATED LOCATIONS.

0 25 50 100

HORIZONTAL SCALE IN FEET
VERTICAL EXAGERATION = 5X

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 12
GEOLOGIC CROSS SECTION B – B'
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI212.02 - 0295.02



LEGEND

- FINE SAND OR SAND AND GRAVEL, POSSIBLY FILL MATERIAL
- SANDY CLAY
- SAND FINE TO COARSE, POORLY SORTED, SILTY, WITH GRAVEL
- SAND, FINE TO MEDIUM, MODERATELY TO WELL SORTED, SILTY
- APPROXIMATE ELEVATION OF WATER TABLE (5/29/91)
- MONITORING WELL BORING LOCATION SHOWING SCREENED INTERVAL
- GEOLOGIC CONTACT (QUESTION MARKS WHERE INFERRED)
- SOIL SAMPLE LOCATION
- 2510 CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLE (ppm)
- BDL BELOW ANALYTICAL DETECTION LIMIT

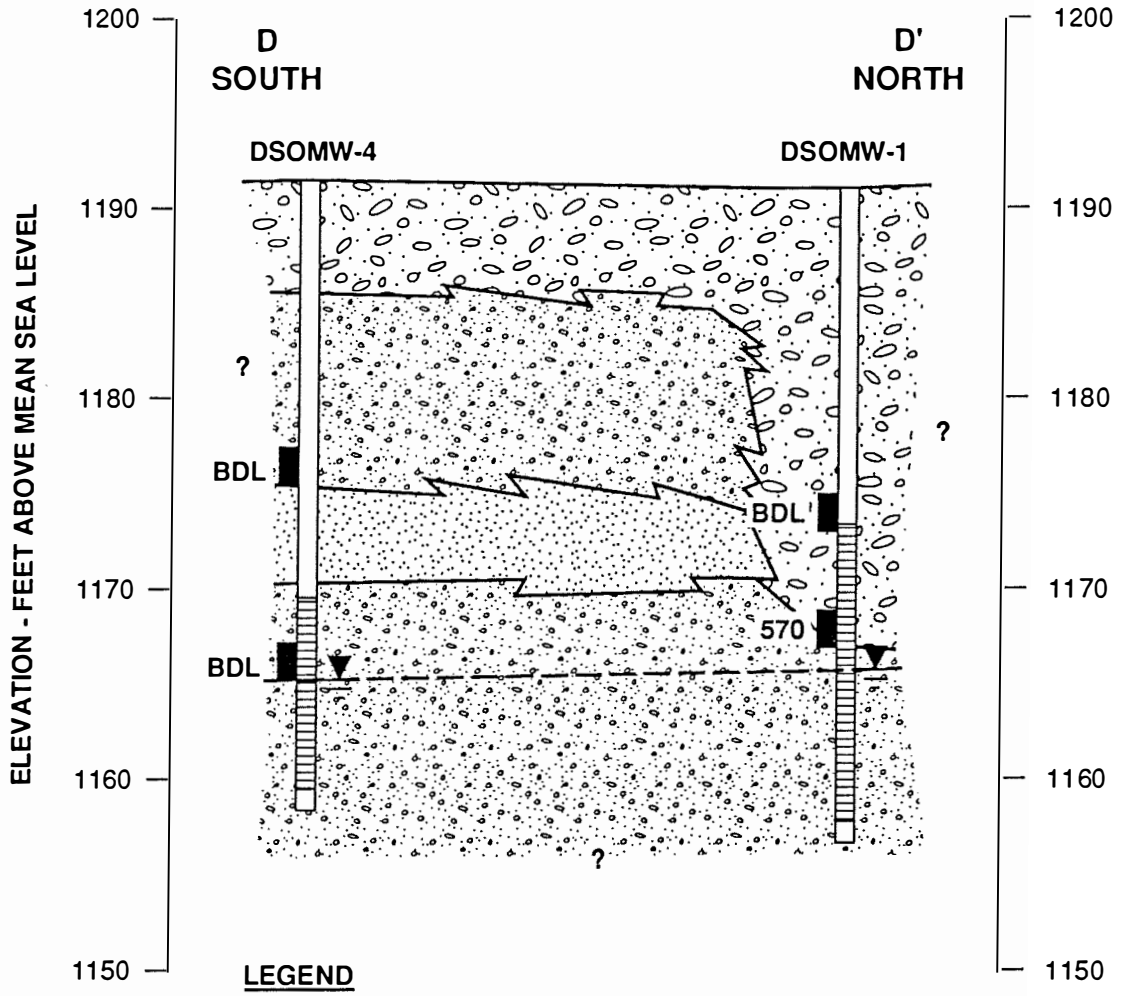
NOTE: THE DEPTH AND THICKNESS OF THE SUBSURFACE UNITS ON THE CROSS SECTION WERE GENERALIZED FROM AND INTERPOLATED BERWEEN WELL BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE INDICATED LOCATIONS.

0 25 50

HORIZONTAL SCALE IN FEET
VERTICAL EXAGERATION = 5X

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 13
GEOLOGIC CROSS SECTION C – C'
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI212.02 - 0295.03



LEGEND

- FINE SAND OR SAND AND GRAVEL, POSSIBLY FILL MATERIAL
- SANDY CLAY
- SAND,FINE TO COARSE, POORLY SORTED, SILTY, WITH GRAVEL
- SAND, FINE TO MEDIUM, MODERATELY TO WELL SORTED, SILTY
- APPROXIMATE ELEVATION OF WATER TABLE (5/29/91)
- MONITORING WELL LOCATION SHOWING SCREENED INTERVAL
- GEOLOGIC CONTACT (QUESTION MARKS WHERE INFERRED)
- SOIL SAMPLE LOCATION
- 570 CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLE (ppm)
- BDL BELOW ANALYTICAL DETECTION LIMIT

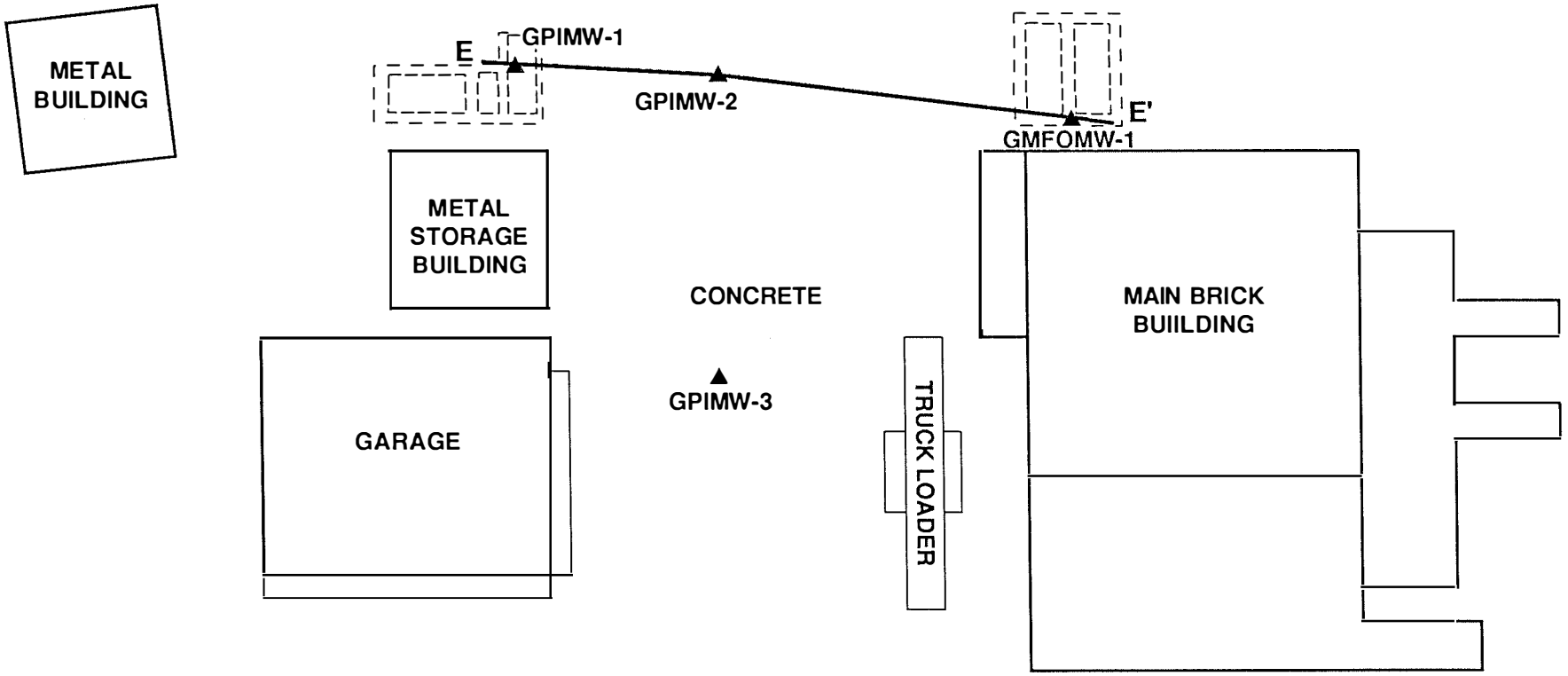
NOTE: THE DEPTH AND THICKNESS OF THE SUB-SURFACE UNITS ON THE CROSS SECTION WERE GENERALIZED FROM AND INTERPOLATED BETWEEN WELL BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE INDICATED LOCATIONS.

0 25 50 100

HORIZONTAL SCALE IN FEET
VERTICAL EXAGERATION = 5X

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 14
GEOLOGIC CROSS SECTION D – D'
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI212.02 - 0295.04



N

0 25 50 100

SCALE IN FEET

LEGEND

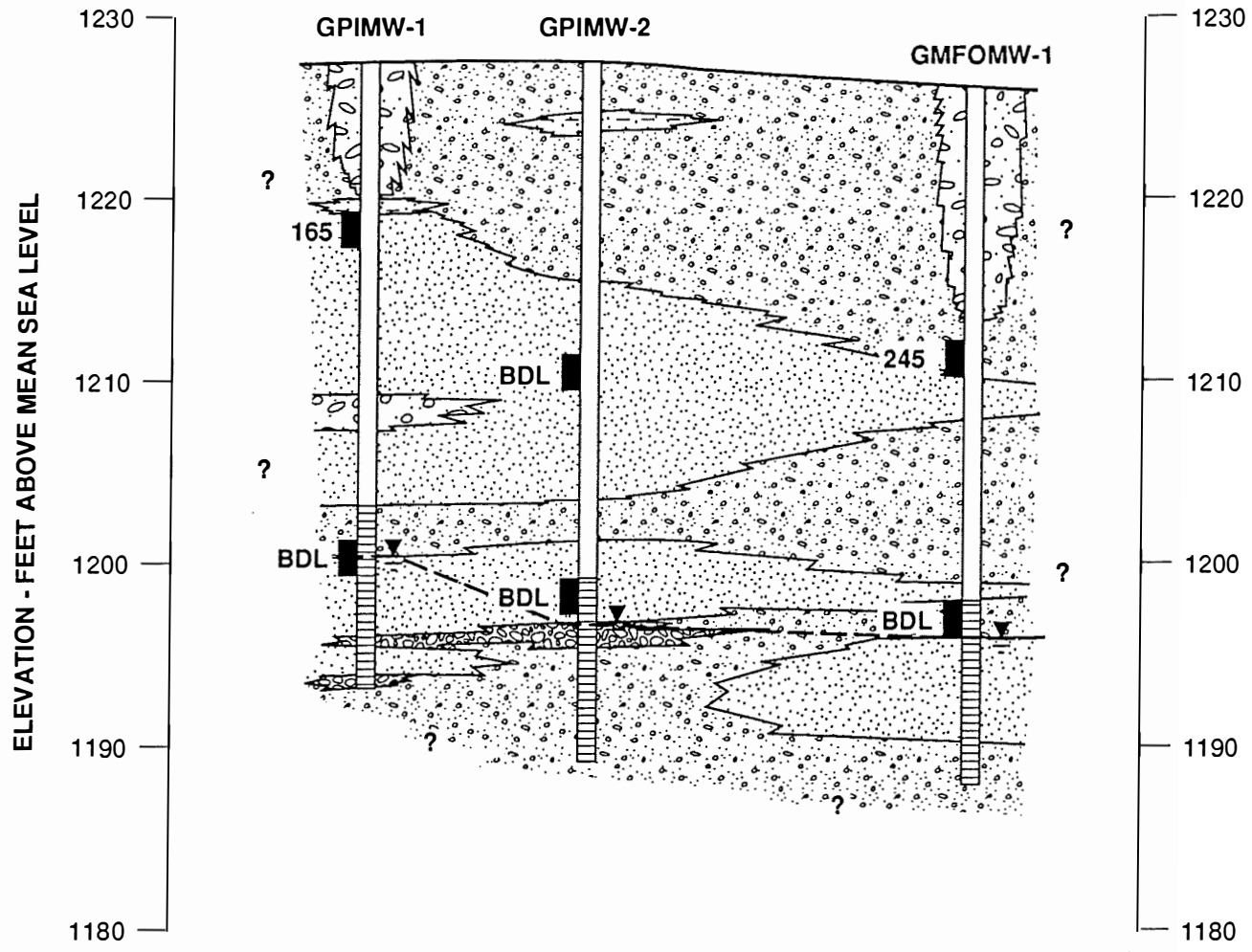
GEOLOGIC CROSS SECTION LOCATION

EXCAVATED UNDERGROUND TANK LOCATION

GPIMW-1 ▲ MONITORING WELL

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 15
LOCATION OF GEOLOGIC CROSS SECTION
GREYSTONE FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.12



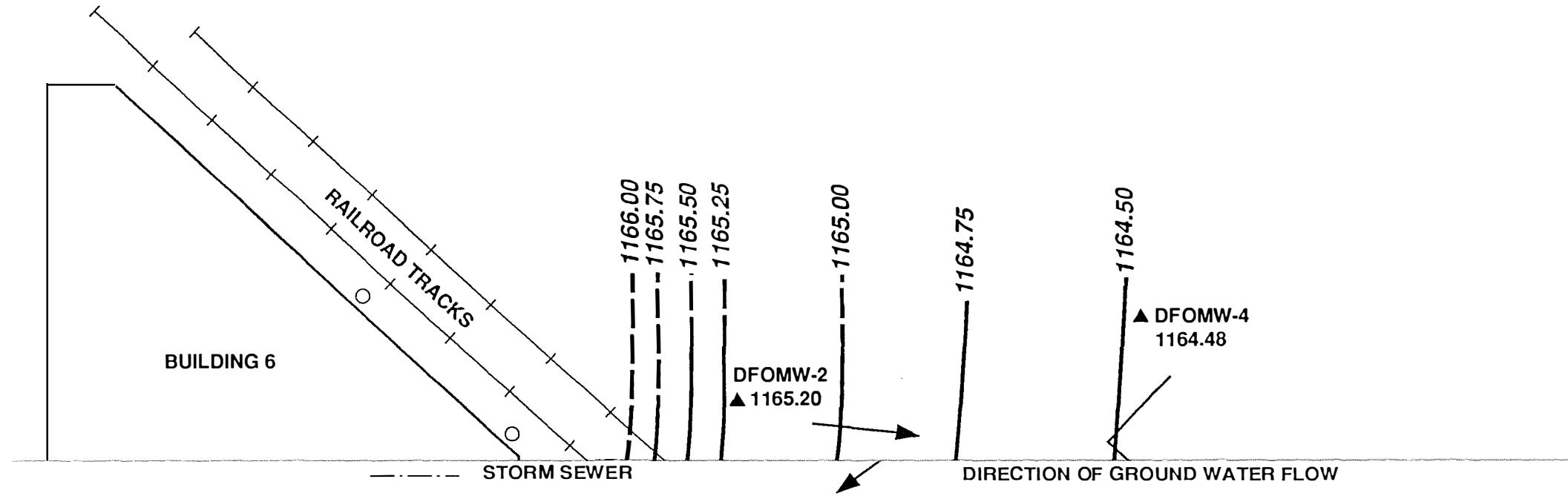
LEGEND

- FINE SAND OR SAND AND GRAVEL, POSSIBLY FILL MATERIAL
- SANDY CLAY
- SAND,FINE TO COARSE POORLY SORTED, SILTY, WITH GRAVEL
- SAND, FINE TO MEDIUM, MODERATELY TO WELL SORTED, SILTY
- GRAVEL, COARSE, WITH SAND AND SILT
- APPROXIMATE ELEVATION OF WATER TABLE (5/29/91)
- MONITORING WELL LOCATION SHOWING SCREENED INTERVAL
- GEOLOGIC CONTACT (QUESTION MARKS WHERE INFERRED)
- SOIL SAMPLE LOCATION
- 245 CONCENTRATION OF TPH DETECTED IN SOIL SAMPLE (ppm)

NOTE: THE DEPTH AND THICKNESS OF THE SUB-SURFACE UNITS ON THE CROSS SECTION WERE GENERALIZED FROM AND INTERPOLATED BETWEEN WELL BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE INDICATED LOCATIONS.

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 16
GEOLOGIC CROSS SECTION E-E'
GREYSTONE FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI212.02 - 0295.05



STORM SEWER

SANITARY SEWER

MANHOLE/CATCH BASIN

EXCAVATED UNDERGROUND STORAGE TANK LOCATION

UNDERGROUND STORAGE TANK LOCATION

DFOMW-1▲ EXISTING MONITORING WELL

DIRECTION OF GROUND WATER FLOW

1165.25 LINE OF EQUAL WATER TABLE ELEVATION (DASHED WHERE INFERRED)

NOTE: WATER LEVEL DATA FOR MONITORING WELL DFOMW-3 WAS NOT UTILIZED IN THE CONSTRUCTION OF THIS MAP DUE TO THE PRESENCE OF 0.38 FT. OF SEPARATE-PHASE PRODUCT ON THE WATER TABLE AT THE TIME OF MEASUREMENT.

ELEVATIONS ARE RELATIVE TO MEAN SEA LEVEL

CONTOUR INTERVAL = 0.25 FEET

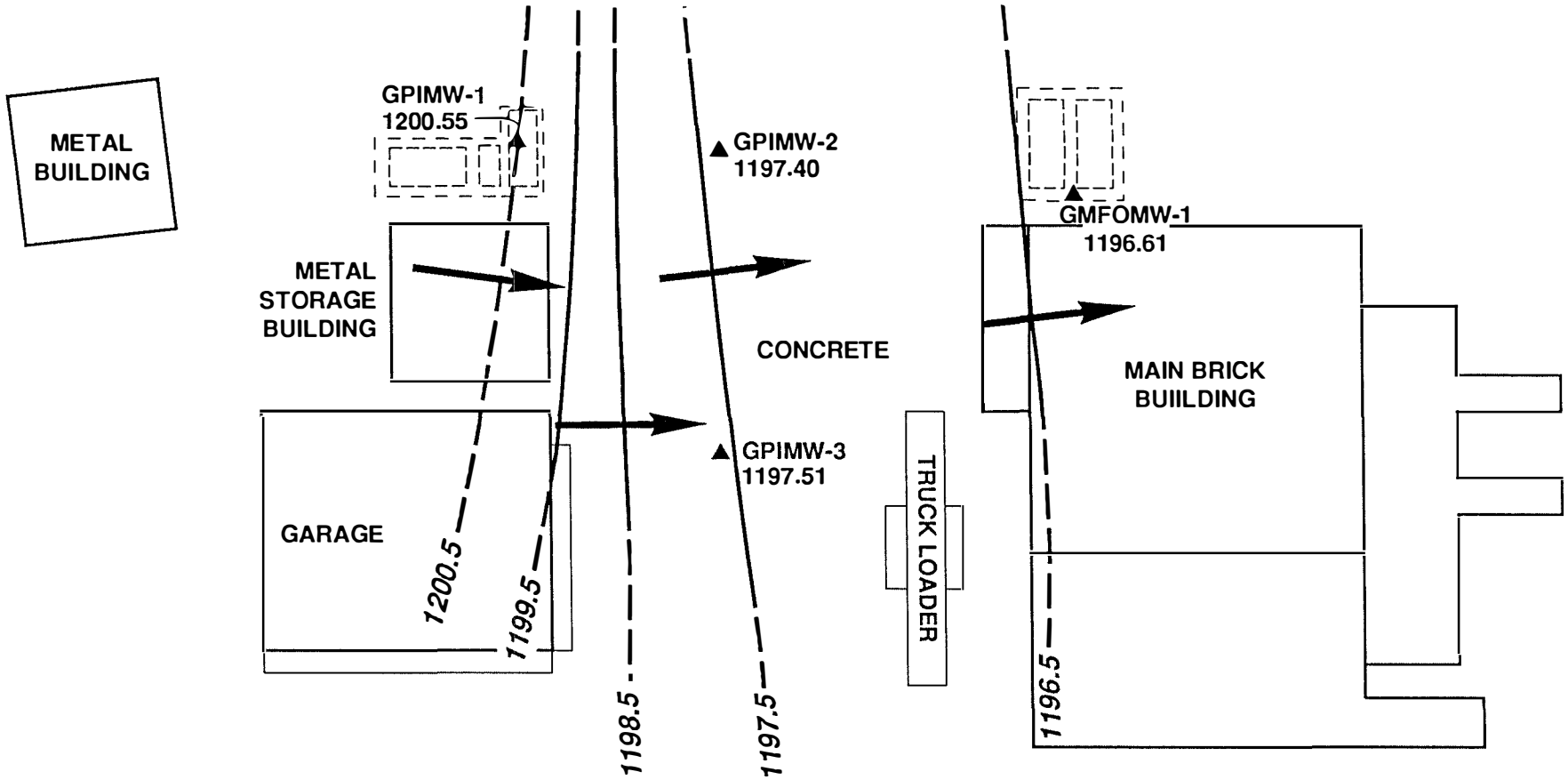
N

0 25 50 100

SCALE IN FEET

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 17
WATER TABLE ELEVATIONS
(MAY 29, 1991)
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.15



LEGEND

GPIMW-1 ▲ 1200.55 — MONITORING WELL WITH WATER TABLE ELEVATION

1196.5 — LINE OF EQUAL GROUNDWATER ELEVATION (DASHED WHERE INFERRED) CONTOUR INTERVAL = 1.0 FEET

DIRECTION OF GROUNDWATER FLOW

EXCAVATED UNDERGROUND TANK LOCATION

N

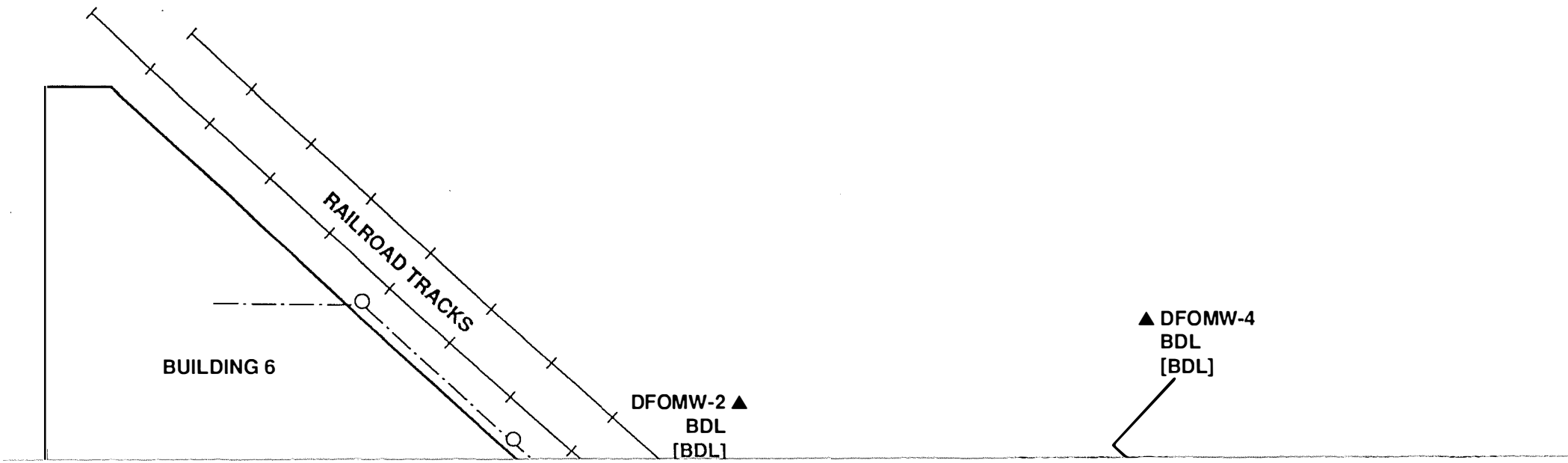
0 25 50 100

SCALE IN FEET

NOTE: ELEVATIONS ARE RELATIVE TO MEAN SEA LEVEL

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 18
GROUND-WATER ELEVATIONS
MAY 29, 1991
GREYSTONE FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.01



—·—·—	STORM SEWER	▲ DFOMW-1 3 [BDL]	MONITORING WELL WITH CONCENTRATION OF TPH IN GROUND-WATER SAMPLE. CONCENTRATION OF PCP DETECTED IN GROUND WATER SAMPLE IS PRESENTED IN BRACKETS
·····	SANITARY SEWER		
○	MANHOLE/CATCH BASIN		
▭	EXCAVATED UNDERGROUND STORAGE TANK LOCATION	NS	NOT SAMPLED DUE TO PRESENCE OF SEPARATE PHASE PRODUCT.
▨	UNDERGROUND STORAGE TANK LOCATION	BDL	BELOW ANALYTICAL METHOD DETECTION LIMIT

NOTE: TPH CONCENTRATIONS ARE PRESENTED IN mg/l = ppm. PCP CONCENTRATIONS ARE PRESENTED IN ug/l = ppb.

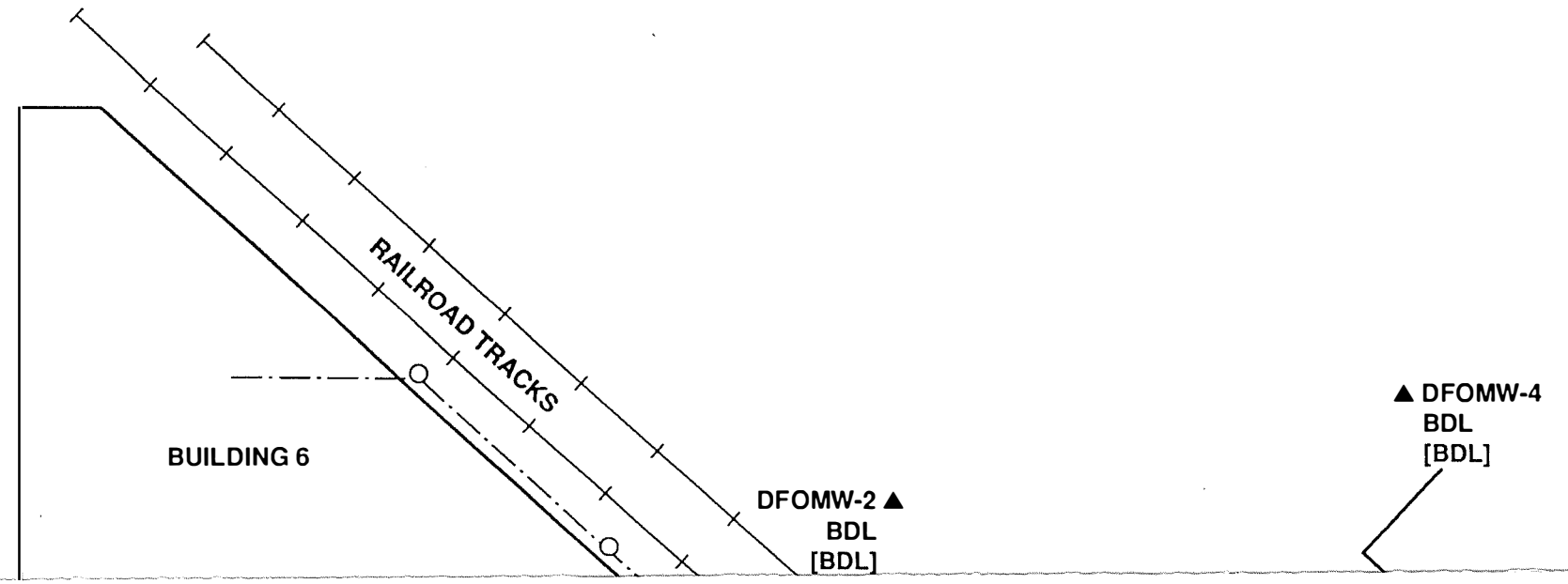
N

0 25 50 100

SCALE IN FEET

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 20
CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (TPH) AND PENTACHLOROPHENOL (PCP) IN GROUND-WATER SAMPLES
6/11/91 – 6/12/91
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0003.14



—·—·—	STORM SEWER	DFOMW-1 ▲ 48 [872]	MONITORING WELL WITH CONCENTRATION OF BENZENE IN GROUND-WATER SAMPLE. TOTAL BTEX IS PRESENTED IN BRACKETS.
·····	SANITARY SEWER		
○	MANHOLE/CATCH BASIN	NS	NOT SAMPLED DUE TO PRESENCE OF SEPARATE PHASE PRODUCT.
▭	EXCAVATED UNDERGROUND STORAGE TANK LOCATION	BDL	BELOW ANALYTICAL METHOD DETECTION LIMIT
▨	UNDERGROUND STORAGE TANK LOCATION		

NOTE: CONCENTRATIONS ARE PRESENTED IN µg/l = ppb

N

0 25 50 100

SCALE IN FEET

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 19
CONCENTRATION OF BENZENE AND TOTAL BTEX IN GROUND-WATER SAMPLES 6/11/91 - 6/12/91
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0003.13

Table 1. Summary of Laboratory Analyses Performed on Ground-Water Samples, 3M Downtown Facility, Greystone Facility, and Greystone Quarry, Wausau, Wisconsin.

Monitoring Well ID	Sampling Date	Constituents						
		BETX	VOCs	Phenols	TPH	Dissolved Lead	Indicator Parameters	Field Parameters
Downtown Slate Oil Area								
DSOMW-2	05/30/91			X	X			
DSOMW-3	05/30/91			X	X			
DSOMW1	06/12/91	X		X	X			X
DSOMW2	06/12/91	X		X	X			X
DSMOW3	06/12/91	X		X	X			X
DSOMW4	06/12/91	X		X	X		X	X
DSOMW2	07/11/91		X					X
DSOMW3	07/11/91		X					
DSOMW4	07/11/91		X					X
Downtown Fuel Oil Area								
DFOMW1	06/11/91	X		X	X		X	X
DFOMW2	06/11/91	X		X	X			X
DFOMW4	06/11/91	X		X	X			X
DFOMW5	06/11/91	X		X	X			X
DFOMW-1	07/11/91		X					X
DFOMW-2	07/11/91		X					X
DFOMW-3	07/11/91			X				
DFOMW-4	07/11/91		X					X
DFOMW-5	07/11/91			X				
DFOMW3	08/08/91			X				
DFOMW5	08/08/91			X				
DFOMW6	08/08/91		X	X	X			X
DFOMW8	08/08/91		X	X	X			X
DFOMW9	08/08/91		X	X	X			X
DFOMW10	08/08/91		X	X	X			X
Greystone Pump Island Area								
GPIMW-1	06/11/91	X			X	X	X	X
GPIMW-2	06/11/91	X			X	X		X
GPIMW-3	06/11/91	X			X	X		X
GPIMW-1	07/10/91		X					X
GPIMW-2	07/10/91		X					X
GPIMW-3	07/10/91		X					X

Table 1. Summary of Laboratory Analyses Performed on Ground-Water Samples, 3M Downtown Facility, Greystone Facility, and Greystone Quarry, Wausau, Wisconsin.

Monitoring Well ID	Sampling Date	Constituents						
		BETX	VOCs	Phenols	TPH	Dissolved Lead	Indicator Parameters	Field Parameters
Greystone Fuel Oil Area								
GFOMW-1	06/11/91	X			X			X
GFOMW-1	07/10/91		X					X
Greystone Quarry								
GMQMW-1	06/11/91	X			X		X	X
GMQMW-1	07/10/91		X					X

BETX = Benzene, ethylbenzene, toluene, and xylene.

VOCs = Volatile organic compounds.

TPH = Total petroleum hydrocarbons.

Inorganic compounds/indicator parameters include: total and dissolved calcium, total and dissolved iron, total and dissolved magnesium, total and dissolved maganese, total and dissolved lead, total and dissolved solids, chloride, sodium, sulfate, alkalinity, biological oxygen demand, and chemical oxygen demand.

Field parameters include: temperature, pH, electrical conductivity, and redox potential.

784-3M/sumlab.wk1

Table 2. Monitoring Well Construction Information and Measured Water Levels, 3M Downtown Facility, Wausau, Wisconsin.

Well Number	Land Surface Elevation (ft msl**)	Top of Casing (TOC) Elevation (ft msl)	Well Casing and Screen Diameter (In)	Elevation Top of Screen (ft msl)	Screen Length (ft)	Depth to Water (ft)	Water Elevation (ft msl)	Depth to Water (ft)	Water Elevation (ft msl)	Depth to Water (ft)	Water Elevation (ft msl)	Depth to Water (ft)	Water Elevation (ft msl)
						5/29/91		6/10-11/91		6/27/91		7/10/91	
DSOMW-1	1190.73	1190.27	4.0	1172.8	15.0	24.56	1165.71	24.40	1165.87	24.14	1166.13	25.15*	1166.12
DSOMW-2	1189.82	1189.30	4.0	1168.8	10.0	23.58	1165.72	23.35	1165.95	23.08	1166.22	22.92	1166.38
DSOMW-3	1190.83	1190.23	4.0	1169.8	10.0	25.04	1165.19	24.88	1165.35	24.74	1165.49	24.68	1165.55
DSOMW-4	1191.13	1193.69	4.0	1169.4	10.0	28.70	1164.99	28.65	1165.04	28.51	1165.18	28.51	1165.18
DFOMW-1	1190.59	1191.04	2.0	1168.6	10.0	24.89	1166.15	24.51	1166.53	24.30	1166.74	24.17*	1166.87
DFOMW-2	1190.01	1192.52	2.0	1168.0	10.0	27.32	1165.20	26.92	1165.60	26.59	1165.93	26.73	1165.79
DFOMW-3	1189.76	1192.32	2.0	1168.8	10.0	27.64	1164.68	27.78*	1164.54	27.31*	1165.01	27.54*	1164.78
DFOMW-4	1189.45	1191.88	2.0	1168.5	10.0	27.40	1164.48	27.27	1164.61	26.84	1165.04	27.18	1164.70
DFOMW-5	1188.91	1191.35	2.0	1166.9	10.0	26.95	1164.40	26.84*	1164.51	27.25*	1164.10	26.88*	1164.47
DFOMW-6	1188.15	1190.65	6.0	1167.2	10.0	NA	NA	NA	NA	NA	NA	NA	NA
DFOMW-7	1188.47	1190.65	6.0	1167.5	10.0	NA	NA	NA	NA	NA	NA	NA	NA
DFOMW-8	1189.55	1192.12	6.0	1167.9	10.0	NA	NA	NA	NA	NA	NA	NA	NA
DFOMW-9	1188.32	1190.83	6.0	1167.3	10.0	NA	NA	NA	NA	NA	NA	NA	NA
DFOMW-10	1188.55	1190.95	6.0	1167.6	10.0	NA	NA	NA	NA	NA	NA	NA	NA

* Indicated monitoring well also contained floating separate phase hydrocarbon product. Measured product thicknesses are presented in Table 9.

** Elevations presented as feet above mean sea level (1929 datum).

NR = Not recorded.

NA = Not Applicable. Monitoring Wells DFOMW-6 through DFOMW-10 were not installed prior to 8/8/91.

Table 2. Monitoring Well Construction Information and Measured Water Levels, 3M Downtown Facility, Wausau, Wisconsin.

Well Number	Land Surface Elevation (ft msl**)	Top of Casing (TOC) Elevation (ft msl)	Well Casing and Screen Diameter (In)	Elevation Top of Screen (ft msl)	Screen Length (ft)	8/8/91 Depth to Water (ft)	8/8/91 Water Elevation (ft msl)	8/27/91 Depth to Water (ft)	8/27/91 Water Elevation (ft msl)
DSOMW-1	1190.73	1190.27	4.0	1172.8	15.0	NR	NR	NR	NR
DSOMW-2	1189.82	1189.30	4.0	1168.8	10.0	NR	NR	NR	NR
DSOMW-3	1190.83	1190.23	4.0	1169.8	10.0	NR	NR	NR	NR
DSOMW-4	1191.13	1193.69	4.0	1169.4	10.0	NR	NR	29.12	1162.01
DFOMW-1	1190.59	1191.04	2.0	1168.6	10.0	NR	NR	24.83*	1165.76
DFOMW-2	1190.01	1192.52	2.0	1168.0	10.0	NR	NR	27.08	1162.93
DFOMW-3	1189.76	1192.32	2.0	1168.8	10.0	NR	NR	28.42*	1161.34
DFOMW-4	1189.45	1191.88	2.0	1168.5	10.0	NR	NR	27.70	1161.75
DFOMW-5	1188.91	1191.35	2.0	1166.9	10.0	NR	NR	27.55*	1161.36
DFOMW-6	1188.15	1190.65	6.0	1167.2	10.0	26.59	1164.06	26.82*	1161.33
DFOMW-7	1188.47	1190.65	6.0	1167.5	10.0	26.64*	1164.01	26.84*	1161.63
DFOMW-8	1189.55	1192.12	6.0	1167.9	10.0	27.82	1164.30	28.04	1161.51
DFOMW-9	1188.32	1190.83	6.0	1167.3	10.0	27.05	1163.78	27.29*	1161.03
DFOMW-10	1188.55	1190.95	6.0	1167.6	10.0	26.65	1164.30	26.81	1161.74

* Indicated monitoring well also contained floating separate phase hydrocarbon product. Measured product thicknesses are presented in Table 9.

** Elevations presented as feet above mean sea level (1929 datum).

NR = Not recorded.

NA = Not Applicable. Monitoring Wells DFOMW-6 through DFOMW-10 were not installed prior to 8/8/91.

Table 3. Monitoring Well Construction Information and Measured Water Levels, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Well Number	Land Surface Elevation (ft msl*)	Top of Casing (TOC) Elevation (ft msl)	Well Casing and Screen Diameter (In)	Elevation Top of Screen (ft msl)	Screen Length (ft)	5/29/91 Depth to Water (ft)	5/29/91 Water Elevation (ft msl)	6/10-11/91 Depth to Water (ft)	6/10-11/91 Water Elevation (ft msl)	6/27/91 Depth to Water (ft)	6/27/91 Water Elevation (ft msl)	7/10/91 Depth to Water (ft)	7/10/91 Water Elevation (ft msl)
GPIMW-1	1227.46	1227.85	2.0	1203.5	10.0	27.30	1200.55	26.86	1200.99	26.99	1200.86	27.11	1200.74
GPIMW-2	1227.52	1226.99	2.0	1198.5	10.0	29.59	1197.40	29.03	1197.96	28.99	1198.00	29.23	1197.76
GPIMW-3	1225.94	1225.33	2.0	1203.9	10.0	27.82	1197.51	27.18	1198.15	27.28	1198.05	27.50	1197.83
GMFOMW-1	1226.37	1225.84	2.0	1199.4	10.0	29.33	1196.61	28.70	1197.14	28.56	1197.28	28.85	1197.52
GMQMW-1	1314.09	1316.48	2.0	1276.1	10.0	NR	NR	38.66	1277.82	38.39	1278.09	39.18	1277.30

* Elevations presented as feet above mean sea level (1929 datum).

7843M/monwater.wk1

Table 3. Monitoring Well Construction Information and Measured Water Levels, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Well Number	Land Surface Elevation (ft msl*)	Top of Casing (TOC) Elevation (ft msl)	Well Casing and Screen Diameter (In)	Elevation Top of Screen (ft msl)	Screen Length (ft)	Depth to Water (ft)	Water Elevation (ft msl)
						8/27/91	
GPIMW-1	1227.46	1227.85	2.0	1203.5	10.0	28.32	1199.14
GPIMW-2	1227.52	1226.99	2.0	1198.5	10.0	30.80	1196.72
GPIMW-3	1225.94	1225.33	2.0	1203.9	10.0	28.90	1197.04
GMFOMW-1	1226.37	1225.84	2.0	1199.4	10.0	30.10	1196.27
GMQMW-1	1314.09	1316.48	2.0	1276.1	10.0	39.27	1274.82

* Elevations presented as feet above mean sea level (1929 datum).

7843M/monwater.wkl

Table 4. Results of In-Situ Hydraulic Conductivity Tests (Slug Tests), 3M Downtown and Graystone Facilities, Wausau, Wisconsin.

Monitoring Well	SLUG TEST IN K (cm/sec)	SLUG TEST IN Number of Points Used for Analysis	SLUG TEST OUT K (cm/sec)	SLUG TEST OUT Number of Points Used for Analysis	Geometric Mean of In and Out (cm/sec)
DOWNTOWN FACILITY					
DFOMW-2	6.5×10^{-4}	13	4.2×10^{-3}	7	1.7×10^{-3}
DFOMW-4	1.6×10^{-3}	7	2.6×10^{-3}	22	2.0×10^{-3}
GRAYSTONE FACILITY					
GPIMW-2	2.4×10^{-3}	11	4.0×10^{-3}	8	3.1×10^{-3}
GQMW-1	1.2×10^{-3}	23	2.0×10^{-3}	24	1.5×10^{-3}

K = Hydraulic Conductivity

784 3M/sitrlt.tbl

Table 5. Results of Soil Samples Field Screened with Organic Vapor Analyzer (OVA), 3M Downtown Facility, Wausau, Wisconsin.

Sample Depth (ft bls)	DSOMW-1	DSOMW-2	DSOMW-3	DSOMW-4	DFOMW-1	DFOMW-2	DFOMW-3	DFOMW-4	DFOMW-5
0-2	Back	Back	Back	Back	Back	Back	Back	Back	Back
2-4	Back	Back	NR	Back	Back	Back	Back	Back	Back
4-6	Back	Back	Back	Back	Back	Back	Back	NR	0.5
6-8	Back	Back	Back	Back	Back	Back	Back	Back	0.5
8-10	Back	Back	Back	Back	Back	Back	Back	Back	0.5
10-12	Back	Back	Back	NR	Back	Back	Back	Back	NR
12-14	Back	Back	Back	Back	Back	0.6	Back	NR	0.5
14-16	Back	Back	Back	Back	20	Back	Back	Back	Back
16-18	Back	Back	Back*	Back	45*	Back	Back	Back	1.0
18-20	Back	Back	Back	Back	65*	Back	Back	Back	Back
20-22	8	Back	Back	Back	110	0.5	Back	Back	Back
22-24	30	Back	Back	Back	200	Back	Back	Back	100*
24-26	20	200	Back	0.5	200	NR	>1000	0.5	>1000*
26-28	750	>1000	>1000	0.5	150*	2.0	>1000	4.0	>1000
28-30	300	>1000*	>1000	Back	80*	4.5	110	Back	250
30-32	450	>1000	>1000	Back	10*	Back	100*	Back	150
32-34	NR	NS	NS	NS	NS	NS	NS	NS	NS
34-36	NS	NS	NS	NS	NS	NS	NS	NS	NS
	EOB=34 ft	EOB=32 ft	EOB=32 ft	EOB-32 ft	EOB=32 ft	EOB=32 ft	EOB=32 ft	EOB=32 ft	EOB=32 ft

Concentrations presented in parts per million.
Back = Background OVA reading.
NR = OVA reading was not recorded.
NS = No sample was collected for OVA reading.
EOB = End of boring.
[ ] = Sample submitted for laboratory analysis of benzene, toluene, ethylbenzene, and xylene (BTEX) and total petroleum hydrocarbons (TPH).
* = Sample interval submitted microbiological plating study.
Samples collected from Monitoring Wells DFOMW6 to DFOMW10 were collected at odd sample intervals.

7843M(WAUSAU)/OVARLT.wk1

Table 5. Results of Soil Samples Field Screened with Organic Vapor Analyzer (OVA), 3M Downtown Facility, Wausau, Wisconsin.

Sample Depth (ft bls)	DFOMW-6	DFOMW-7	DFOMW-8	DFOMW-9	DFOMW-10
0-2	NR	NR	NR	NR	NR
2-4	NR	Back	Back	NR	NR
4-6	Back	Back	Back	Back	Back
6-8	NR	Back	Back	NR	NR
8-10	Back	Back	Back	NR*	Back*
10-12	NR	NR	Back	NR	NR
12-14	NR	Back	Back	NR	NR
14-16	Back	6	Back	Back	200
16-18	NR	5.5	Back	NR	NR
18-20	NR	5	Back	100	6000
20-22	75	12	Back	800	4000
22-24	160	35	Back	250	60
24-26	NR	1600	40	95	3.5
26-28	150	90	1200	25	7
28-30	50	20	200	9	10
30-32	NR	14	130	NR	NR
32-34	NR	9	NR	NR	NR
34-36	75	18	55	5	8
	EOB=36 ft	EOB=36 ft	EOB=37 ft	EOB=36 ft	EOB=36 ft

Concentrations presented in parts per million.
Back = Background OVA reading.
NR = OVA reading was not recorded.
NS = No sample was collected for OVA reading.
EOB = End of boring.
[ ] = Sample submitted for laboratory analysis of benzene, toluene, ethylbenzene, and xylene (BTEX) and total petroleum hydrocarbons (TPH).
* = Sample interval submitted microbiological plating study.
Samples collected from Monitoring Wells DFOMW6 to DFOMW10 were collected at odd sample intervals.

7843M(WAUSAU)/OVARLT.wk1

Table 6. Analytical Results from Soil Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameters	Units	Detection Limit	DSOMW-1		DSOMW-2		DSOMW-3		DSOMW-4	
Sample Collection Depth	ft bls	0.5	16-18	22-24	14-16	24-26	18-20	26-28	14-16	24-26
Laboratory Analysis										
Benzene	ppb	52-120	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	ppb	52-120	BDL	2700	BDL	BDL	BDL	BDL	BDL	BDL
Toluene	ppb	260-290	BDL	3500	BDL	BDL	BDL	BDL	BDL	BDL
Xylene	ppb	100-240	310	19000	BDL	130	BDL	1300	BDL	BDL
Total Petroleum Hydrocarbons (TPH)*	ppm	5.0	BDL	570/340**	BDL	48	BDL	2510	BDL	BDL
Field Measurements										
OVA Reading	ppm	1.0	Back	30	Back	200	Back	>1000	Back	0.5

Detection Limits at DFOMW-1 are as follows: benzene, 1100 ppb; ethylbenzene, 1100 ppb; toluene, 5600 ppb; and xylene, 2200 ppb.
ft bls = Feet below land surface.
ppb = Parts per billion.
ppm = Parts per million.
NA = Not analyzed.
BDL = Below detection limit of the analytical method.
Back = Background OVA readings.
* = TPH quantified on basis of diesel standard except where noted.
** = TPH results for DSOMW-1 (22-24) were quantified on the basis of diesel and mineral spirits standards. TPH concentrations for this sample were 570 ppm and 340 ppm on the basis of a diesel standard and mineral spirits standard (respectively).

Table 6. Analytical Results from Soil Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameters	Units	Detection Limit	DFOMW-1		DFOMW-2		DFOMW-3		DFOMW-4		DFOMW-5	
Sample Collection Depth	ft bls	0.5	14-16	22-24	12-14	22-24	14-16	24-26	14-16	24-26	12-14	24-26
Laboratory Analysis												
Benzene	ppb	50-1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	ppb	50-1000	BDL	16000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2900
Toluene	ppb	50-1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	330
Xylene	ppb	50-1000	260	56000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	4900
Total Petroleum Hydrocarbons (TPH)*	ppm	4-80	4640	7500	BDL	BDL	BDL	2450	BDL	BDL	BDL	3080
Field Measurements												
OVA Reading	ppm	1.0	20	200	0.6	Back	Back	>1000	Back	0.5	0.5	>1000

Detection Limits at DFOMW-1 are as follows: benzene, 1100 ppb; ethylbenzene, 1100 ppb; toluene, 5600 ppb; and xylene, 2200 ppb.
ft bls = Feet below land surface.
ppb = Parts per billion.
ppm = Parts per million.
NA = Not analyzed.
BDL = Below detection limit of the analytical method.
Back = Background OVA readings.
* = TPH quantified on basis of diesel standard except where noted.
** = TPH results for DSOMW-1 (22-24) were quantified on the basis of a diesel and mineral spirits standards. TPH concentrations for this sample were 570 ppm and 340 ppm on the basis of a diesel standard and mineral spirits standard (respectively).

Table 6. Analytical Results from Soil Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameters	Units	Detection Limit	DFOMW-6			DFOMW-7			DFOMW-8		
Sample Collection Depth	ft bls	0.5	21-23	23-25	34-36	14-16	22-24	34-36	16-18	24-26	34-36
Laboratory Analysis											
Benzene	ppb	50-1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	ppb	50-1000	BDL	BDL	BDL	BDL	BDL	60	BDL	BDL	76
Toluene	ppb	50-1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Xylene	ppb	50-1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	77
Total Petroleum Hydrocarbons (TPH)*	ppm	4-80	BDL	BDL	80	BDL	BDL	890	BDL	290	170
Field Measurements											
OVA Reading	ppm	1.0	75	160	75	6	35	18	Back	40	55

Detection Limits at DFOMW-1 are as follows: benzene, 1100 ppb; ethylbenzene, 1100 ppb; toluene, 5600 ppb; and xylene, 2200 ppb.
ft bls = Feet below land surface.
ppb = Parts per billion.
ppm = Parts per million.
NA = Not analyzed.
BDL = Below detection limit of the analytical method.
Back = Background OVA readings.
* = TPH quantified on basis of diesel standard except where noted.
** = TPH results for DSOMW-1 (22-24) were quantified on the basis of a diesel and mineral spirits standards. TPH concentrations for this sample were 570 ppm and 340 ppm on the basis of a diesel standard and mineral spirits standard (respectively).

Table 6. Analytical Results from Soil Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameters	Units	Detection Limit	DFOMW-9		DFOMW-10	
Sample Collection Depth	ft bls	0.5	19-21	23-25	14-16	19-21
Laboratory Analysis						
Benzene	ppb	50-1000	BDL	BDL	BDL	3100
Ethylbenzene	ppb	50-1000	BDL	BDL	BDL	49000
Toluene	ppb	50-1000	BDL	BDL	BDL	5900
Xylene	ppb	50-1000	BDL	BDL	BDL	190000
Total Petroleum Hydrocarbons (TPH)*	ppm	4-80	BDL	BDL	4.8	47000
Field Measurements						
OVA Reading	ppm	1.0	100	250	200	6000

Detection Limits at DFOMW-1 are as follows: benzene, 1100 ppb; ethylbenzene, 1100 ppb; toluene, 5600 ppb; and xylene, 2200 ppb.
ft bls = Feet below land surface.
ppb = Parts per billion.
ppm = Parts per million.
NA = Not analyzed.
BDL = Below detection limit of the analytical method.
Back = Background OVA readings.
* = TPH quantified on basis of diesel standard except where noted.
** = TPH results for DSOMW-1 (22-24) were quantified on the basis of a diesel and mineral spirits standards. TPH concentrations for this sample were 570 ppm and 340 ppm on the basis of a diesel standard and mineral spirits standard (respectively).

Table 7. Results of Soil Samples Field Screened with Organic Vapor Analyzer (OVA), 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Sample Depth (ft bls)	GPIMW-1	GPIMW-2	GPIMW-3	GMFOMW-1	GMQMW-1
0-2	Back	Back	Back	40	Back
2-4	Back	Back	Back	Back	Back
4-6	Back	Back	Back	Back	Back
6-8	Back	Back	Back	Back	Back
8-10	3.0*	Back	Back	Back	10
10-12	2.5*	Back*	Back	Back	18*
12-14	0.5	Back*	Back	Back	7.8*
14-16	0.4	Back	Back	Back	0.5*
16-18	Back	Back	Back	Back	5
18-20	Back*	Back	Back	Back	1
20-22	Back	Back	Back	Back	0.6
22-24	NR	0.2	Back	Back	End Sampling 22 ft
24-26	Back	Back	Back	Back	EOB=49.5 ft
26-28	Back	Back	Back	Back	
28-30	Back	Back	Back	Back	
30-32	Back	Back	Back	Back	
32-34	Back	Back	EOB=32 ft	Back	
34-36	EOB=34 ft	Back*		Back	
36-38		NR		Back	
		EOB=38 ft		EOB=38 ft	

Concentrations presented in parts per million.
Back = Background OVA reading.
NR = OVA reading was not recorded.
EOB = End of boring.
[ ] = Sample submitted for laboratory analysis of benzene, toluene, ethylbenzene, and xylene (BTEX) and total petroleum hydrocarbons (TPH).
* = Sample interval submitted for microbiological plating study.

Table 8. Analytical Results from Soil Samples, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Parameters	Units	Detection Limit	GPIMW-1		GPIMW-2		GPIMW-3		GFOMW-1		GMQMW-1
Sample Collection Depth	ft bls	0.5	8-10	26-28	16-18	28-30	18-20	24-26	14-16	28-30	16-18
Laboratory Analysis											
Benzene	ppb	52-59	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	ppb	52-59	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Toluene	ppb	260-290	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Xylene	ppb	100-120	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Total Petroleum Hydrocarbons (TPH)*	ppm	5.0	165	BDL	BDL	BDL	BDL	BDL	245	BDL	2140
Lead	ppm	3.0	BDL	BDL	3.3	BDL	BDL	BDL	NA	NA	NA
Field Measurements											
OVA Reading	ppm	1	3.0	Back	Back	Back	Back	Back	Back	Back	5

* TPH quantified on basis of diesel standard.
ft bls = Feet below land surface.
ppb = Parts per billion.
ppm = Parts per million.
NA = Not analyzed.
BDL = Below detection limit of the analytical method.
Back = Background OVA readings.

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Table 9. Measured Product Thicknesses in Monitoring Wells, 3M Downtown Facility, Wausau, Wisconsin.

Well Number	Date	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)
Slate Oil Area				
DSOMW-1	07-10-91	24.00	24.15	.15
DSOMW-1	07-12-91	23.99	24.07	.08
DSOMW-1	07-30-91	24.11	24.90	.79
DSOMW-2	05-30-91	23.57	23.58	.01
DSOMW-2	07-30-91	23.13	23.14	.01
DSOMW-3	06-11-91	24.86	24.87	.01
DSOMW-3	07-30-91	24.88	24.85	.01
Fuel Oil Area				
DFOMW-1	07-10-91	24.16	24.17	.01
DFOMW-1	08-27-91	24.55	24.83	.28
DFOMW-3	06-13-91	27.45	27.90	.45
DFOMW-3	06-27-91	27.01	27.31	.30
DFOMW-3	07-10-91	27.09	27.54	.45
DFOMW-3	07-12-91	27.08	27.58	.50
DFOMW-3	08-08-91	24.47	28.06	.59
DFOMW-3	08-27-91	27.81	28.42	.61
DFOMW-5	06-27-91	26.67	27.25	.58
DFOMW-5	07-10-91	26.83	26.88	.05*
DFOMW-5	07-12-91	26.89	27.57	.68
DFOMW-5	08-08-91	27.09	27.72	.63
DFOMW-5	08-27-91	27.33	27.55	.22
DFOMW-6	08-01-91	26.51	26.52	.01
DFOMW-6	08-06-91	26.56	26.57	.01
DFOMW-7	08-01-91	26.52	26.53	.01
DFOMW-7	08-06-91	26.60	26.61	.01
DFOMW-7	08-08-91	26.63	26.64	.01
DFOMW-7	08-27-91	26.82	26.84	.02
DFOMW-9	08-01-91	26.61	26.62	.01*
DFOMW-9	08-06-91	26.73	26.74	.01*

All product measurements were made utilizing a Keck, KIR-89 Interface Probe.

* Measured product thickness uncertain due to possible interface probe malfunction.

Monitoring Wells DSOMW-1 to DSOMW-3 were not accessible for product thickness measurement on 8/27/91.

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Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DSOMW-1 (6-12-91)	DSOMW-1 (Duplicate) (6/12/91)	DSOMW-1 (7-11-91)	DSOMW-2 (5/30/91)	DSOMW-2 (6-12-91)	DSOMW-2 (7-11-91)
Volatile Organic Compounds								
Benzene	ppb	1 - 12	4	3	NS	NA	<1	<1
Ethylbenzene	ppb	1 - 12	3	2	NS	NA	<1	<1
Toluene	ppb	1.2 - 50	<5	<5	NS	NA	<5	<5
Xylene	ppb	1.2 - 20	13	13	NS	NA	<2	<2
Total Petroleum Hydrocarbons (TPH)	ppm	0.1 - 3	0.30(a)	<0.25	NS	<3	<0.25	NA
Phenols								
2-Clorophenol	ppb	1 - 100	4.5	4.8	NS	<10	<1.0	NA
2-Nitrophenol	ppb	1 - 100	2	<1.0	NS	<10	<1.0	NA
Phenol	ppb	1 - 100	<1.0	<1.0	NS	<10	<1.0	NA
2,4-Dimethylphenol	ppb	1 - 100	11	13	NS	<10	<1.0	NA
2,4-Dichlorophenol	ppb	1 - 100	<1.0	<1.0	NS	<10	<1.0	NA
2,4,6,Trichlorophenol	ppb	1 - 100	<3.0	<3.0	NS	<10	<3.0	NA
4-Chloro-3-Methylphenol	ppb	1 - 100	<5.0	15	NS	<10	<5.0	NA
2,4-Dinitrophenol	ppb	3 - 500	<3.0	17	NS	<50	<3.0	NA
4,6-Dinitro-2-Methylphenol	ppb	3 - 500	8.8	14	NS	<50	<5.0	NA
Pentachlorophenol	ppb	3 - 500	<5.0	<5.0	NS	<50	<5.0	NA
4-Nitrophenol	ppb	3 - 500	<5.0	<5.0	NS	<50	<5.0	NA
Inorganic Compounds								
Calcium	ppm	2	63	NA	NS	NA	NA	NA
Calcium, Dissolved	ppm	2	58	NA	NS	NA	NA	NA
Chloride	ppm	1	270	NA	NS	NA	NA	NA
Iron, Total	ppm	0.006	7.4	NA	NS	NA	NA	NA
Iron, Dissolved	ppm	0.006	4.5	NA	NS	NA	NA	NA
Magnesium, Total	ppm	0.05	14	NA	NS	NA	NA	NA
Magnesium, Dissolved	ppm	0.05	14	NA	NS	NA	NA	NA
Manganese, Total	ppm	0.002	3.5	NA	NS	NA	NA	NA
Manganese, Dissolved	ppm	0.002	3.5	NA	NS	NA	NA	NA
Sodium	ppm	0.10	130	NA	NS	NA	NA	NA
Lead, Total	ppm	0.002	0.004	NA	NS	NA	NA	NA
Lead, Dissolved	ppm	0.004	<0.004	<0.002	NS	NA	NA	NA
Sulfate	ppm	1.0	52	NA	NS	NA	NA	NA

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DSOMW-1 (6-12-91)	DSOMW-1 (Duplicate) (6/12/91)	DSOMW-1 (7-11-91)	DSOMW-2 (5/30/91)	DSOMW-2 (6-12-91)	DSOMW-2 (7-11-91)
Indicator Parameters								
TDS	ppm	1	924	NA	NS	NA	NA	NA
Alkalinity, Total	ppm	1.0	69	NA	NS	NA	NA	NA
Bicarbonate	ppm	1.0	69	NA	NS	NA	NA	NA
Carbonate	ppm	1.0	<1.0	NA	NS	NA	NA	NA
Carbon Dioxide, Free	ppm	1.0	70	NA	NS	NA	NA	NA
Hydroxide	ppm	1.0	<1.0	NA	NS	NA	NA	NA
BOD	ppm	1	13	NA	NS	NA	NA	NA
COD	ppm	7	<7	NA	NS	NA	NA	NA
Field Measurements								
Temperature	°C	0.5	16.0	NA	NS	NA	14.0	13.5
pH	pH Units	0.01	NA	NA	NS	NA	6.74	7.75
Conductivity	μmhos/cm	1	1200	NA	NS	NA	1740	1560
Redox Potential	mV	1	NA	NA	NS	NA	NA	150

ppm Parts per million.
ppb Parts per billion.
NA Not analyzed.
NS Not sampled due to presence of separate-phase product.

(a) TPH quantified on basis of diesel standard.
(b) TPH quantified on basis of gasoline standard.
(c) Detection limit = 0.01 ppm.

Ground-water samples collected on 6/11/91 and 6/12/91 were analyzed for volatile organic compounds including benzene, ethylbenzene, toluene, and xylene. Samples collected on 7/11/91, 7/12/91, and 8/8/91 were analyzed for a scan of volatile organic compounds, however only benzene, ethylbenzene, toluene and xylene were detected in ground water samples collected on 7/11/91. Chloroform and Trichloroethene were detected in a sample collected from DFOMW-9 on 8/8/91 at concentrations of 1.3 ppb and 2.0 ppb (respectively).

Ground-water samples collected on 6/12/91 were analyzed for phenols using EPA Method 8040 and samples collected on 7/11/91 were analyzed for phenols using EPA Method 8270. Detection limits for Method 8270 were significantly higher than Method 8040 and include a more comprehensive list of phenol constituents. However, none of the additional phenols were detected in the samples analyzed using Method 8270. Laboratory sheets for ground-water samples are presented in Appendix E.

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DSOMW-3 (5/30/91)	DSOMW-3 (6-12-91)	DSOMW-3 (7-11-91)	DSOMW-3 (Duplicate) (7/11/91)	DSOMW-4 6-12-91	DSOMW-4 7-11-91
Volatile Organic Compounds								
Benzene	ppb	1 - 12	NA	10	6	<1	<1	<1
Ethylbenzene	ppb	1 - 12	NA	10	3	<1	<1	<1
Toluene	ppb	1.2 - 50	NA	<5	<5	<5	<5	<5
Xylene	ppb	1.2 - 20	NA	14	6	<2	<2	<2
Total Petroleum Hydrocarbons (TPH)	ppm	0.1 - 3	51	1.6(a)	NA	NA	<0.25	NA
Phenols								
2-Clorophenol	ppb	1 - 100	<100	<1.0	NA	NA	<1.0	NA
2-Nitrophenol	ppb	1 - 100	<100	<1.0	NA	NA	<1.0	NA
Phenol	ppb	1 - 100	<100	<1.0	NA	NA	<1.0	NA
2,4-Dimethylphenol	ppb	1 - 100	<100	<1.0	NA	NA	<1.0	NA
2,4-Dichlorophenol	ppb	1 - 100	<100	<1.0	NA	NA	<1.0	NA
2,4,6,Trichlorophenol	ppb	1 - 100	<100	13	NA	NA	<3.0	NA
4-Chloro-3-Methylphenol	ppb	1 - 100	<100	<5.0	NA	NA	<5.0	NA
2,4-Dinitrophenol	ppb	3 - 500	<500	11	NA	NA	<3.0	NA
4,6-Dinitro-2-Methylphenol	ppb	3 - 500	<500	8	NA	NA	<5.0	NA
Pentachlorophenol	ppb	3 - 500	<500	<5.0	NA	NA	<5.0	NA
4-Nitrophenol	ppb	3 - 500	<100	<5.0	NA	NA	<5.0	NA
Inorganic Compounds								
Calcium	ppm	2	NA	NA	NA	NA	95	NA
Calcium, Dissolved	ppm	2	NA	NA	NA	NA	95	NA
Chloride	ppm	1	NA	NA	NA	NA	308	NA
Iron, Total	ppm	0.006	NA	NA	NA	NA	57	NA
Iron, Dissolved	ppm	0.006	NA	NA	NA	NA	0.016	NA
Magnesium, Total	ppm	0.05	NA	NA	NA	NA	28	NA
Magnesium, Dissolved	ppm	0.05	NA	NA	NA	NA	20	NA
Manganese, Total	ppm	0.002	NA	NA	NA	NA	3.1	NA
Manganese, Dissolved	ppm	0.002	NA	NA	NA	NA	0.61	NA
Sodium	ppm	0.10	NA	NA	NA	NA	130	NA
Lead, Total	ppm	0.002	NA	NA	NA	NA	0.020(c)	NA
Lead, Dissolved	ppm	0.004	NA	NA	NA	NA	<0.004	NA
Sulfate	ppm	1.0	NA	NA	NA	NA	60	NA

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DSOMW-3 (5/30/91)	DSOMW-3 (6-12-91)	DSOMW-3 (7-11-91)	DSOMW-3 (Duplicate) (7/11/91)	DSOMW-4 6-12-91	DSOMW-4 7-11-91
Indicator Parameters								
TDS	ppm	1	NA	NA	NA	NA	1126	NA
Alkalinity, Total	ppm	1.0	NA	NA	NA	NA	44	NA
Bicarbonate	ppm	1.0	NA	NA	NA	NA	44	NA
Carbonate	ppm	1.0	NA	NA	NA	NA	<1.0	NA
Carbon Dioxide, Free	ppm	1.0	NA	NA	NA	NA	27	NA
Hydroxide	ppm	1.0	NA	NA	NA	NA	<1.0	NA
BOD	ppm	1	NA	NA	NA	NA	3	NA
COD	ppm	7	NA	NA	NA	NA	<7	NA
Field Measurements								
Temperature	°C	0.5	NA	14.0	NA	NA	13.0	14.0
pH	pH Units	0.01	NA	NA	NA	NA	6.44	7.65
Conductivity	µmhos/cm	1	NA	2510	NA	NA	1400	1475
Redox Potential	mV	1	NA	NA	NA	NA	300	131

ppm Parts per million.
ppb Parts per billion.
NA Not analyzed.
NS Not sampled due to presence of separate-phase product.

(a) TPH quantified on basis of diesel standard.
(b) TPH quantified on basis of gasoline standard.
(c) Detection limit = 0.01 ppm.

Ground-water samples collected on 6/11/91 and 6/12/91 were analyzed for volatile organic compounds including benzene, ethylbenzene, toluene, and xylene. Samples collected on 7/11/91, 7/12/91, and 8/8/91 were analyzed for a scan of volatile organic compounds, however only benzene, ethylbenzene, toluene and xylene were detected in ground water samples collected on 7/11/91. Chloroform and Trichloroethene were detected in a sample collected from DFOMW-9 on 8/8/91 at concentrations of 1.3 ppb and 2.0 ppb (respectively).

Ground-water samples collected on 6/12/91 were analyzed for phenols using EPA Method 8040 and samples collected on 7/11/91 were analyzed for phenols using EPA Method 8270. Detection limits for Method 8270 were significantly higher than Method 8040 and include a more comprehensive list of phenol constituents. However, none of the additional phenols were detected in the samples analyzed using Method 8270. Laboratory sheets for ground-water samples are presented in Appendix E.

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DFOMW-1 6-11-91	DFOMW-1 7-11-91	DFOMW-1 (Duplicate) (7/11/91)	DFOMW-2 6-11-91	DFOMW-2 7-11-91	DFOMW-3 6-11-91
Volatile Organic Compounds								
Benzene	ppb	1 - 12	48	23	23	<1	<1	NS
Ethylbenzene	ppb	1 - 12	120	99	91	<1	<1	NS
Toluene	ppb	1.2 - 50	84	<50	<50	<5	<5	NS
Xylene	ppb	1.2 - 20	620	340	350	<2	<2	NS
Total Petroleum Hydrocarbons (TPH)	ppm	0.1 - 3	3(b)	NA	NA	<0.25	NA	NS
Phenols								
2-Clorophenol	ppb	1 - 10	<10	NA	NA	<1.0	NA	NS
2-Nitrophenol	ppb	1 - 10	<10	NA	NA	<1.0	NA	NS
Phenol	ppb	1 - 10	<10	NA	NA	<1.0	NA	NS
2,4-Dimethylphenol	ppb	1 - 10	<10	NA	NA	<1.0	NA	NS
2,4-Dichlorophenol	ppb	1 - 10	<10	NA	NA	<1.0	NA	NS
2,4,6,Trichlorophenol	ppb	3 - 30	<30	NA	NA	<3.0	NA	NS
4-Chloro-3-Methylphenol	ppb	5 - 50	81	NA	NA	<5.0	NA	NS
2,4-Dinitrophenol	ppb	3 - 30	<30	NA	NA	<3.0	NA	NS
4,6-Dinitro-2-Methylphenol	ppb	5 - 50	<50	NA	NA	<5.0	NA	NS
Pentachlorophenol	ppb	5 - 50	<50	NA	NA	<5.0	NA	NS
4-Nitrophenol	ppb	5 - 50	<50	NA	NA	<5.0	NA	NS
Inorganic Compounds								
Calcium	ppm	2	89	NA	NA	NA	NA	NS
Calcium, Dissolved	ppm	2	89	NA	NA	NA	NA	NS
Chloride	ppm	1	276	NA	NA	NA	NA	NS
Iron, Total	ppm	0.006	42	NA	NA	NA	NA	NS
Iron, Dissolved	ppm	0.006	13	NA	NA	NA	NA	NS
Magnesium, Total	ppm	0.05	17	NA	NA	NA	NA	NS
Magnesium, Dissolved	ppm	0.05	17	NA	NA	NA	NA	NS
Manganese, Total	ppm	0.002	16	NA	NA	NA	NA	NS
Manganese, Dissolved	ppm	0.002	16	NA	NA	NA	NA	NS
Sodium	ppm	0.10	490	NA	NA	NA	NA	NS
Lead, Total	ppm	0.002	<0.010(c)	NA	NA	NA	NA	NS
Lead, Dissolved	ppm	0.004	<0.04	NA	NA	NA	NA	NS
Sulfate	ppm	1.0	19	NA	NA	NA	NA	NS

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DFOMW-1 6-11-91	DFOMW-1 7-11-91	DFOMW-1 (Duplicate) (7/11/91)	DFOMW-2 6-11-91	DFOMW-2 7-11-91	DFOMW-3 6-11-91
Indicator Parameters								
TDS	ppm	1	2124	NA	NA	NA	NA	NS
Alkalinity, Total	ppm	1.0	962	NA	NA	NA	NA	NS
Bicarbonate	ppm	1.0	961	NA	NA	NA	NA	NS
Carbonate	ppm	1.0	<1.0	NA	NA	NA	NA	NS
Carbon Dioxide, Free	ppm	1.0	284	NA	NA	NA	NA	NS
Hydroxide	ppm	1.0	<1.0	NA	NA	NA	NA	NS
BOD	ppm	1	28	NA	NA	NA	NA	NS
COD	ppm	7	172	NA	NA	NA	NA	NS
Field Measurements								
Temperature	°C	0.5	21.0	NA	NA	12.5	13.0	NS
pH	pH Units	0.01	6.66	NA	NA	6.08	7.50	NS
Conductivity	µmhos/cm	1	2734	NA	NA	760	730	NS
Redox Potential	mV	1	39	NA	NA	313	57	NS

ppm Parts per million.
ppb Parts per billion.
NA Not analyzed.
NS Not sampled due to presence of separate-phase product.

(a) TPH quantified on basis of diesel standard.
(b) TPH quantified on basis of gasoline standard.
(c) Detection limit = 0.01 ppm.

Ground-water samples collected on 6/11/91 and 6/12/91 were analyzed for volatile organic compounds including benzene, ethylbenzene, toluene, and xylene. Samples collected on 7/11/91, 7/12/91, and 8/8/91 were analyzed for a scan of volatile organic compounds, however only benzene, ethylbenzene, toluene and xylene were detected in ground water samples collected on 7/11/91. Chloroform and Trichloroethene were detected in a sample collected from DFOMW-9 on 8/8/91 at concentrations of 1.3 ppb and 2.0 ppb (respectively).

Ground-water samples collected on 6/12/91 were analyzed for phenols using EPA Method 8040 and samples collected on 7/11/91 were analyzed for phenols using EPA Method 8270. Detection limits for Method 8270 were significantly higher than Method 8040 and include a more comprehensive list of phenol constituents. However, none of the additional phenols were detected in the samples analyzed using Method 8270. Laboratory sheets for ground-water samples are presented in Appendix E.

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DFOMW-3 7-12-91	DFOMW-3 8-8-91	DFOMW-4 6-11-91	DFOMW-4 7-11-91	DFOMW-5 6-11-91	DFOMW-5 7-12-91
Volatile Organic Compounds								
Benzene	ppb	1 - 12	NS	NA	<1	<1	<10	NS
Ethylbenzene	ppb	1 - 12	NS	NA	<1	<1	110	NS
Toluene	ppb	1.2 - 50	NS	NA	<5	<5	69	NS
Xylene	ppb	1.2 - 20	NS	NA	<2	<2	61	NS
Total Petroleum Hydrocarbons (TPH)	ppm	0.1 - 3	NS	NA	<0.25	NA	9(b)/26(a)	NS
Phenols								
2-Clorophenol	ppb	1 - 1000	<100	<1.0	<1.0	NA	<10	<1000
2-Nitrophenol	ppb	1 - 1000	<100	400	<1.0	NA	580	<1000
Phenol	ppb	1 - 1000	<100	<1.0	<1.0	NA	<10	<1000
2,4-Dimethylphenol	ppb	1 - 1000	<100	1200	<1.0	NA	<10	<1000
2,4-Dichlorophenol	ppb	1 - 1000	<100	<1.0	<1.0	NA	<10	<1000
2-4-6,Trichlorophenol	ppb	1 - 1000	<100	400	<3.0	NA	<30	<1000
4-Chloro-3-Methylphenol	ppb	1 - 1000	<100	<5.0	<5.0	NA	280	<1000
2,4-Dinitrophenol	ppb	3 - 5000	<500	<3.0	<3.0	NA	460	<5000
4,6-Dinitro-2-Methylphenol	ppb	3 - 5000	<500	<5.0	<5.0	NA	490	<5000
Pentachlorophenol	ppb	3 - 5000	<500	<5.0	<5.0	NA	780	<5000
4-Nitrophenol	ppb	3 - 5000	<500	<5.0	<5.0	NA	850	<5000
Inorganic Compounds								
Calcium	ppm	2	NA	NA	NA	NA	NA	NA
Calcium, Dissolved	ppm	2	NA	NA	NA	NA	NA	NA
Chloride	ppm	1	NA	NA	NA	NA	NA	NA
Iron, Total	ppm	0.006	NA	NA	NA	NA	NA	NA
Iron, Dissolved	ppm	0.006	NA	NA	NA	NA	NA	NA
Magnesium, Total	ppm	0.05	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved	ppm	0.05	NA	NA	NA	NA	NA	NA
Manganese, Total	ppm	0.002	NA	NA	NA	NA	NA	NA
Manganese, Dissolved	ppm	0.002	NA	NA	NA	NA	NA	NA
Sodium	ppm	0.10	NA	NA	NA	NA	NA	NA
Lead, Total	ppm	0.002	NA	NA	NA	NA	NA	NA
Lead, Dissolved	ppm	0.004	NA	NA	NA	NA	NA	NA
Sulfate	ppm	1.0	NA	NA	NA	NA	NA	NA

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DFOMW-3 7-12-91	DFOMW-3 8-8-91	DFOMW-4 6-11-91	DFOMW-4 7-11-91	DFOMW-5 6-11-91	DFOMW-5 7-12-91
Indicator Parameters								
TDS	ppm	1	NA	NA	NA	NA	NA	NA
Alkalinity, Total	ppm	1.0	NA	NA	NA	NA	NA	NA
Bicarbonate	ppm	1.0	NA	NA	NA	NA	NA	NA
Carbonate	ppm	1.0	NA	NA	NA	NA	NA	NA
Carbon Dioxide, Free	ppm	1.0	NA	NA	NA	NA	NA	NA
Hydroxide	ppm	1.0	NA	NA	NA	NA	NA	NA
BOD	ppm	1	NA	NA	NA	NA	NA	NA
COD	ppm	7	NA	NA	NA	NA	NA	NA
Field Measurements								
Temperature	°C	0.5	NA	NA	12.5	12.0	20.0	NA
pH	pH Units	0.01	NA	NA	6.70	7.80	5.95	NA
Conductivity	µmhos/cm	1	NA	NA	380	360	149	NA
Redox Potential	mV	1	NA	NA	268	30	116	NA

ppm Parts per million.
ppb Parts per billion.
NA Not analyzed.
NS Not sampled due to presence of separate-phase product.

(a) TPH quantified on basis of diesel standard.
(b) TPH quantified on basis of gasoline standard.
(c) Detection limit = 0.01 ppm.

Ground-water samples collected on 6/11/91 and 6/12/91 were analyzed for volatile organic compounds including benzene, ethylbenzene, toluene, and xylene. Samples collected on 7/11/91, 7/12/91, and 8/8/91 were analyzed for a scan of volatile organic compounds, however only benzene, ethylbenzene, toluene and xylene were detected in ground water samples collected on 7/11/91. Chloroform and Trichloroethene were detected in a sample collected from DFOMW-9 on 8/8/91 at concentrations of 1.3 ppb and 2.0 ppb (respectively).

Ground-water samples collected on 6/12/91 were analyzed for phenols using EPA Method 8040 and samples collected on 7/11/91 were analyzed for phenols using EPA Method 8270. Detection limits for Method 8270 were significantly higher than Method 8040 and include a more comprehensive list of phenol constituents. However, none of the additional phenols were detected in the samples analyzed using Method 8270. Laboratory sheets for ground-water samples are presented in Appendix E.

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DFOMW-5 8-8-91	DFOMW-6 8-8-91	DFOMW-8 8-8-91	DFOMW-9 8-8-91	DFOMW-9 (Duplicate) 8-8-91	DFOMW-10 8-8-91
Volatile Organic Compounds								
Benzene	ppb	1 - 12	NA	<12	4.7	<2.5	<1.2	<12
Ethylbenzene	ppb	1 - 12	NA	66	61	<2.5	<1.2	66
Toluene	ppb	1.2 - 50	NA	<12	<2.5	<2.5	<1.2	<12
Xylene	ppb	1.2 - 20	NA	39	3.5	3.4	3.7	<12
Total Petroleum Hydrocarbons (TPH)	ppm	0.1 - 3	NA	69	16	0.82	0.80	1.5
Phenols								
2-Clorophenol	ppb	1 - 1000	<10	<10	<10	<1.0	<1.0	<1.0
2-Nitrophenol	ppb	1 - 1000	36	37	23	<1.0	<1.0	2.8
Phenol	ppb	1 - 1000	<10	<10	<10	<1.0	<1.0	<1.0
2,4-Dimethylphenol	ppb	1 - 1000	17	35	19	<1.0	<1.0	7.9
2,4-Dichlorophenol	ppb	1 - 1000	<10	<10	<10	<1.0	<1.0	<1.0
2-4-6,Trichlorophenol	ppb	1 - 1000	<30	<30	<30	<3.0	<3.0	<3.0
4-Chloro-3-Methylphenol	ppb	1 - 1000	<50	<50	<50	<5.0	<5.0	<5.0
2,4-Dinitrophenol	ppb	3 - 5000	<30	<30	<30	<3.0	<3.0	<3.0
4,6-Dinitro-2-Methylphenol	ppb	3 - 5000	<50	<50	<50	<5.0	<5.0	<5.0
Pentachlorophenol	ppb	3 - 5000	<50	<50	<50	<500	<500	<5.0
4-Nitrophenol	ppb	3 - 5000	<50	<50	<50	<5.0	<5.0	<5.0
Inorganic Compounds								
Calcium	ppm	2	NA	NA	NA	NA	NA	NA
Calcium, Dissolved	ppm	2	NA	NA	NA	NA	NA	NA
Chloride	ppm	1	NA	NA	NA	NA	NA	NA
Iron, Total	ppm	0.006	NA	NA	NA	NA	NA	NA
Iron, Dissolved	ppm	0.006	NA	NA	NA	NA	NA	NA
Magnesium, Total	ppm	0.05	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved	ppm	0.05	NA	NA	NA	NA	NA	NA
Manganese, Total	ppm	0.002	NA	NA	NA	NA	NA	NA
Manganese, Dissolved	ppm	0.002	NA	NA	NA	NA	NA	NA
Sodium	ppm	0.10	NA	NA	NA	NA	NA	NA
Lead, Total	ppm	0.002	NA	NA	NA	NA	NA	NA
Lead, Dissolved	ppm	0.004	NA	NA	NA	NA	NA	NA
Sulfate	ppm	1.0	NA	NA	NA	NA	NA	NA

Table 10. Summary of Analytical Results from Ground-Water Samples, 3M Downtown Facility, Wausau, Wisconsin.

Parameter	Units	Detection Limits	DFOMW-5 8-8-91	DFOMW-6 8-8-91	DFOMW-8 8-8-91	DFOMW-9 8-8-91	DFOMW-9 (Duplicate) 8-8-91	DFOMW-10 8-8-91
Indicator Parameters								
TDS	ppm	1	NA	NA	NA	NA	NA	NA
Alkalinity, Total	ppm	1.0	NA	NA	NA	NA	NA	NA
Bicarbonate	ppm	1.0	NA	NA	NA	NA	NA	NA
Carbonate	ppm	1.0	NA	NA	NA	NA	NA	NA
Carbon Dioxide, Free	ppm	1.0	NA	NA	NA	NA	NA	NA
Hydroxide	ppm	1.0	NA	NA	NA	NA	NA	NA
BOD	ppm	1	NA	NA	NA	NA	NA	NA
COD	ppm	7	NA	NA	NA	NA	NA	NA
Field Measurements								
Temperature	°C	0.5	NA	14	15	14	14	15
pH	pH Units	0.01	NA	6.32	6.44	6.67	6.67	6.42
Conductivity	µmhos/cm	1	NA	825	1220	1400	1400	2500
Redox Potential	mV	1	NA	NA	NA	NA	NA	NA

ppm Parts per million.
ppb Parts per billion.
NA Not analyzed.
NS Not sampled due to presence of separate-phase product.

(a) TPH quantified on basis of diesel standard.
(b) TPH quantified on basis of gasoline standard.
(c) Detection limit = 0.01 ppm.

Ground-water samples collected on 6/11/91 and 6/12/91 were analyzed for volatile organic compounds including benzene, ethylbenzene, toluene, and xylene. Samples collected on 7/11/91, 7/12/91, and 8/8/91 were analyzed for a scan of volatile organic compounds, however only benzene, ethylbenzene, toluene and xylene were detected in ground water samples collected on 7/11/91. Chloroform and Trichloroethene were detected in a sample collected from DFOMW-9 on 8/8/91 at concentrations of 1.3 ppb and 2.0 ppb (respectively).

Ground-water samples collected on 6/12/91 were analyzed for phenols using EPA Method 8040 and samples collected on 7/11/91 were analyzed for phenols using EPA Method 8270. Detection limits for Method 8270 were significantly higher than Method 8040 and include a more comprehensive list of phenol constituents. However, none of the additional phenols were detected in the samples analyzed using Method 8270. Laboratory sheets for ground-water samples are presented in Appendix E.

7843m/gwrltbk.wk1

Table 11. Analytical Results from Ground-Water Sampling, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Parameters	Units	Detection Limits	GPIMW-1 6-11-91	GPIMW-1 (Duplicate)	GPIMW-1 7-10-91	GPIMW-2 6-11-91	GPIMW-2 7-10-91	GPIMW-3 6-11-91
Volatile Organic Compounds								
Benzene	ppb	1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ppb	1	<1	<1	<1	<1	<1	<1
Toluene	ppb	5	<5	<5	<5	<5	<5	<5
Xylene	ppb	2-5	<2	<2	<2	<2	<2	<2
TPH	ppm	0.25	<0.25	<0.25	NA	<0.25	NA	<0.25
Inorganic Compounds								
Calcium	ppm	2	48	NA	NA	NA	NA	NA
Calcium, Dissolved	ppm	2	43	NA	NA	NA	NA	NA
Chloride	ppm	1	13	NA	NA	NA	NA	NA
Iron, Total	ppm	0.006	51	NA	NA	NA	NA	NA
Iron, Dissolved	ppm	0.006	0.013	NA	NA	NA	NA	NA
Magnesium, Total	ppm	0.05	21	NA	NA	NA	NA	NA
Magnesium, Dissolved	ppm	0.05	0.069	NA	NA	NA	NA	NA
Manganese, Total	ppm	0.002	0.91	NA	NA	NA	NA	NA
Manganese, Dissolved	ppm	0.002	0.069	NA	NA	NA	NA	NA
Sodium	ppm	0.10	12	NA	NA	NA	NA	NA
Lead, Total	ppm	0.002	0.012	NA	NA	NA	NA	NA
Lead, Dissolved	ppm	0.004	<0.004	<0.002	NA	<0.002	<0.002	<0.002
Sulfate	ppm	1	25	NA	NA	NA	NA	NA

ppm = Parts per million.
ppb = Parts per billion.
NA = Not analyzed.

784 3mwausau/gwrvt.tbl

Table 11. Analytical Results from Ground-Water Sampling, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Parameters	Units	Detection Limits	GPIMW-1 6-11-91	GPIMW-1 (Duplicate)	GPIMW-1 7-10-91	GPIMW-2 6-11-91	GPIMW-2 7-10-91	GPIMW-3 6-11-91
Indicator Parameters								
TDS	ppm	1	189	NA	NA	NA	NA	NA
Alkalinity, Total	ppm	1	130	NA	NA	NA	NA	NA
Bicarbonate	ppm	1	130	NA	NA	NA	NA	NA
Carbonate	ppm	1	<1.0	NA	NA	NA	NA	NA
Carbon Dioxide, free	ppm	1	47	NA	NA	NA	NA	NA
Hydroxide	ppm	1	<1.0	NA	NA	NA	NA	NA
BOD	ppm	1	1	NA	NA	NA	NA	NA
COD	ppm	7	93	NA	NA	NA	NA	NA
Field Measurements								
Temperature	°C	0.5	9.50	NA	10.0	9.0	10.0	11.0
pH	pH units	0.01	6.41	NA	7.35	6.62	7.25	6.20
Conductivity	μmho/cm	1	340	NA	340	380	300	280
Redox potential	mV	1	333	NA	NA	312	NA	380

ppm = Parts per million.
ppb = Parts per billion.
NA = Not analyzed.

784 3mwausau/gwrvt.tbl

Table 11. Analytical Results from Ground-Water Sampling, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Parameters	Units	Detection Limits	GPIMW-3 7-10-91	GFOMW-1 6-11-91	GFOMW-1 7-10-91	GQMW-1 6-11-91	GQMW-1 7-10-91
Volatile Organic Compounds							
Benzene	ppb	1	<1	<1	<1	<1	<1
Ethylbenzene	ppb	1	<1	<1	<1	<1	<1
Toluene	ppb	5	<5	18	<5	<5	<5
Xylene	ppb	2-5	<2	<2	<2	<5	<2
TPH	ppm	0.25	NA	<0.25	NA	<0.25	NA
Inorganic Compounds							
Calcium	ppm	2	NA	NA	NA	16	NA
Calcium, Dissolved	ppm	2	NA	NA	NA	23	NA
Chloride	ppm	1	NA	NA	NA	6	NA
Iron, Total	ppm	0.006	NA	NA	NA	0.53	NA
Iron, Dissolved	ppm	0.006	NA	NA	NA	0.015	NA
Magnesium, Total	ppm	0.05	NA	NA	NA	3.6	NA
Magnesium, Dissolved	ppm	0.05	NA	NA	NA	3.6	NA
Manganese, Total	ppm	0.002	NA	NA	NA	0.10	NA
Manganese, Dissolved	ppm	0.002	NA	NA	NA	0.10	NA
Sodium	ppm	0.10	NA	NA	NA	5.3	NA
Lead, Total	ppm	0.002	NA	NA	NA	<0.002	NA
Lead, Dissolved	ppm	0.004	NA	<0.004	NA	<0.004	NA
Sulfate	ppm	1	NA	NA	NA	25	NA

ppm = Parts per million.
ppb = Parts per billion.
NA = Not analyzed.

784 3mwausau/gwrvt.tbl

Table 11. Analytical Results from Ground-Water Sampling, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Parameters	Units	Detection Limits	GPIMW-3 7-10-91	GFOMW-1 6-11-91	GFOMW-1 7-10-91	GQMW-1 6-11-91	GQMW-1 7-10-91
Indicator Parameters							
TDS	ppm	1	NA	NA	NA	74	NA
Alkalinity, Total	ppm	1	NA	NA	NA	18	NA
Bicarbonate	ppm	1	NA	NA	NA	18	NA
Carbonate	ppm	1	NA	NA	NA	<1.0	NA
Carbon Dioxide, free	ppm	1	NA	NA	NA	18	NA
Hydroxide	ppm	1	NA	NA	NA	<1.0	NA
BOD	ppm	1	NA	NA	NA	2	NA
COD	ppm	7	NA	NA	NA	21	NA
Field Measurements							
Temperature	°C	0.5	12.0	14.0	14.0	9.0	9.0
pH	pH units	0.01	7.40	6.40	7.15	5.50	7.50
Conductivity	µmho/cm	1	250	510	440	125	325
Redox potential	mV	1	NA	332	NA	296	NA

ppm = Parts per million.
ppb = Parts per billion.
NA = Not analyzed.

784 3mwausau/gwrvt.tbl

Table 12. Analytical Results from Quality Assurance/Quality Control Ground-Water Samples, 3M Downtown Facility, Greystone Facility and Greystone Quarry, Wausau, Wisconsin.

Parameter	Units	Detection Limits	FB-1 6-11-91	FB-2 6-12-91	Trip Blank 6-12-91	FB-1[a] 7-10-91	FB-2[a] 7-11-91	Trip Blank[a] 7-11-91	Field Blank 8-8-91	Trip Blank 8-8-91	DCONT-1[b] 6-12-91
Volatile Organic Compounds											
Benzene	ppb	0.50	<1	<1	<1	<1	<1	<1	<0.50	<0.50	<1
Ethylbenzene	ppb	0.50	<1	<1	<1	<1	<1	<1	<0.50	<0.50	<1
Toluene	ppb	0.50	<5	<5	<5	<5	<5	<5	<0.50	<0.50	<5
Xylene	ppb	0.50	<2	<2	<2	<2	<2	<2	<0.50	<0.50	4
TPH	ppm	0.10-0.25	<0.10	<0.10	NA	NA	NA	NA	<0.10	NA	0.67
Phenols											
2-Chlorophenol	ppb	1.0	NA	NA	NA	NA	NA	NA	<1.0	NA	<1.0
2-Nitrophenol	ppb	1.0	NA	NA	NA	NA	NA	NA	<1.0	NA	<1.0
Phenol	ppb	1.0	NA	NA	NA	NA	NA	NA	<1.0	NA	<1.0
2,4-Dimethylphenol	ppb	1.0	NA	NA	NA	NA	NA	NA	<1.0	NA	<1.0
2,4-Dichlorophenol	ppb	1.0	NA	NA	NA	NA	NA	NA	<1.0	NA	<1.0
2,4,6-Trichlorophenol	ppb	3.0	NA	NA	NA	NA	NA	NA	<3.0	NA	<3.0
4-Chloro-3-methylphenol	ppb	5.0	NA	NA	NA	NA	NA	NA	<5.0	NA	13
2,4-Dinitrophenol	ppb	3.0	NA	NA	NA	NA	NA	NA	<3.0	NA	<3.0
4,6-Dinitro-2-methylphenol	ppb	5.0	NA	NA	NA	NA	NA	NA	<5.0	NA	5.5
Pentachlorophenol	ppb	5.0	NA	NA	NA	NA	NA	NA	<5.0	NA	5.0
4-Nitrophenol	ppb	5.0	NA	NA	NA	NA	NA	NA	<5.0	NA	<5.0

ppm = Parts per million.
ppb = Parts per billion.
FB = Field blank.
NA = Not analyzed.

[a] These samples were analyzed using EPA Method 601 and 602. For a comprehensive listing of the analytical results, see Appendix E.

[b] Purge and other wastewater from field activities completed at the Downtown Facility.

784 3M/qaqc.wk1

Table 13. Results of Separate-Phase Hydrocarbon Product Identification, 3M Downtown Wausau Facility, Wausau, Wisconsin.

Monitoring Well ID	Sampling Date	Product Identification
DSOMW-1	8-8-91	Unknown Hydrocarbon
DFOMW-3	7-12-91	Fuel Oil #4
DFOMW-5	7-12-91	Fuel Oil #4

Note - Product identification was determined using USEPA Modified Method 8015.

784-3M/reasep.wk1

Table 14. Results of Microbiological Plating Study Samples, 3M Downtown Facility, Wausau, Wisconsin.

Sample Identification	Total Heterotrophic Microbes	Specific Degrading Microbes	Specific Degrading Microbes Percent (%)	TPH (mg/kg)	Ammonia (mg/kg)	o-Phosphate (mg/kg)	Percent Moisture (%)	pH (Standard Units)
		Diesel	Diesel					
DSOMW2/28-30	BDL*	BDL**	NA	FP	0.1	0.4	13.2	7.3
DSOMW3/16-18	BDL*	BDL**	NA	13	0.1	0.1	2.8	8.0
DFOMW1/16-20	45	BDL**	NA	2900	0.1	1.6	4.6	8.1
DFOMW1/26-32	7.4	BDL**	NA	1200	0.3	0.3	7.6	7.4
DFOMW3/30-32	2.4	.06	2.5	160	0.1	0.9	13.4	6.9
DFOMW5/22-26	41	27	66	8700	0.1	0.8	6.5	7.4
		Mineral Spirits	Mineral Spirits					
DFOMW5/22-26	41	.02	.05	8700	0.1	0.8	6.5	7.4

Units for Total Heterotrophic and Specific Degrading Microbes are: Bacteria x 10^5 Colony Forming Units (CFU)/gram. Units are presented on a dry-weight basis.

Samples were analyzed for microbes capable of using diesel fuel as a carbon source. Sample DSOMW5/22-26 was also analyzed for microbes capable of using mineral spirits as a carbon source.

TPH = Total petroleum hydrocarbons (determined by EPA Method 418.1).

BDL* = Below detection limit of <3.0 x 10^3 CFU/gram.

BDL** = Below detection limit of <3.0 x 10^2 CFU/gram.

FP = Separate-phase product was present in the soil sample..

NA = Not applicable.

784 3M/dwnmic.wk1

Table 15. Results of Microbiological Plating Study Samples, 3M Greystone Facility and Quarry, Wausau, Wisconsin.

Sample Identification	Total Heterotrophic Microbes	Specific Degrading Microbes	Specific Degrading Microbes Percent (%)	TPH (mg/kg)	Ammonia (mg/kg)	o-Phosphate (mg/kg)	Percent Moisture (%)	pH (Standard Units)
		Diesel	Diesel					
GPIMW1/8-12	8.6	58	NA	71.0	0.3	0.1	4.9	7.3
GPIMW1/18-20	46	13	28	7.0	0.3	9.25	15.0	7.2
GPIMW2/10-14	37	BDL*	NA	5.0	0.1	0.3	2.9	7.3
GPIMW2/34-36	.34	.04	12	<5.0	0.1	1.0	14.7	7.4
GQMW1/10-16	99	38	38	350	0.1	0.1	15.3	7.3
		Mineral Spirits	Mineral Spirits					
GPIMW1/18-20	46	.31	.67	7.0	0.3	9.25	15.0	7.2

Units for Total Heterotrophic and Specific Degrading Microbes are: Bacteria x 10^5 Colony Forming Units (CFU)/gram. Units are presented on dry-weight basis.

Samples were analyzed for microbes capable of using diesel fuel as a carbon source. Sample GPIMW1/18-20 was also analyzed for microbes capable of using mineral spirits as a carbon source.

TPH = Total petroleum hydrocarbons (determined by EPA Method 418.1).

BDL* = Below detection limit of <3.0 x 10^2 CFU/gram.

NA = Not applicable.

784 3M/microtbl.wk1

APPENDICIES FOR SOIL AND GROUND-WATER INVESTIGATION AT FORMER UST SITES

3M DOWNTOWN WAUSAU
AND GREYSTONE FACILITIES
WAUSAU, WISCONSIN

PREPARED FOR

3M ENVIRONMENTAL ENGINEERING AND POLLUTION CONTROL

PREPARED BY

GERAGHTY & MILLER, INC.
ENVIRONMENTAL SERVICES
126 NORTH JEFFERSON STREET
SUITE 400
MILWAUKEE, WISCONSIN 53202
(414) 276-7742

DECEMBER 1991

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	0 5 / 2 1 / 9 1

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-1		10 Inches	1166.13 Feet	1190.73

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0.5	2	0.7	12-19-18	Light gray, very fine silty sand, loose and dry. (3M sand)	0
2	4	2	7-6-8-8	Same as above.	0
4	6	1.7	8-5-5-5	Same as above, roofing granuals , 1.5 to 1.6.	0
6	8	1.9	5-7-10-10	Same as above.	0
8	10	1.9	8-8-10-9	Same as above.	0
10	12	0.9	2-1-6-8	Light gray, gray, light brown and white fine silty, well sorted sand with trace small gravel fragments, loose and moist.	0
12	14	0.1	6-10-13-14	Same as above.	
14	16	1.2	12-16-10-14	Gray to brown to black fine to medium silty sand, loose, moist.	0
16	18	1.5	13-12-17-16	Brown to black, fine, well sorted, silty sand, loose, moist, odor present.	0
18	20	1.5	27-8-10-13	Same as above.	0
20	22	1.4	10-14-17-21	Same as above.	8
22	24	1.5	12-16-14-19	Same dark gray to black fine silty sand, odor present.	30
24	26	2	10-17-14-19	Black fine to medium sand with gravel. Hydrocarbon-like odor and heavy staining. Possibly hydrocarbon saturated.	20
26	28	1.7	16-23-34-45	Black stained fine to coarse silty sand with small to coarse gravel, loose, saturated with hydrocarbon.	750
28	30	1.5	26-27-21-19	Same as above.	300

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05/21/91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-1		10 Inches	1166.13 Feet	1190.73

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
30	32	2.0	12-15-17-27	0-1.2: Same as above, saturated with hydrocarbon and water.	400 to
				1.2-2.0: Light brown to rust colored fine to coarse sand with small	500
				to large gravel, loose and wet (not stained with black hydrocarbon).	
32	34	0.5	100/1.0	Same as above, rust to yellow colored very silty sand with fragments	250
				of weathered igneous rock, loose and wet.	

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 20 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-2		8 Inches	1166.22 Feet	1189.82

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable)
____ feet N or S____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	1.5	0.6	14-16-17	Fine to coarse sand and small-medium gravel fill materials, loose, dry.	0
2	4	1.0	19-54-41-32	0-0.4: Light brown, fine to medium silty sand. 0.4-0.7: White fine crystalline substance, appears to be crushed gravel. 0.7-0.1: Same as 0-0.4, loose and dry.	0
4	6	1.1	17-24-51-63	Light brown, fine to coarse poorly sorted sand with small-coarse gravel (angular and rounded) loose, moist, likely native material.	0
6	8	1.1	21-27-36-49	Same as above.	0
8	10	1.0	21-24-36-31	Same as above.	0
10	12	1.0	14-10-13-12	Light brown fine to medium poorly sorted silty sand, no gravel, loose, moist.	0
12	14	1.0	12-13-17-14	Same as 4-10 ft intervals, loose and moist, small-coarse gravel and cobbles.	0
14	16	1.4	12-17-16-19	Light brown, fine to medium poorly sorted silty sand, loose, moist. As in 10-12 ft interval, no gravel.	0
16	18	1.7	6-12-11-13	Same as above.	0
18	20	1.5	6-11-13-17	Same as above.	0
20	22	1.3	12-13-16-20	Light brown, fine to medium moderately sorted silty sand, loose, moist.	0

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Department of Natural Resources

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05/20/91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-2		8 Inches	1166.22 Feet	1189.82

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
22	24	0.0	18-32-46-41	0-0.4: Same as above. 0.4-0.8: Same as 4-10 ft interval, loose, moist.	
24	26	1.0	16-17-24-34	0-0.5: Fine to coarse sand and gravel, mixed, loose, wet.	200
				0.5-1.0: Light brown to gray or black, fine, well sorted silty sand, loose, wet, odor present. The water table appears to be at approximately 24 ft bls.	
26	28	1.5	19-54-47-41	Black-gray, mixed fine to coarse sand, small to coarse gravel with cobbles, loose, wet, odor, obviously affected.	>1000
28	30	2.0	21-24-31-27	0-1.7: Black-gray sand and gravel, as above. 1.7-2.0: light brown, fine-coarse silty sand, loose, wet.	>1000
30	32	0.7	11-19-26-31	Light brown, fine-coarse silty sand with small gravel, loose, wet, obviously affected.	>1000

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 21 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-3		10 Inches	1165.49 Feet	1190.83

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	0.1	12-10-14-13	Dark brown, fine to coarse sand with small-medium gravel, loose and dry.	0
2	4	0	7-17-21-63	No recovery.	0
4	6	0.9	17-24-52-60	Light brown, fine to coarse sand with small-coarse assorted gravel, loose, moist, no order.	0
6	8	1.3	16-27-36-49	Same as above, no odor.	0
8	10	1.3	17-36-48-29	Same as above, no odor.	0
10	12	1.4	6-14-17-23	Light brown, fine to medium poorly sorted, silty sand with trace small to medium gravel, loose and moist.	0
12	14	1.3	10-17-15-20	Same as above, no gravel.	0
14	16	1.3	13-16-17-21	Light brown, fine, well sorted silty sand, loose, moist with no gravel, no odor.	0
16	18	1.3	14-16-17-19	Same as above.	0
18	20	1.5	12-14-17-16	Same as above.	0
20	22	1.2	10-16-21-20	Same as above, trace small gravel, no odor.	0
22	24	1.7	17-32-56-61	Rust colored, fine to coarse sand with small-large weathered gravel, loose, moist.	0
24	26	0.7	46-100-in 6"	Same as above, mixed sand with mixed weathered gravel.	0
26	28	1.5	21-17-32-41	Light brown to black fine-coarse sand with small to coarse gravel, loose, saturated, stained, odor present.	>1000

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 21 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-3		10 Inches	1165.49 Feet	1190.83

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
28	30	1.9	17-27-32-26	Same as above, saturated, appears affected.	>1000
30	32	1.1	17-36-26-24	0-0.3: Same as above, black stained sand and gravel. 0.3-1.1: Light brown to rust silty clayey sand, slightly cohesive, soft and wet.	>1000

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 24 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-4		10 Inches	1165.18 Feet	1191.13

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	0.7	10-20	Dark brown fine silty sand with small to coarse gravel, organics present, loose to medium dense, dry.	0
2	4	1.0	9-26-100/.4	0-0.5: Same as above. 0.5-1.0: Light brown fine to coarse silty sand with coarse gravel, loose and moist.	0
4	6	0.2	13-100/0.3	Same as above.	0
6	8	1.1	10-14-28-30	Dark brown fine silty sand with coarse gravel, slightly cohesive, medium dense and moist.	0
8	10	1.1	25-28-25-15	0-0.2: Same as above. 0.2-1.1: Light brown fine to coarse poorly sorted silty sand with small to coarse gravel, very loose and moist.	0
10	12	0	58-33-14-17	No recovery.	--
12	14	0.7	10-11-15-20	0-0.4: Same as above, fine sand with gravel. 0.4-0.7: Fine to medium sand with gravel, loose and moist.	0
14	16	1.4	10-13-19-28	Light brown fine to coarse poorly sorted silty sand with small to coarse gravel, loose and moist.	0
16	18	13	11-18-24-26	0-0.2: Same as above. 0.2-1.3: Light brown very fine silty sand, no gravel, very loose and moist.	0
18	20	1.5	19-29-39-43	Same as above, with dark lines approximately 1/16 in. thick oriented horizontally across the sample.	0

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 24 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DSOMW-4		10 Inches	1165.18 Feet	1191.13

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
20	22	1.4	9-39-52-32	0-1.0: Light brown fine to medium poorly sorted silty sand, no gravel, loose and moist. 1.0-1.4: Brown to rust to yellow colored fine to coarse poorly sorted silty sand with small to coarse gravel. Greater silt content than the above interval, loose to medium dense, moist.	0
22	24	0.8	34-19-23-27	Same as above (21.5 to 22).	0
24	26	1.2	12-36-44-32	Same as above.	0.5
26	28	1.2	25-36-25-47	Same as above, wet. The water table appears to be at approximately 26 ft bls.	0.5
28	30	1.5	17-14-32-53	0-0.2: Same as above. 0.2-1.5: Coarse gravel with fine to coarse silty sand.	0
30	32	0.2	16-18-29-45	Gravel, as above.	0

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name) **WTD ENVIRONMENTAL DRILLING**	Date Installed **0 5 / 2 3 / 9 1** (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-1		**8** Inches	**1166.74** Feet	**1190.59**

NW 1/4 of **SE** 1/4 of Section **35** T **29** N, R **7** E or W

Grid Location (if applicable) ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		**WAUSAU**

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	1.5	11-16-9-6	Light gray fine silty sand, loose to medium dense, dry (3M sand).	0
2.5	4	2.0	11-9-9	Same as above.	0
4	6	2.0	13-8-6-9	Same as above.	0
6	8	1.8	6-7-5-6	Same as above.	0
8	10	1.8	7-6-5-8	Same as above.	0
10	12	1.5	6-4-6-4	0-0.5: Same as above. 0.5-1.5: Same as above with small to medium gravel, moist and loose.	0
12	14	1.4	5-5-8-8	0-0.7: Same as above. 0.7-1.0: Brown to rust colored fine to coarse poorly sorted silty sand with small to coarse gravel, all intervals moist and loose. 1.0-1.4: Light brown fine, well sorted silty sand, no gravel.	0
14	16	1.3	10-11-12-13	Light brown fine well sorted silty sand, moist with no gravel, odor present. Dark horizontal lines from 1.1-1.3.	20
16	18	1.2	*-12-11-12	Same as above (light brown fine sand). Grayish staining. 0.3-1.0: Moist and loose, odor present.	45
18	20		*-6-9-13	Light brown to gray (mixed) fine silty sand, loose and moist, odor present.	65
20	22	1.1	*-17-18-34	Same as above.	110
22	24	1.5	*-22-21-22	0-0.5: Gray fine sand as above. 0.5-1.5: Light brown fine sand, as above, very moist, odor present.	200

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05/23/91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-1		8 Inches	1166.74 Feet	1190.59

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
24	26	1.5	14-15-20-22	Brown to light brown to gray fine to coarse poorly sorted silty sand	200
				with small to large gravel, very moist to wet at bottom of spoon, odor.	
26	28	0.5	170/1.0	Brown to gray small to coarse gravel with fine to coarse silty sand,	150
				loose to medium dense, slightly cohesive, wet, odor present.	
				(The water table appears to be at approximately 26 feet bls.)	
28	30	0.6	100	Gray to olive green to light gray fine to coarse sands and gravels,	80
				medium dense to dense, wet, odor present.	
30	32	0.2	100	Olive green to gray to light gray, fine to coarse silty sand with small to	10
				coarse gravel, moist, odor present.	
				* = Weight of rods.	

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	0 5 / 2 3 / 9 1

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-2		8 Inches	1165.93 Feet	1190.01

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	1.1	6-10-9-12	Light gray to brown fine silty sand (3M sand) with small rust colored gravel fragments.	0
2	4	1.1	7-41-12-16	Same as above with medium to large gravel, loose and moist. A fragment of foundry slag was also present.	0
4	6	0.2	6-22-22-24	Brown to rust to yellow fine to coarse poorly sorted silty sand with small to large gravel, loose and moist (mostly large gravel in cuttings).	0
6	8	1.0	7-12-22-21	Same as above with small to medium gravel.	0
8	10	0.9	7-16-26-26	Same as above with small to large gravel.	0
10	12	1.2	4-16-20-21	Light brown fine to medium silty sand with trace small to large gravel, loose and moist.	0
12	14	1.9	8-13-16-20	Same as above, moderately sorted with no gravel.	0.6
14	16	1.8	10-14-19-21	Light brown silty well sorted sand, fine to medium at top of interval grading to fine at bottom of interval, no gravel, loose and moist.	0
16	18	1.6	7-16-17-21	Light brown fine silty sand, loose and moist, no gravel.	0
18	20	1.6	8-12-16-23	Light brown fine to medium silty sand. Fine sand at top of interval grading to medium sized sand at bottom of interval.	0
20	22	1.8	10-36-42-51	0-3: Same as above. 0.3-1.8: Brown to rust to yellow fine to coarse poorly sorted silty sand with small to large gravel, loose and moist.	0.5
22	24	1.8	16-21-32-37	Same as above, no odor.	0

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

Signature | Firm: GERAGHTY & MILLER, INC.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 23 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-2		8 Inches	1165.93 Feet	1190.01

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable)
____ feet N or S____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
24	26	1.1	30-25-25-22	No recovery, spoon was wet.	--
26	28	1.1	30-25-25-22	Brown to rust to yellow fine to coarse poorly sorted silty sand with small to large gravel, dense and wet. Faint odor.	2.0
28	30	1.0	12-24-32-24	Same as above, more silt, slightly cohesive, dense and wet.	4.5
30	32	0.8	34-62	Same as above, dense and wet, slightly cohesive.	0
			100 in 4"		

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Signature	Firm
	GERAGHTY & MILLER, INC.

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DWNTN001/ DFOMW2

State of Wisconsin
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name) **WTD ENVIRONMENTAL DRILLING**	Date Installed **0 5 / 2 3 / 9 1** (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-3		**8** Inches	**1165.01** Feet	**1189.76**

NW 1/4 of **SE** 1/4 of Section **35** T **29** N, R **7** E or W

Grid Location (if applicable) ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		**WAUSAU**

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	1.0	20-60-38	Mixed sand and gravel, asphalat 0.4-0.8, dry, likely fill material.	0
2	4	0.8	3-7-12-20	Gray to brown to black silty fine to coarse sand with small to coarse gravel, loose to medium loose, moist, likely fill material.	0
4	6	0.8	18-25-21-22	Brown , very silty fine to coarse sand with small to coarse gravel, slightly cohesive, medium loose and moist, likely fill material.	0
6	8	0.9	6-10-12-18	Light brown, fine to medium poorly sorted silty sand with small to coarse gravel, loose and moist, no odor, likely native material.	0
8	10	1.7	10-15-17-19	Same as above.	0
10	12	1.0	10-11-11-11	Light brown fine silty sand, moist and loose, no gravel.	0
12	14	1.0	9-12-18-17	Same as above, grading to very fine sand at the bottom of the interval, loose and moist.	0
14	16	1.7	6-12-18-17	Light brown fine silty sand, well sorted, loose and moist, no gravel.	0
16	18	1.7	*-10-15-15	Same as above.	0
18	20	1.5	*-10-15-15	0-1.0: Same as above. 1.0-1.5: Rust colored, very fine silty sand, gray to black horizontal lines, very silty, medium dense, and moist.	0
20	22	1.1	29-18-28-33	Rust to yellow, very fine to coarse silty sand with small to coarse gravel, quartzite, granite, and siltstone fragments.	0
22	24	0.3	*-20-36-26	Same as above.	0

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Signature | Firm **GERAGHTY & MILLER, INC.**

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DWNTN001/ DFOMW3

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05/23/91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-3		8 Inches	1165.01 Feet	1189.76

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W | Grid Location (if applicable) ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
24	26	1.1	1-17-36-40	0-0.2: Same as above. 0.2-1.1: Gray fine to coarse sand with small to coarse gravel, loose and wet, odor present. The water table appears to be at approximately 24 feet bls.	>1000
26	28	1.1	*-16-14-40	Same as above, irredescent sheen present.	>1000
28	30	0.3	*-26-20-30	Brown to gray fine to medium silty sand with small to coarse gravel, loose and moist, odor present.	110
30	32	2.0	*-*-38-46	0-0.3: Gray to rust colored, fine to medium silty sand with small to coarse gravel, loose and wet. 0.3-2.0: Rust colored fine to medium silty sand. Silt content increases at bottom of interval, loose to medium dense, wet, odor.	100
				* = Weight of rods.	

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DWNTN001/ DFOMW3

State of Wisconsin
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 24 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-4		8 Inches	1165.84 Feet	1189.45

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	0.9	9-13-13	Light gray fine silty sand, moist, loose to medium dense (3M sand).	0
2	4	0.9	9-13-16-17	0-0.5: Same as above. 0.5-0.9: Mixed brown to light brown fine to coarse silty sand with small to coarse gravel fragments.	0
4	6	0	25-18-39-27	No recovery.	--
6	8	0.8	12-19-27-32	Light brown fine to medium silty sand with small to coarse gravel, loose and moist.	0
8	10	1.0	14-14-27-33	0-0.6: Same as above. 0.6-1.0: Light brown fine to coarse silty sand with small to coarse gravel (approximately 50 %), loose and moist.	0
10	12	0.2	24-17-15-23	Light brown, fine to medium silty sand, loose and moist.	0
12	14	0	9-13-15-21	No recovery.	--
14	16	1.0	12-16-24	Light brown, fine silty sand, no gravel, loose and moist. Dark brown to gray horizontal lines from 0.7 to 0.9.	0
16	18	1.5	8-10-12-16	Rust to red colored fine to coarse very silty sand with small to coarse gravel, loose to medium dense, slightly cohesive.	0
18	20	1.0	9-13-15-20	0-0.5: Same as above. 0.5-0.7: Brown silt lense with small to coarse gravel, cohesive soft, moist. 0.7-1.0: Rust-yellow colored fine to coarse poorly sorted silty sand with small to coarse gravel, loose and moist.	0

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DWNTN001/ DFOW4

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	05 / 24 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-4		8 Inches	1165.84 Feet	1189.45

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W | Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
20	22	1.7	31-36-60-48	0-0.3: Brown fine silty sand , slightly cohesive, soft. 0.3-1.7: Rust colored poorly sorted sand as above with coarse gravel lenses at 0.5-0.8 and 1.4-1.7.	0
22	24	0.6	54-56-36-32	0-0.3: Coarse gravel with sand. 0.3-0.6: Rust colored fine to coarse silty sand with small to coarse gravel, loose and moist.	0
24	26	1.2	29-27-25-22	Same as above, very moist, wet. The water table appears to be at approximately 24 ft bls.	0.5
26	28	1.0	46-33-31-31	0-0.5: Gravel with sand. 0.5-1.0: Brown very fine silty sand, no gravel, wet. The water table appears to be at approximately 24 ft.	4.0
28	30	1.5	42-66-67-65	0-0.5: Brown sand and gravel, loose. 0.5-0.7: Rust to red sandy silt seam, soft. 0.7-1.5: Light brown to yellow, fine to coarse sand with small to coarse gravel, slightly cohesive, loose to medium dense, wet.	0
30	32	0.4	47-62	Same as above.	0

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DWNTN001/ DFOW4

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 4/90
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name) **WTD ENVIRONMENTAL DRILLING**	Date Installed 05/22/91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-5		8 Inches	1164.10 Feet	1188.91

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable) ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0.6	2	0.8	8-26-23	Light brown, rust, and light gray, fine to coarse sand with small to large gravel, dry.	0
2	4	1.2	12-14-24-24	Same as above, likely fill material.	0
4	6	1.3	12-15-26-44	Same as above, mixed sands and gravel.	0.5
6	8	1.8	14-37-56-70	Same as above, slightly moist.	0.5
8	10	1.7	17-47-32-33	Same as above.	0.5
10	12	0	22-32-34-37	No recovery.	--
12	14	1.5	12-12-18-27	0-0.7: Light brown fine to medium , moderately sorted sand, loose, moist, 0.7-1.2: Reddish very fine sandy clay (rolls) soft, moist. 1.2-1.5: Rust to yellow colored, very fine sand.	0.5
14	16	0.4	31-37-41-42	Rust to yellow colored, fine to coarse sand with small to coarse gravel, loose, moist. Large piece of gravel blocked recovery.	0
16	18	1.3	36-45-49-35	Same as above with quartzite gravel.	1.0
18	20	1.1	23-35-100/0.5	Same as above with a well sorted fine sand seam 0.1 to 0.3.	0
20	22	1.5	38-41-35-39	Same as above with fine silty sand seams at 0.5-1.0 and 1.3-1.5, moist and loose.	0
22	24	1.0	19-47-74-69	0-1.0: Same as above. 1.0-1.9: Light gray to white, fine to coarse silty sand, loose and moist.	100

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Signature | Firm **GERAGHTY & MILLER, INC.**

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DWNTN001/ DFOMW5

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 4/90
Page 2 of 2

Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	05 / 22 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW-5		8 Inches	1164.10 Feet	1188.91

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
24	26	1.3	15-35-46-23	Rust colored, fine to coarse poorly sorted silty sand with small-	>1000
				coarse gravel, mixed, odor present, wet. Water table appears to be at	
				approximately 25 ft bls.	
26	28	1.8	26-56-66-69	0-0.8: Brown to gray, fine to coarse poorly sorted sand, loose and	>1000
				wet. 0.8-1.8: Red-brown to gray, small-coarse gravel with fine to	
				to coarse sand, loose and wet, odor present.	
28	30	1.0	29-46-62-71	0-0.5: Sand as above, no gravel (blowup). 0.5-1.0: Gravel with sand	250
				as above.	
30	32	1.8	31-55-45-51	0-0.9: Blow up gray (fine to medium) sand. 0.9-1.8: Gravel with sand	150
				as above.	

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DWNTN001/ DFOMW5

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 4/90
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name) **WTD ENVIRONMENTAL DRILLING**	Date Installed 0 7 / 3 0 / 9 1 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW6		8 Inches	Feet	

	Grid Location (if applicable)
NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W	feet N or S feet E or W

County	County Code	Civil Town
MARATHON		**WAUSAU**

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
4	6	1	100--	Medium brown silty sand, dry, diorite rock chip (refusal).	0
9	11	1	100--	Diorite rock chips (refusal.)	0
14	16	16	12-67-56-42	Red-brown silty sand, medium size, well sorted, slightly moist. Top 6"	0
				mafic rock chips.	
19	21	4	25-100--	Slough	--
21	23	17	18-28-42-50	Top 5", medium brown sand, well sorted, medium size. Middle 8",	75
				silty sand, fine (size). Bottom 4", sandy gravel, soil sample taken.	
23	25	10	19-100	Top 5", medium brown silty sand, well sorted. Bottom 5", brown	160
				sandy gravel, moist, soil sample taken.	
25	27	6	100--	Bottom 1", diorite chips (refusal). Top 5", slough (dry), clay silt.	--
27	29	21	18-24-35-32	Top 16", medium brown silty sand, 1" pebbles. Bottom 5", dark brown	150
				sand, coarse, wet.	
29	31	15	52-100--	Medium brown sandy gravel with silt, wet.	50
34	36	20	49-65-98-42	Medium brown sand with gravel bits, sand medium to coarse, wet.	75
				End of boring at 36 ft, soil sample taken.	
				Note - Blind drill to 38 ft with 8 1/2" auger.	

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

Signature | Firm **GERAGHTY & MILLER, INC.**

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DNRII/ DFOMW6

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	07 (M M) / 30 (D D) / 91 (Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW7		8 Inches	Feet	

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable)
____ feet N or S____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
2	4	3	35-100--	Medium brown sandy gravel, 1" size pebbles, medium size sand, dry.	0
4	6	3	100--	As above.	0
6	8	10	3-5-10-25	Top 5", as above. Bottom 5", light brown sand, medium size, 1/4" pebbles.	0
8	10	5	30-47-58-71	Medium brown sandy gravel, 1" size granite pebbles, medium size sand, dry.	0
10	12	--	100--	No recovery.	
12	14	15	10-18-28-32	Medium brown silty sand, medium to coarse, moist.	0
14	16	12	32-32-40-30	As above, hydrocarbon odor, soil sample taken.	6
16	18	10	10-35-48-57	Medium brown sand, medium size, well sorted, moist.	5.5
18	20	10	12-30-37-42	As above.	5
20	22	10	20-30-22-18	Top 7", sandy gravel with silt, 1" pebbes. Bottom 3", medium brown sand, 1" pebbles.	12
22	24	12	28-100--	Top 5", medium brown silty sand, moist, medium size. Bottom 7", medium brown sandy gravel with silt, moist, soil sample taken.	35
24	26	10	12-32-22-49	Dark brown sandy gravel, sand coarse, gravel up to .5", hydrocarbon, wet.	1600
26	28	21	18-22-32-26	Top 13", slough, dry. Bottom 8", medium brown sand, wet, medium size, wet.	90

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Signature | Firm GERAGHTY & MILLER, INC.

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DNRII/ dfomw7

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	07 / 30 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW7		8 Inches	Feet	

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
28	30	1	18-28-34-100	Slough, wet.	20
30	32	10	19-27-34-48	Medium brown gravel with sand, silt, poorly sorted, wet.	14
32	34	22	10-16-16-19	Top 5", medium brown sand, medium size, wet. Middle 7", medium brown sandy gravel. Bottom 10", light brown sand, wet.	9
34	36	21	6-22-38-56	Medium brown sand, well sorted, medium size, wet, soil sample taken.	18
				End of boring at 36 ft.	
				Note - blind drill to 38 ft with 8 1/2" auger.	

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

Signature | Firm

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State of Wisconsin
Department of Natural Resources

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	07 (M M) / 29 (D D) / 91 (Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW8		8 Inches	Feet	

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W	Grid Location (if applicable) ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
2	4	19	12-6-12-28	Medium brown sandy silt with gravel, charcoal-like chunks at 7", moist.	0
4	6	17	12-21-31-30	Top 10", dark brown silty sand with gravel. Bottom 7", light brown sandy gravel, 1" pebbles.	0
6	8	16	32-34-39-51	Top 5", dark brown sandy silt with gravel chunks. Bottom 11", light brown sand, well sorted, moist.	0
8	10	12	13-31-42-59	Light brown sand, medium texture with 1/2" pebbles, moist.	0
10	12	15	12-31-30-21	Same as above.	0
12	14	13	15-22-27-25	Same as above.	0
14	16	13	9-10-12-16	Same as above, sand slightly coarser.	0
16	18	15	10-12-19-50	Light brown sand, finer than above with 3/4" pebbles, moist, soil sample taken.	0
18	20	13	10-26-35-70	Top 6", as above with more pebbles. Bottom 7", red-brown sandy gravel, moist.	0
20	22	17	29-37-42-39	Light brown sand, medium texture with 1/2" to 1" size pebbles, moist, bio-sample taken.	0
22	24	5	10-38-100	Auger refusal, as above.	0
24	26	15	34-31-31-29	As above, strong hydrocarbon odor, soil sample taken.	40
26	28	15	15-21-25-41	As above, wet, very strong hydrocarbon odor.	1200

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	GERAGHTY & MILLER, INC.

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DNR11/ dfomw8

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Department of Natural Resources

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	07 / 29 / 91 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW8		8 Inches	Feet	

	Grid Location (if applicable)
NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W	feet N or S feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
28	30	11	12-28-35-46	Dark brown sandy gravel with 1" size pebbles, wet strong	200
				hydrocarbon odor.	
30	32	12	18-22-35-48	Dark brown silty gravel with 1/2" size pebbles, wet.	130
32	34	0	31-61-41-28	No recovery.	--
34	36	10	40	Dark brown silty gravel with 1" size pebbles, wet, medium brown	55
				clay (1") at 3", soil sample taken.	
				End of boring at 37 ft.	
				Note - Blind drill to 38 ft with 8 1/2" auger.	

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name) **WTD ENVIRONMENTAL DRILLING**	Date Installed 0 7 / 3 1 / 9 1 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW9		8 Inches	Feet	

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable) ____ feet N or S____ feet E or W

County	County Code	Civil Town
MARATHON		**WAUSAU**

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
4	6	9	40-66-72-100	Medium brown sandy gravel, medium size, sand gravel rounded up to 1", dry.	0
9	11	--	100--	Refusal-rock.	--
14	16	8	21-29-42-56	Medium brown sand with gravel, medium size sand, gravel 1/2", moist.	0
19	21	11	6-35-58-89	Medium brown sand, fine to medium size, gravel present, moist, soil sample taken.	100
21	23	9	12-15-17-24	As above.	800
23	25	14	18-24-36-58	Top 10", medium brown sand with gravel. Middle 1", stained sand (black product). Bottom 3", stained sand (orange) medium size sand, soil sample taken.	250
25	27	17	24-32-29-27	Top 6", red-brown sand, medium to coarse. Bottom 11", medium brown sand, fine, wet.	95
27	29	14	8-10-49-79	Medium brown sandy gravel, well rounded, pebbles up to 1", wet.	25
29	31	14	58-100--	As above.	9
34	36	8	8-10-52-100	Medium brown sand with gravel, medium to coarse sand, wet.	5
				End of boring at 36 ft.	
				Note - Blind drill to 38 ft with 8 1/2" auger.	

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DNRII/ dfomw9

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Department of Natural Resources

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Facility Name	License/Permit/Monitoring Number
3M/DOWNTOWN FACILITY	
Boring Drilled by (Name)	Date Installed
WTD ENVIRONMENTAL DRILLING	0 7 / 3 1 / 9 1 (M M / D D / Y Y)

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
DFOMW10		8 Inches	Feet	

NW 1/4 of SE 1/4 of Section 35 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
MARATHON		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (inches)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA
4	6	2	18-18-29-12	Gray-brown silty sand, medium sized, moist, 1/4" Pebbles.	0
9	11	8	30-25-22-24	Medium brown sand, medium size, fairly well sorted, (???), 1/2" pebbles, moist.	0
14	16	7	18-22-38-32	Same above, more pebbles, moist black tar-like hydrocarbon-saturated sand, soil sample taken.	200
19	21	7	24-22-34-36	Silty sand, shades of bright green and red, black tar-like hydrocarbon, hydrocarbon-odor, soil sample taken.	6000
21	23	12	22-56-68-72	Discolored red, green sand with gravel, medium sized sand, black tar, dry, hydrocarbon-odor.	4000
23	25	1	100--	Dark brown silty sand saturated hydrocarbon, holds grains together, smells like lighter fluid.	60
25	27	6	35-56-40-52	Dark brown sandy gravel, coarse sand, gravel up to 1", muddy silt, wet.	3.5
27	29	8		As above.	7
29	31	7	90-66-78-10	As above.	10
34	36	21	32-45-48-32	Medium brown sand, medium to coarse, some silt, wet.	8
				End of boring at 36 ft.	
				Note: Blind drill to 38 feet with 8 1/2" HS auger.	

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	05 / 30 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GMPIMW-1		8 Inch	1200.86 Feet	1227.46

SW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0.5	2	0.8	11-17-11	Light gray fine silty sand, medium dense, dry, no odor (3M sand).	0
2	4	1.8	5-5-5-5	Same as above, loose to medium dense, dry, no odor.	0
4	6	2.0	2-2-2-2	Same as above.	0
6	8	1.1	1-2-1-2	0-0.8: Same as above, loose. 0.8-1.1: Brown sandy silt and clay mixed, loose sand, soft silt and clay, moist.	0
8	10	1.2	4-6-11-16	Brown to light brown, fine to medium poorly sorted silty sand, very loose, moist (likely native material).	3
10	12	1.2	5-11-12-24	Same as above.	2.5
12	14	1.3	5-5-7-15	Same as above, no odor.	0.5
14	16	1.6	9-11-15-22	Same as above, no odor.	0.4
16	18	1.5	8-11-16-25	Same as above, very moist, no odor.	0
18	20	1.2	8-16-32-34	0-0.7: Same as above, brown small to coarse gravel with fine to coarse silty sand, loose and very moist	0
20	22	1.4	*-19-21-36	Brown to light brown very fine to medium poorly sorted silty sand, very loose and very moist.	0
22	24	0	100/0.2	No recovery.	--
24	26	1.5	*-26-32-46	Brown to light brown, very fine to medium poorly sorted silty sand with one coarse igneous gravel fragment at 1.0 ft, very loose and very moist.	0

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State of Wisconsin
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Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	05 / 30 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GMPIMW-1		8 Inches	1200.86 Feet	1227.46

SW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
26	28	1.4	*-22-36-43	0-0.9: Same as above. 0.9-1.4: Same as above, saturated, no gravel. The water table appears to be at approximately 27 ft.	0
28	30	1.8	*-22-36-43	Same as above, no gravel, saturated.	0
30	32	2.0	105/12"	0-1.8: Same as above with a coarse gravel fragment at 0.6. 1.8-2.0: Coarse weathered gravel with fine to coarse silty sand.	0
32	34	2.0	26-52-52-95	0-0.4: Light brown fine to medium sand. 0.4-2.0: Small to coarse weathered gravel fragments mixed with brown fine to medium silty sand, loose, saturated.	0
				* = Weight of rods.	

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Department of Natural Resources

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Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	0 5 / 2 9 / 9 1

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GMPIMW-2		8 Inch	1198.00 Feet	1227.52

SW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0.5	2	0.9	17-33-42	Light brown fine to coarse silty sand with small to coarse gravel, loose and moist.	0
2	4	1.1	28-8-10-11	0-0.6: Same as above. 0.6-1.1: Light brown to rust colored sandy silty clay, no odor, soft to medium stiff, moist.	0
4	6	0.9	10-28-28-28 / 26-26-26-28	Light brown, very fine to coarse silty sand with small to coarse gravel, loose and moist.	0
6	8	1.6	3-10-19-26	Same as above.	0
8	10	1.0	10-18-20-22	Light brown, fine to medium poorly sorted silty sand with trace small to coarse gravel, very loose and moist.	0
10	12	1.5	8-12-21-24	Same as above.	0
12	14	1.5	10-11-13-24	Light brown, very fine to coarse moderately sorted sand (very fine sand seam at 0.8-1.1), very loose and moist.	0
14	16	1.4	10-11-13-24	Light brown fine to coarse silty sand, loose and moist, no odor.	0
16	18	1.3	*-13-24-30	Same as above, no odor.	0
18	20	1.6	*-14-19-30	Same as above, no odor.	0
20	22	1.5	*-27-28-47	Same as above with fine sand seam at 0.5-0.9.	0
22	24	1.6	10-24-25-49	Light brown very fine to medium silty sand, loose and moist, no odor.	0
24	26	1.4	*-19-26-42	Same as above with trace medium gravel.	0
26	28	1.4	*-19-31-50	Light brown, very fine to medium poorly sorted silty sand, no gravel, very loose and very moist.	0

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Signature | Firm: GERAGHTY & MILLER, INC.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	0 5 / 2 9 / 9 1

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GMPIMW-2		8 Inches	1198.00 Feet	1227.52

SW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
28	30	1.5	13-22-23-45	Same as above, very moist.	0
30	32	1.5	*-22-39-40	0-1.1: Same as above, very moist to wet. 1.1-1.5: Small to coarse	0
				gravel with very fine to coarse silty sand, loose and wet. The water	
				table appears to be at approximately 31 ft.	
32	34	1.7	*-18-22-50	Light brown fine to coarse silty sand with small to coarse gravel,	0
				loose and saturated.	
34	36	1.7	12-19-34-39	Same as above.	0
36	38	0	114/1.0	No recovery.	--
				* = Weight of rods.	

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	0 5 / 2 9 / 9 1

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GMPIMW-3		8 Inch	1198.05 Feet	1225.94

SW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0.5	2	0.8	20-30-56	Brown to light brown, very silty fine to coarse sand with small to coarse gravel, dry, no odor.	0
2	4	1.7	1-6-11-18	Brown to light brown clayey, sandy silty, soft to medium stiff, moist and no odor.	
4	6	1.7	19-22-22-30	0-0.3: Very silty, slightly cohesive, fine to medium sand with small to coarse gravel. 0.3-0.6: Coarse gravel seam. 0.6-1.7: Brown to light brown, fine to coarse silty sand with small to coarse gravel, loose and moist, no odor.	0
6	8	1.4	5-10-15-20	Brown and light brown layered fine sand with trace small to medium gravel, very loose, dry to moist (layering is probably due to recent rain fall).	0
8	10	1.4	5-7-9-11	Same as above.	0
10	12	1.2	6-11-16-18	0-0.2: Same as above. 0.2-1.0: Light brown very fine to coarse silty sand. 1.0-1.2: Light brown very fine to fine silty sand, very loose and moist.	0
12	14	1.5	8-8-14-22	Light brown fine to medium poorly sorted silty sand, no gravel, very loose and moist.	0
14	16	1.5	11-12-19-26	Same as above.	0
16	18	1.3	*-17-22-25	Same as above with trace small-coarse gravel.	0

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	05 / 29 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GMPIMW-3		8 Inches	1198.05 Feet	1225.94

SW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
18	20	1.4	-17-22-30	Light brown fine to coarse silty sand with small to coarse gravel, very loose. 1.2-1.4: Very fine silty sand seam, loose and moist.	0
20	22	1.5	3-16-31-46	Light brown fine to medium silty sand with trace small to coarse gravel, very loose and moist.	0
22	24	1.5	9-20-22-34	Same as above with black to dark gray horizontal lines, loose and very moist.	0
24	26	1.3	6-16-31-42	Brown, fine to medium silty sand, no gravel, loose and very moist to wet, no odor.	0
26	28	1.7	13-16-36-46	Same as above, saturated.	0
28	30	1.9	-19-26-38	Same as above.	0
30	32	2.0	-20-40-55	Same as above.	0
				* = Weight of rods.	

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State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
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Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	05 / 28 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GFOMW-1		8 Inch	1197.28 Feet	1226.37

NW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0.5	2	1.1	11-10-9	Light gray silty fine sand (3M sand), loose and dry, odor present (fill material).	40
2	4	1.7	5-4-3-2	Light gray silty fine sand (3M sand), loose and dry, no odor.	0
4	6	1.5	3-3-3-4	Same as above.	0
6	8	1.3	2-5-18-12	0-0.9: Same as above. 0.9-1.3: Light brown fine to medium silty sand with small to coarse gravel, loose and moist, asphalt at bottom of spoon, no odor.	0
8	10	0.9	7-5-3-2	0-0.5: Same as above. 0.5-0.9: More light gray silty sand (3M sand).	0
10	12	1.3	2-1-1-2	Light gray, fine silty sand (3M sand), loose and moist.	0
12	14	1.3	13-8-5-8	0-0.3: Same as above, very moist. 0.3-1.3: Light brown fine to medium silty sand with small to medium gravel, loose and moist, slight odor (likely native material).	0
14	16	1.4	5-7-8-6	Same as above, slight odor.	0
16	18	1.4	6-12-20-30	0-0.5: Brown fine to medium poorly sorted sand. 0.5-1.4: Light brown fine silty sand, loose and very moist, slight odor.	0
18	20	1.7	20-20-22-26	0-1.2: Same as above, grading to light brown fine to coarse poorly sorted silty sand with small to coarse gravel to 1.7 ft, very loose to loose, very moist, slight odor.	0
20	22	1.6	22-22-18-26	Same as above, slight odor.	0
22	24	1.4	13-14-21-34	Same as above, slight odor.	0

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

Signature | Firm: GERAGHTY & MILLER, INC.

This form is authorized by Chapters 144, 147 and 162, Wis Stats. Completion of this report is mandatory. Penalties; Forfeit not less than $10 nor more than $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both, for each violation. Each day of continued violation is a separate offense, pursuant to ss. 144.99 and 162.06, Wis Stats.

GRYFC001/ gmfomw1

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 4/90
Page 2 of 2

Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	05 / 28 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GFOMW-1		8 Inches	1197.28 Feet	1226.37

NW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable): ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
24	26	1.3	12-18-23-34	Same as above.	0
26	28	1.6	11-15-18-25	0-0.6: Same as above. 0.6-1.6: Light brown, very fine to fine silty sand, no odor, no gravel, very moist, bottom of splitspoon is wet.	2.0
28	30	1.5	14-26-34-46	Light brown fine to medium poorly sorted silty sand with small to coarse gravel, loose and very moist to wet.	0
30	32	1.9	14-40-40-47	Light brown, fine to medium silty sand, no gravel, loose, saturated, no odor. The water table appears to be at approximately 30 ft bls.	0
32	34	2.0	24-40-46-60	Same as above, very fine to medium silty sand , saturated.	0
34	36	2.0	7-21-42-65	Same as above with a silt seam at 1.0-1.4, dark horizontal lines at bottom of spoon.	
36	38	1.9	28-42-46	Light brown fine to medium silty sand, trace fine to coarse gravel, loose and wet.	0

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GRYFC001/ gmfomw1

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 4/90
Page 1 of 1

Facility Name	License/Permit/Monitoring Number
3M/GRAYSTONE FACILITY	
Boring Drilled by (Name)	Date Installed (M M / D D / Y Y)
WTD ENVIRONMENTAL DRILLING	05 / 30 / 91

Facility Well Number	WI Unique Well Number (assigned by DNR)	Borehole Diameter	Water Level	Surface Elevation
GMQMW-1		8 Inch	1278.09 Feet	1314.09

SW 1/4 of NE 1/4 of Section 11 T 29 N, R 7 E or W

Grid Location (if applicable) ____ feet N or S ____ feet E or W

County	County Code	Civil Town
Marathon		WAUSAU

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description	OVA (ppm)
0	2	1.2	1-2-5-8	Light gray fine silty sand (3M sand), loose to medium dense, moist.	0
2	4	2.0	2-2-2-2	Same as above, mixed with light brown slightly clayey silt layers,	0
				1-2 inches thick, loose and soft, moist.	
4	6	1.8	2-2-2-2	Light gray fine silty sand (3M sand), loose and moist (fill material).	0
6	8	1.7	1/1.0-1/1.0	Same as above.	0
8	10	1.0	1-1-1-1	Same as above, very moist, slight diesel fuel odor, fill material.	10
10	12	0.5	1-4-3-2	Brown clayey silt with trace coarse gravel fragments, very moist,	3.0
				slight odor (likely native material).	
12	14	.04	5-6-7-7	Brown slightly clayey silt with coarse gravel fragments, very soft and	7.8
				very moist to wet, slight odor.	
14	16	0.4	6-7-8-9	Coarse gravel with brown slightly clayey silt, loose, very moist to wet.	0.5
16	18	0.4	8-15-7-15	Brown slightly clayey silt with coarse gravel, soft, very moist to wet.	5.0
18	20	0.2	9-11-13-10	Coarse gravel fragments with brown silt, loose, soft, very moist to wet.	1.0
20	22	0.6	14-22-26-66	Light gray to gray weathered bedrock with brown slightly clayey silt	0.6
				throughout the vertical fractures, very slight odor, dry to moist, not	
				wet as above.	
				Terminate Hollow Stem Auger drilling methods and continuous	
				sampling, install a temporary casing and implement Air Hammer/	
				Rotary drilling methods through the bedrock until the water table or a	
				water producing a zone is found.	

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Signature	Firm
	GERAGHTY & MILLER, INC.

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GRYFC001/ gmqmw1

APPENDIX B

MONITORING WELL CONSTRUCTION LOGS

State of Wisconsin
Department of Natural Resources

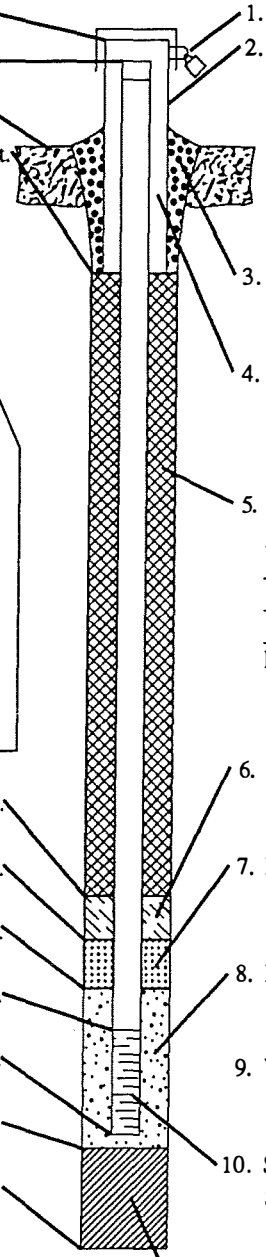
MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: 3M Downtown Wausau	Grid Location: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: DSOMW-1
Facility License, Permit or Monitoring Number: _____		Wis. Unique Well Number: _____ DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐ E. ☐ W.	Date Well Installed: 05/21/91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Ross Creighton; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1190.73 ft. MSL
B. Well casing, top elevation 1190.27 ft. MSL
C. Land surface elevation 1190.73 ft. MSL
D. Surface seal, bottom 1189.73 ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:
☐ GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP
☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH
☐ Bedrock
13. Sieve analysis attached? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; _____ Other ☐ ___
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
Describe _____
17. Source of water (attach analysis):
_____

E. Bentonite seal, top ____.__ ft. MSL or ___.__ ft.
F. Fine sand, top 1176.7 ft. MSL or 14.0 ft.
G. Filter pack, top 1174.7 ft. MSL or 16.0 ft.
H. Well screen, top 1172.8 ft. MSL or 17.9 ft.
I. Well screen bottom 1157.8 ft. MSL or 32.9 ft.
J. Filter pack, bottom 1156.7 ft. MSL or 34.0 ft.
K. Borehole, bottom 1156.7 ft. MSL or 34.0 ft.
L. Borehole, diameter 10.0 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 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; Annular space seal ☐; _____ Other ☐ ___
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ ___
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added _____ ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added _____ ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; _____ Other ☐ ___
10. Screen material: Same ___
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; _____ Other ☐ ___
Manufacturer Northern Aire
Slot size: 0.010 in.
Slotted length: 15.0 ft.
11. Backfill material (below filter pack): None ☒; _____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

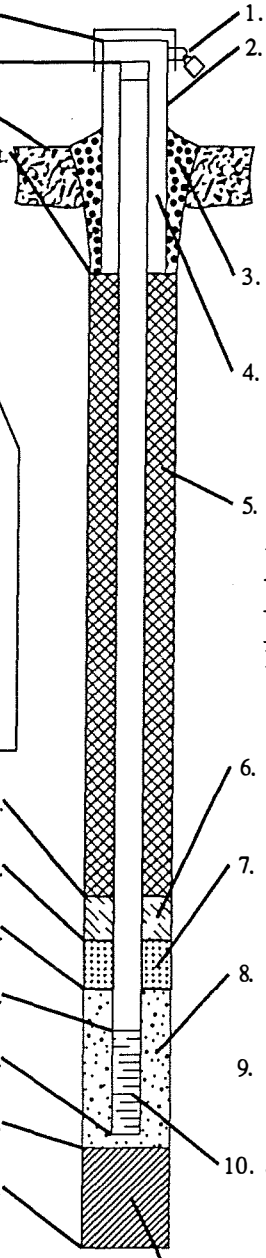
MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: 3M Downtown Wausau	Grid Location: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: DSOMW-2
Facility License, Permit or Monitoring Number:		Wis. Unique Well Number / DNR Well Number:
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐E. ☐W.	Date Well Installed: m m / d d / y y = 05/21/91
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Ross Creighton; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1189.82 ft. MSL
B. Well casing, top elevation 1189.30 ft. MSL
C. Land surface elevation 1189.82 ft. MSL
D. Surface seal, bottom 1188.8 ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:
☐ GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP
☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH
☐ Bedrock
13. Sieve analysis attached? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; ____ Other ☐ ___
15. Drilling fluid used: Water ☐ 02 Air ☐ 01; Drilling Mud ☐ 03 None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
Describe ____
17. Source of water (attach analysis): ____

E. Bentonite seal, top ____ ft. MSL or ____ ft.
F. Fine sand, top 1173.1 ft. MSL or 16.7 ft.
G. Filter pack, top 1170.8 ft. MSL or 19.0 ft.
H. Well screen, top 1168.8 ft. MSL or 21.0 ft.
I. Well screen bottom 1158.8 ft. MSL or 31.0 ft.
J. Filter pack, bottom 1157.8 ft. MSL or 32.0 ft.
K. Borehole, bottom 1157.8 ft. MSL or 32.0 ft.
L. Borehole, diameter 10.0 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 6.5 in.
b. Length: 1.0 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; Annular space seal ☐; ____ Other ☐ ___
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ ___
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added 1.0 ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added 2.5 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; ____ Other ☐ ___
10. Screen material: Same ___
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ___
Manufacturer Northern Aire
Slot size: 0.010 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; ____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

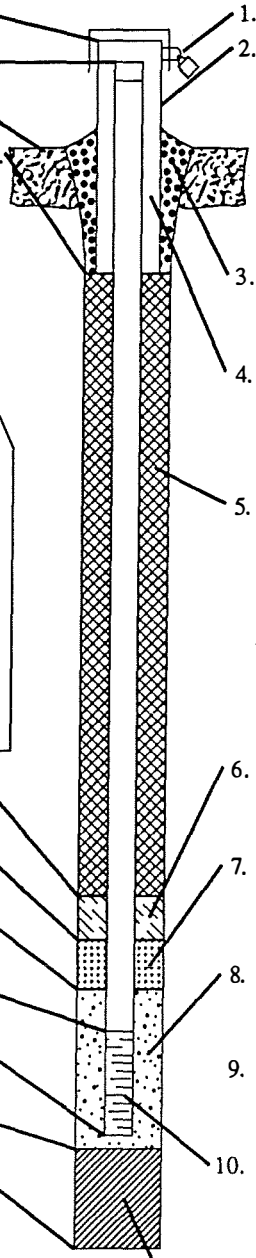
MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: 3M Downtown Wausau	Grid Location: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: DSOMW-3
Facility License, Permit or Monitoring Number: _____		Wis. Unique Well Number: _____ DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐ E. ☐ W.	Date Well Installed: 05/21/91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) Ross Creighton; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1190.83 ft. MSL
B. Well casing, top elevation 1190.23 ft. MSL
C. Land surface elevation 1190.83 ft. MSL
D. Surface seal, bottom 1189.83 ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:
☐ GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP
☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH
☐ Bedrock
13. Sieve analysis attached? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; _____ Other ☐ __
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
Describe _____
17. Source of water (attach analysis):
_____

E. Bentonite seal, top ____.__ ft. MSL or ____.__ ft.
F. Fine sand, top 1173.9 ft. MSL or 16.9 ft.
G. Filter pack, top 1171.8 ft. MSL or 19.0 ft.
H. Well screen, top 1169.8 ft. MSL or 21.0 ft.
I. Well screen bottom 1159.8 ft. MSL or 31.0 ft.
J. Filter pack, bottom 1158.9 ft. MSL or 31.9 ft.
K. Borehole, bottom 1158.8 ft. MSL or 32.0 ft.
L. Borehole, diameter 10.0 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 6.5 in.
b. Length: 1.0 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; Annular space seal ☐; _____ Other ☐ __
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ __
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added 2.0 ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added 3.5 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; _____ Other ☐ __
10. Screen material: Same __
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; _____ Other ☐ __
Manufacturer Northern Aire
Slot size: 0.010 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; _____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: **3M Downtown Wausau**	Grid Location: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: **DSOMW-4**
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number: ____ DNR Well Number: ____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐E. ☐W.	Date Well Installed: 05/24/91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): **Ross Creighton**, **Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1193.69 ft. MSL
B. Well casing, top elevation 1193.69 ft. MSL
C. Land surface elevation 1191.13 ft. MSL
D. Surface seal, bottom 1188.13 ft. MSL or 3.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

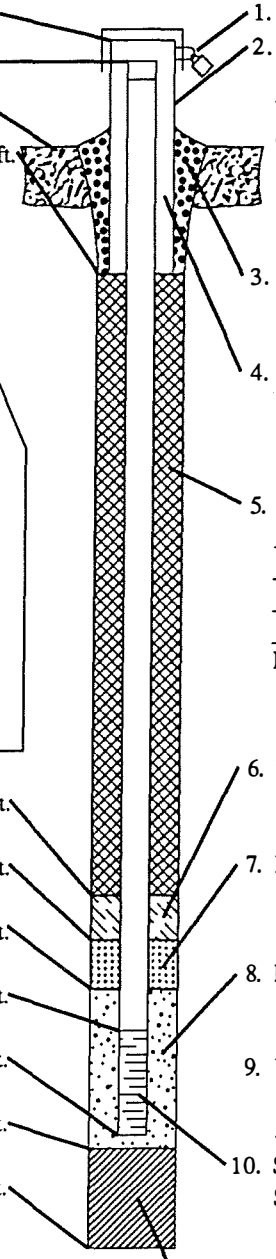
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; ____ Other ☐ ___

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

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

17. Source of water (attach analysis): ____

E. Bentonite seal, top ____ ft. MSL or ____ ft.
F. Fine sand, top 1173.7 ft. MSL or 17.4 ft.
G. Filter pack, top 1171.4 ft. MSL or 19.7 ft.
H. Well screen, top 1169.4 ft. MSL or 21.7 ft.
I. Well screen bottom 1159.4 ft. MSL or 31.7 ft.
J. Filter pack, bottom 1158.1 ft. MSL or 33.0 ft.
K. Borehole, bottom 1158.1 ft. MSL or 33.0 ft.
L. Borehole, diameter 10.0 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 6.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ 04; ____ Other ☐ ___
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 3 Steel Marker Posts
3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; ____ Other ☐ ___
4. Material between well casing and protective pipe: Bentonite ☒ 30; Annular space seal ☐; ____ Other ☐ ___
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight . . Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight . . . . . Bentonite slurry ☒ 31
____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None ____ Other ☒ ___
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added ____ ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added ____ ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; ____ Other ☐ ___
10. Screen material: Same ___
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ___
Manufacturer Northern Aire
Slot size: 0.010 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; ____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

MONITORING WELL CONSTRUCTION

Form 4400-113A 8-89

Facility/Project Name: **3M Downtown Wausau**	Grid Location: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: **DFOMW-1**
Facility License, Permit or Monitoring Number: _____		Wis. Unique Well Number / DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: _____ 1/4 of _____ 1/4 of Section _____, T_____ N, R _____ ☐E. ☐W.	Date Well Installed: m m **05** / d d **23** / y y **91**
Distance Well Is From Waste/Source Boundary: _____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) **Ross Creighton** / **Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation **1190.59** ft. MSL

B. Well casing, top elevation **1190.04** ft. MSL

C. Land surface elevation **1190.59** ft. MSL

D. Surface seal, bottom **1189.59** ft. MSL or **1.0** ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

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

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

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis):

_____

E. Bentonite seal, top ____.__ ft. MSL or ___.__ ft.

F. Fine sand, top **1172.6** ft. MSL or **18.0** ft.

G. Filter pack, top **1170.6** ft. MSL or **20.0** ft.

H. Well screen, top **1168.6** ft. MSL or **22.0** ft.

I. Well screen bottom **1158.6** ft. MSL or **32.0** ft.

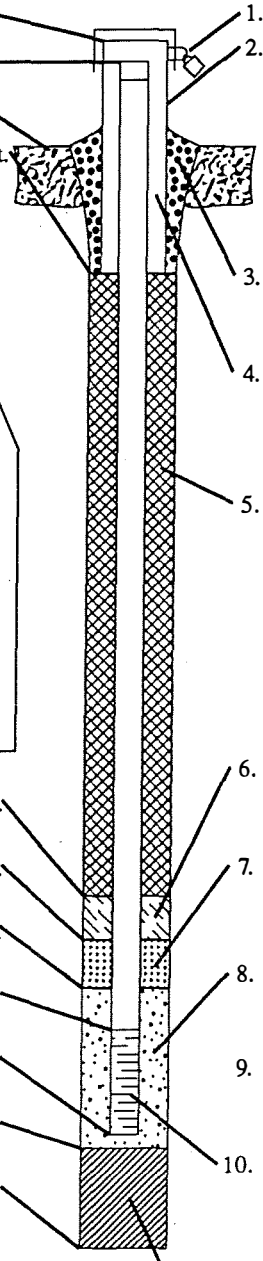
J. Filter pack, bottom **1158.6** ft. MSL or **32.0** ft.

K. Borehole, bottom **1158.6** ft. MSL or **32.0** ft.

L. Borehole, diameter **8.0** in.

M. O.D. well casing **2.3** in.

N. I.D. well casing **2.0** in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter **6.5** in.
b. Length: **1.0** 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; Annular space seal ☐; _____ Other ☐ ___

5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
2.7 Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ ___

7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added **1.5** ft³

8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added **3.0** ft³

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

10. Screen material: **Same** ___
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; _____ Other ☐ ___
Manufacturer **Northern Aire**
Slot size: **0.010** in.
Slotted length: **10.0** ft.

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

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

MONITORING WELL CONSTRUCTION

Form 4400-113A 8-89

Facility/Project Name: 3M Downtown Wausau	Grid Location: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: DFOMW-2
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number: ____ DNR Well Number: ____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐E. ☐W.	Date Well Installed: 05/23/91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Ross Creighton; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1192.52 ft. MSL

B. Well casing, top elevation 1192.52 ft. MSL

C. Land surface elevation 1190.01 ft. MSL

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

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

13. Sieve analysis attached? ☐ Yes ☒ No

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

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

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis):

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

F. Fine sand, top 1173.4 ft. MSL or 16.6 ft.

G. Filter pack, top 1170.0 ft. MSL or 20.0 ft.

H. Well screen, top 1168.0 ft. MSL or 22.0 ft.

I. Well screen bottom 1158.0 ft. MSL or 32.0 ft.

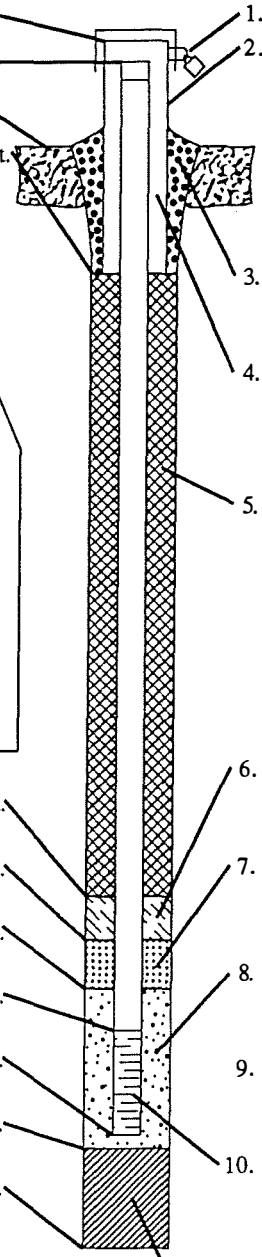
J. Filter pack, bottom 1158.0 ft. MSL or 32.0 ft.

K. Borehole, bottom 1158.0 ft. MSL or 32.0 ft.

L. Borehole, diameter 8.0 in.

M. O.D. well casing 2.3 in.

N. I.D. well casing 2.0 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ 04; ____ Other ☐ __
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 3 Steel Marker Posts

3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; ____ Other ☐ __

4. Material between well casing and protective pipe: Bentonite ☒ 30; Annular space seal ☐; ____ Other ☐ __

5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight.. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight..... Bentonite slurry ☒ 31
____ % Bentonite..... Bentonite-cement grout ☐ 50
2.7 Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ __

7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added 1.0 ft³

8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added 4.5 ft³

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

10. Screen material: Same
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ __
Manufacturer Northern Aire
Slot size: 0.010 in.
Slotted length: 10.0 ft.

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

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

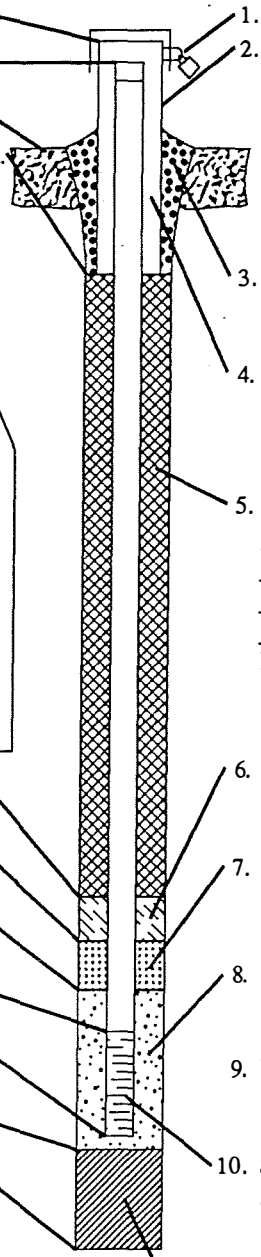
MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: **3M Downtown Wausau**	Grid Location: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: **DFOMW-3**
Facility License, Permit or Monitoring Number: _____		Wis. Unique Well Number: _____ DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: _____ 1/4 of _____ 1/4 of Section _____, T_____ N, R _____ ☐E. ☐W.	Date Well Installed: 05/23/91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: _____ ft.	Location of Well Relative to Waste/Source: ☐Upgradient ☐Sidegradient ☐Downgradient ☐Not Known	Well Installed By: (Person's Name and Firm): **Ross Creighton**, **Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1192.32 ft. MSL
B. Well casing, top elevation 1192.32 ft. MSL
C. Land surface elevation 1189.76 ft. MSL
D. Surface seal, bottom 1184.76 ft. MSL or 5.0 ft.

12. USCS classification of soil near screen:
☐GP ☐GM ☐GC ☐GW ☐SW ☐SP
☐SM ☐SC ☐ML ☐MH ☐CL ☐CH
☐Bedrock
13. Sieve analysis attached? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; _____ Other ☐ __
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
Describe _____
17. Source of water (attach analysis):
_____

E. Bentonite seal, top _____ ft. MSL or _____ ft.
F. Fine sand, top 1173.0 ft. MSL or 16.8 ft.
G. Filter pack, top 1170.9 ft. MSL or 18.9 ft.
H. Well screen, top 1168.8 ft. MSL or 21.0 ft.
I. Well screen bottom 1158.8 ft. MSL or 31.0 ft.
J. Filter pack, bottom 1157.8 ft. MSL or 32.0 ft.
K. Borehole, bottom 1157.8 ft. MSL or 32.0 ft.
L. Borehole, diameter 8.0 in.
M. O.D. well casing 2.3 in.
N. I.D. well casing 2.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 4.0 in.
b. Length: 5.0 ft.
c. Material: Steel ☒ 04; _____ Other ☐ __
d. Additional protection? ☒ Yes ☐ No
If yes, describe: **3 Steel Marker Posts**
3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; _____ Other ☐ __
4. Material between well casing and protective pipe: Bentonite ☒ 30; Annular space seal ☐; _____ Other ☐ __
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
2.0 Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ __
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added 1.5 ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added 4.0 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; _____ Other ☐ __
10. Screen material: **Same**
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; _____ Other ☐ __
Manufacturer **Northern Aire**
Slot size: 0.010 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; _____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: **3M Downtown Wausau**	Grid Location: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: **DFOMW-4**
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number: ____ DNR Well Number: ____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R ____ ☐E. ☐W.	Date Well Installed: m m / d d / y y = **05/24/91**
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) **Ross Creighton, Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation **1191.88** ft. MSL
B. Well casing, top elevation **1191.88** ft. MSL
C. Land surface elevation **1189.45** ft. MSL
D. Surface seal, bottom **1184.45** ft. MSL or **5.0** ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

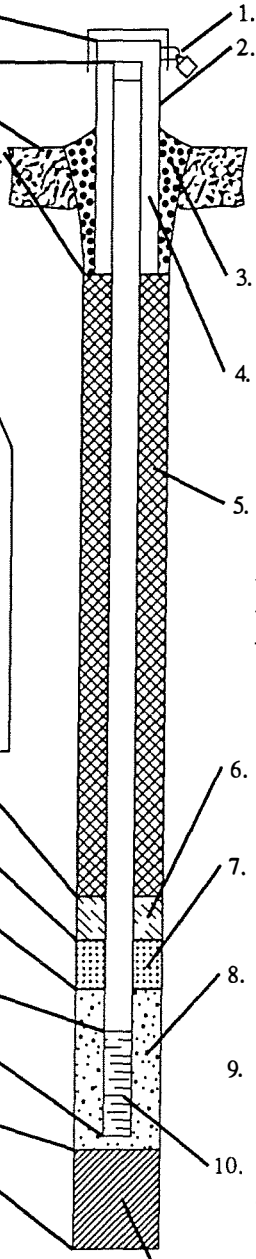
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; ____ Other ☐ __

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

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

17. Source of water (attach analysis): ____

E. Bentonite seal, top ____.__ ft. MSL or ____.__ ft.
F. Fine sand, top **1173.0** ft. MSL or **16.5** ft.
G. Filter pack, top **1170.9** ft. MSL or **18.6** ft.
H. Well screen, top **1168.5** ft. MSL or **21.0** ft.
I. Well screen bottom **1158.5** ft. MSL or **31.0** ft.
J. Filter pack, bottom **1157.5** ft. MSL or **32.0** ft.
K. Borehole, bottom **1157.5** ft. MSL or **32.0** ft.
L. Borehole, diameter **8.0** in.
M. O.D. well casing **2.3** in.
N. I.D. well casing **2.0** in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter **4.0** in.
b. Length: **5.0** ft.
c. Material: Steel ☒ 04; ____ Other ☐ __
d. Additional protection? ☒ Yes ☐ No
If yes, describe: **3 Steel Marker Posts**
3. Surface seal: Bentonite ☐ 30; Concrete ☒ 01; ____ Other ☐ __
4. Material between well casing and protective pipe: Bentonite ☒ 30; Annular space seal ☐; ____ Other ☐ __
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ __
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added ____ ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added ____ ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; ____ Other ☐ __
10. Screen material: **Same**
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ __
Manufacturer **Northern Aire**
Slot size: **0.010** in.
Slotted length: **10.0** ft.
11. Backfill material (below filter pack): None ☒; ____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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Department of Natural Resources

MONITORING WELL CONSTRUCTION

Form 4400-113A 8-89

Facility/Project Name: **3M Downtown Wausau**	Grid Location: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: **DFOMW-5**
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number / DNR Well Number: ____ / ____
Type of Well: Water Table Observation Well ☒ 11, Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐ E. ☐ W.	Date Well Installed: m m / d d / y y = **05/22/91**
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): **Ross Creighton, Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation **1191.35** ft. MSL

B. Well casing, top elevation **1191.35** ft. MSL

C. Land surface elevation **1188.91** ft. MSL

D. Surface seal, bottom **1185.91** ft. MSL or **3.0** ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

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

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

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis):

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

F. Fine sand, top **1171.2** ft. MSL or **17.7** ft.

G. Filter pack, top **1169.1** ft. MSL or **19.8** ft.

H. Well screen, top **1166.9** ft. MSL or **22.0** ft.

I. Well screen bottom **1156.9** ft. MSL or **32.0** ft.

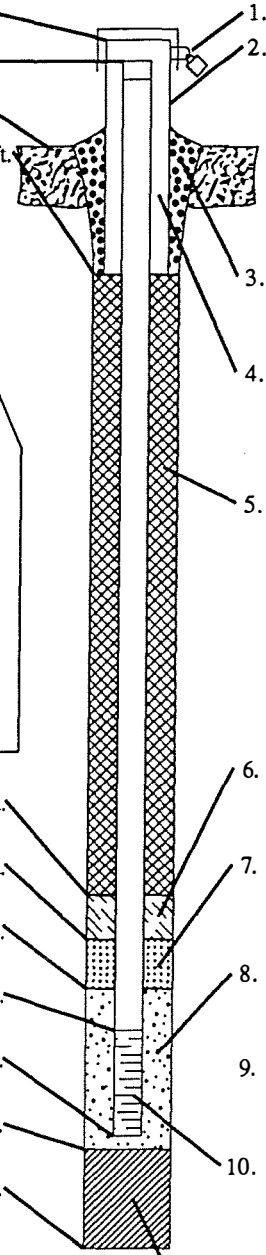
J. Filter pack, bottom **1156.9** ft. MSL or **32.0** ft.

K. Borehole, bottom **1156.9** ft. MSL or **32.0** ft.

L. Borehole, diameter **8.0** in.

M. O.D. well casing **2.3** in.

N. I.D. well casing **2.0** in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter **4.0** in.
b. Length: **5.0** ft.
c. Material: Steel ☒ 04; ____ Other ☐ ____
d. Additional protection? ☒ Yes ☐ No
If yes, describe: **3 Steel Marker Posts**

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

4. Material between well casing and protective pipe: Bentonite ☒ 30; Annular space seal ☐; ____ Other ☐ ____

5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight.. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight..... Bentonite slurry ☒ 31
____ % Bentonite..... Bentonite-cement grout ☐ 50
2.1 Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ ____

7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added **1.0** ft³

8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added **3.5** ft³

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

10. Screen material: **Same** ____
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ____
Manufacturer **Northern Aire**
Slot size: **0.010** in.
Slotted length: **10.0** ft.

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

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

Signature	Firm
	Geraghty & Miller, Inc.

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NOTE: Shaded areas are for DNR use only. See instructions for more information.

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A 4/90

Facility/Project Name: 3M - Wausau	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: DFOMW-6
Facility License, Permit or Monitoring Number: _ _ _ _ _ _ _	Grid Origin Location: Lat. ____ ____ ____ Long. ____ ____ ____ or St. Plane ____ ft. N, ____ ft. E.	Wis. Unique Well Number: _ _ _ _ _ _ _ _ _ _ DNR Well Number: _ _ _ _
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location of Waste/Source: ☒ E. NW 1/4 of SE 1/4 of Sec. 35, T 29 N, R. 7 ☐ W.	Date Well Installed: 07 / 30 / 91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☒ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) Eric Dwyer; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1190.65 ft. MSL

B. Well casing, top elevation 1190.65 ft. MSL

C. Land surface elevation 1188.15 ft. MSL

D. Surface seal, bottom 1187.15 ft. MSL or 1.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

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

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

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis):

E. Bentonite seal, top ____.__ ft. MSL or ___.__ ft.

F. Fine sand, top 1171.2 ft. MSL or 17.0 ft.

G. Filter pack, top 1169.2 ft. MSL or 19.0 ft.

H. Well screen, top 1167.2 ft. MSL or 21.0 ft.

I. Well screen bottom 1157.2 ft. MSL or 31.0 ft.

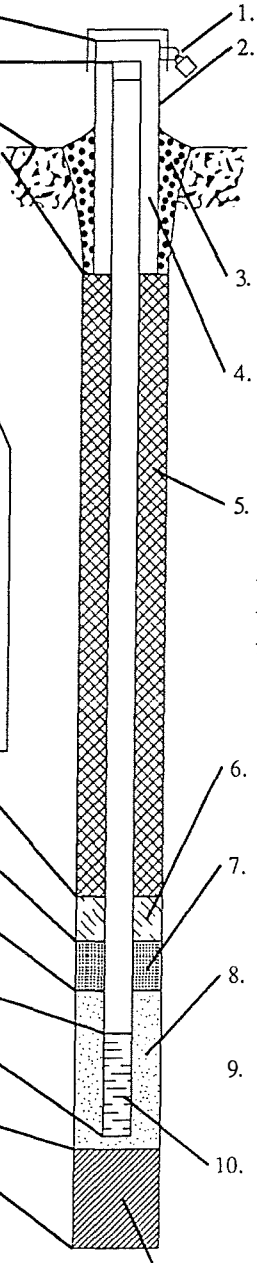
J. Filter pack, bottom 1150.2 ft. MSL or 38.0 ft.

K. Borehole, bottom 1150.2 ft. MSL or 38.0 ft.

L. Borehole, diameter 12.0 in.

M. O.D. well casing 6.64 in.

N. I.D. well casing 6.35 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter 8.0 in.
b. Length: 8.0 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; Annular space seal ☐; ____ Other ☐ ____

5. Annular space seal: Granular Bentonite ☒ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

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

7. Fine sand material: Manufacturer, product name and mesh size
Unimin #4030
Volume added 0.5 ft³

8. Filter pack material: Manufacturer, product name and mesh size
Red Flint #40
Volume added 6.6 ft³

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

10. Screen material: Same ____
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ____
Manufacturer Northern Aire
Slot size: 0.01 in.
Slotted length: 10.0 ft.

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

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

Signature	Firm
	Geraghty & Miller, Inc.

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WI212.02 - 0344.02 0317.01

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A 4/90

Facility/Project Name: 3M - Wausau	Local Grid Location of Well: ____ ft. ☐ N. ____ ft. ☐ E. ☐ S. ☐ W.	Well Name: DFOMW-7
Facility License, Permit or Monitoring Number: _____	Grid Origin Location: Lat. ____ ____ ____ Long. ____ ____ ____ or St. Plane ____ ft. N, ____ ft. E.	Wis. Unique Well Number: _____ DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location of Waste/Source: ☒ E. NW 1/4 of SE 1/4 of Sec. 35, T 29 N, R. 7 ☐ W.	Date Well Installed: m m / d d / y y = 07 / 30 / 91
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☒ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) Eric Dwyer; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1190.65 ft. MSL
B. Well casing, top elevation 1190.65 ft. MSL
C. Land surface elevation 1188.47 ft. MSL
D. Surface seal, bottom 1187.47 ft. MSL or 1.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

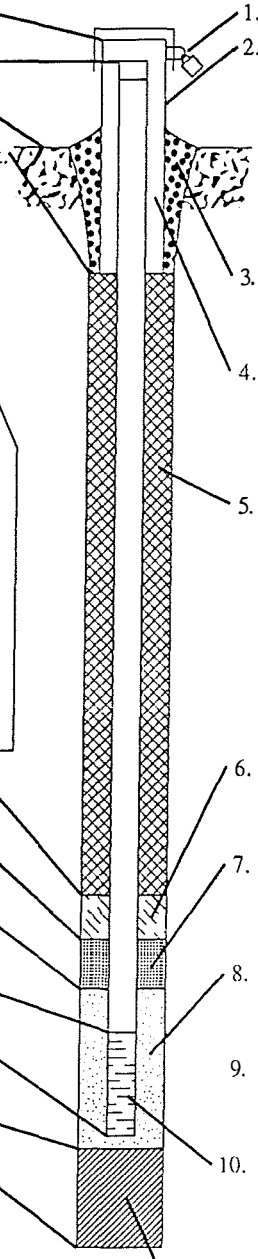
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; _____ Other ☐ __

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

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

17. Source of water (attach analysis):
_____

E. Bentonite seal, top ____.__ ft. MSL or ___.__ ft.
F. Fine sand, top 1171.3 ft. MSL or 17.2 ft.
G. Filter pack, top 1170.5 ft. MSL or 18.0 ft.
H. Well screen, top 1167.5 ft. MSL or 21.0 ft.
I. Well screen bottom 1157.5 ft. MSL or 31.0 ft.
J. Filter pack, bottom 1150.5 ft. MSL or 38.0 ft.
K. Borehole, bottom 1150.5 ft. MSL or 38.0 ft.
L. Borehole, diameter 12.0 in.
M. O.D. well casing 6.64 in.
N. I.D. well casing 6.35 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 8.0 in.
b. Length: 8.0 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; Annular space seal ☐; _____ Other ☐ __
5. Annular space seal: Granular Bentonite ☒ 33
____ Lbs/gal mud weight . . Bentonite-sand slurry ☐ 35
____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
_____ Other ☐ __
7. Fine sand material: Manufacturer, product name and mesh size
Unimin #4030
Volume added 0.2 ft³
8. Filter pack material: Manufacturer, product name and mesh size
Red Flint #40
Volume added 6.6 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; _____ Other ☐ __
10. Screen material: Same
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; _____ Other ☐ __
Manufacturer Northern Aire
Slot size: 0.015 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; _____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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WI212.02 · 0344.02 0317.01

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A 4/90

Facility/Project Name: 3M - Wausau	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: DFOMW-8
Facility License, Permit or Monitoring Number: _ _ _ _ _ _ _	Grid Origin Location: Lat. ___ ___ ___ Long. ___ ___ ___ or St. Plane ____ ft. N, ____ ft. E.	Wis. Unique Well Number: _ _ _ _ _ _ _ _ _ _ DNR Well Number: _ _ _ _
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location of Waste/Source: ☒ E. NW 1/4 of SE 1/4 of Sec. 35, T 29 N, R. 7 ☐ W.	Date Well Installed: m m / d d / y y = 07 / 29 / 91
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☒ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Eric Dwyer; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1192.12 ft. MSL
B. Well casing, top elevation 1192.12 ft. MSL
C. Land surface elevation 1189.55 ft. MSL
D. Surface seal, bottom 1188.55 ft. MSL or 1.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

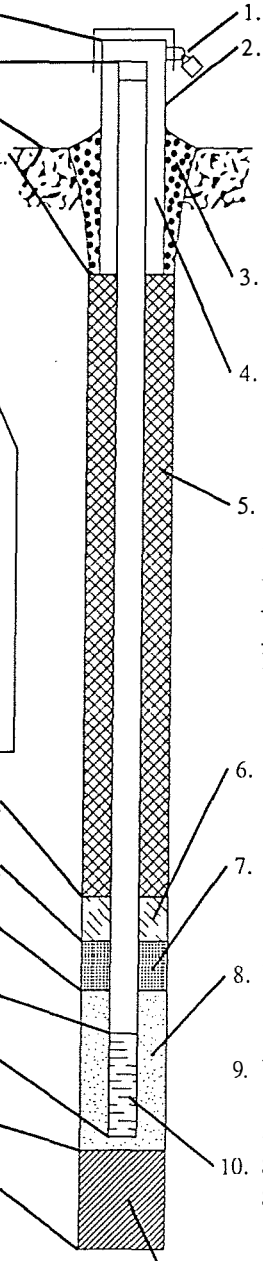
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; ____ Other ☐ __

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

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

17. Source of water (attach analysis):
____

E. Bentonite seal, top ___.__ ft. MSL or ___.__ ft.
F. Fine sand, top 1171.3 ft. MSL or 18.3 ft.
G. Filter pack, top 1169.5 ft. MSL or 20.1 ft.
H. Well screen, top 1167.9 ft. MSL or 21.7 ft.
I. Well screen bottom 1157.9 ft. MSL or 31.7 ft.
J. Filter pack, bottom 1155.6 ft. MSL or 34.0 ft.
K. Borehole, bottom 1155.6 ft. MSL or 34.0 ft.
L. Borehole, diameter 12.0 in.
M. O.D. well casing 6.64 in.
N. I.D. well casing 6.35 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 8.0 in.
b. Length: 8.0 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; Annular space seal ☐; ____ Other ☐ __
5. Annular space seal: Granular Bentonite ☒ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
____ Other ☐ __
7. Fine sand material: Manufacturer, product name and mesh size
Unimin #4030
Volume added 0.4 ft³
8. Filter pack material: Manufacturer, product name and mesh size
Red Flint #40
Volume added 6 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; ____ Other ☐ __
10. Screen material: Same
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ __
Manufacturer Northern Aire
Slot size: 0.015 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; ____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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WI212.02 - 0344.02 0317.01

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A 4/90

Facility/Project Name: 3M - Wausau	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: DFOMW-9
Facility License, Permit or Monitoring Number: _____	Grid Origin Location: Lat. ____ ____ ____ Long. ____ ____ ____ or St. Plane ____ ft. N. ____ ft. E.	Wis. Unique Well Number / DNR Well Number: _____ / ____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location of Waste/Source: ☒ E. ☐ W. NW 1/4 of SE 1/4 of Sec. 35, T 29 N, R. 7	Date Well Installed: 07 / 31 / 91 (m m / d d / y y)
Distance Well s From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☒ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) Eric Dwyer; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1190.83 ft. MSL
B. Well casing, top elevation 1190.83 ft. MSL
C. Land surface elevation 1188.32 ft. MSL
D. Surface seal, bottom 1187.32 ft. MSL or 1.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

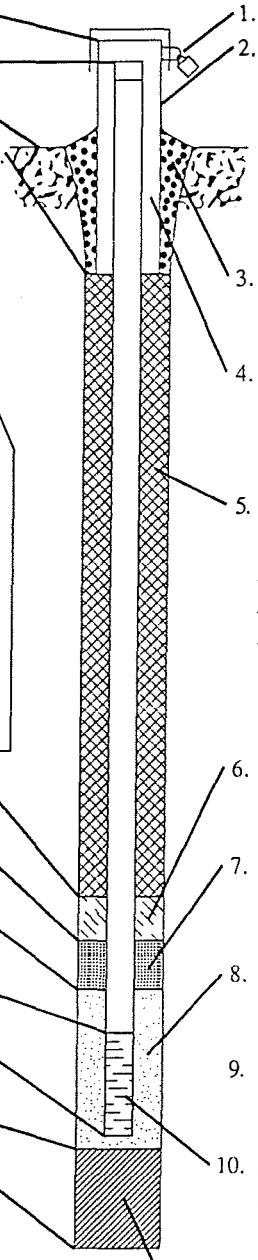
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; _____ Other ☐ __

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

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

17. Source of water (attach analysis):
_____

E. Bentonite seal, top ___.__ ft. MSL or ___.__ ft.
F. Fine sand, top 1171.3 ft. MSL or 17.0 ft.
G. Filter pack, top 1169.5 ft. MSL or 18.7 ft.
H. Well screen, top 1167.3 ft. MSL or 21.0 ft.
I. Well screen bottom 1157.3 ft. MSL or 31.0 ft.
J. Filter pack, bottom 1150.3 ft. MSL or 38.0 ft.
K. Borehole, bottom 1150.3 ft. MSL or 38.0 ft.
L. Borehole, diameter 12.0 in.
M. O.D. well casing 6.64 in.
N. I.D. well casing 6.35 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 8.0 in.
b. Length: 8.0 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; Annular space seal ☐; _____ Other ☐ __
5. Annular space seal: Granular Bentonite ☒ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
_____ Other ☐ __
7. Fine sand material: Manufacturer, product name and mesh size
Unimin #4030
Volume added 0.4 ft³
8. Filter pack material: Manufacturer, product name and mesh size
Red Flint #40
Volume added 6.6 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; _____ Other ☐ __
10. Screen material: Same
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; _____ Other ☐ __
Manufacturer Northern Aire
Slot size: 0.015 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; _____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A 4/90

Facility/Project Name: 3M - Wausau	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: DFOMW-10
Facility License, Permit or Monitoring Number: _ _ _ _ _ _ _	Grid Origin Location: Lat. ____ ____ ____ Long. ____ ____ ____ or St. Plane ____ ft. N, ____ ft. E.	Wis. Unique Well Number: _ _ _ _ _ _ _ DNR Well Number: _ _ _ _
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location of Waste/Source: NW 1/4 of SE 1/4 of Sec. 35, T 29 N, R. 7 ☒ E. ☐ W.	Date Well Installed: m m / d d / y y = 07 / 31 / 91
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☒ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Eric Dwyer; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1190.95 ft. MSL
B. Well casing, top elevation 1190.95 ft. MSL
C. Land surface elevation 1188.55 ft. MSL
D. Surface seal, bottom 1187.55 ft. MSL or 1.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

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

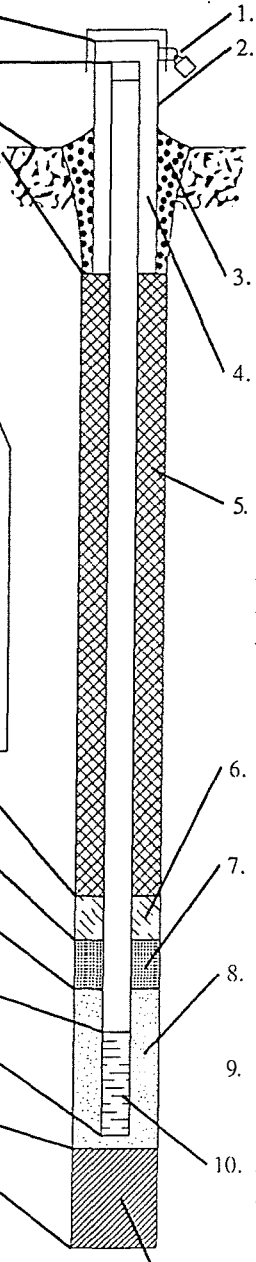
15. Drilling fluid used: Water ☐ 02 Air ☐ 01; Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis):

E. Bentonite seal, top ___.__ ft. MSL or ___.__ ft.
F. Fine sand, top 1171.6 ft. MSL or 17.0 ft.
G. Filter pack, top 1169.9 ft. MSL or 18.8 ft.
H. Well screen, top 1167.6 ft. MSL or 21.0 ft.
I. Well screen bottom 1157.6 ft. MSL or 31.0 ft.
J. Filter pack, bottom 1150.6 ft. MSL or 38.0 ft.
K. Borehole, bottom 1150.6 ft. MSL or 38.0 ft.
L. Borehole, diameter 12.0 in.
M. O.D. well casing 6.64 in.
N. I.D. well casing 6.35 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 8.0 in.
b. Length: 8.0 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; Annular space seal ☐; ____ Other ☐ ___
5. Annular space seal: Granular Bentonite ☒ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
____ Other ☐ ___
7. Fine sand material: Manufacturer, product name and mesh size
Unimin #4030
Volume added 0.4 ft³
8. Filter pack material: Manufacturer, product name and mesh size
Red Flint #40
Volume added 4.8 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; ____ Other ☐ ___
10. Screen material: Same ___
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ___
Manufacturer Northern Aire
Slot size: 0.015 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; ____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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NOTE: Shaded areas are for DNR use only. See instructions for more information.

WI212.02 - 0344.02 0317.01

State of Wisconsin
Department of Natural Resources

MONITORING WELL CONSTRUCTION

Form 4400-113A 8-89

Facility/Project Name: 3M Greystone Wausau	Grid Location: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: GPIMW-1
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number: ____ DNR Well Number: ____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐E. ☐W.	Date Well Installed: 05/31/91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Ross Creighton; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1227.46 ft. MSL

B. Well casing, top elevation 1227.05 ft. MSL

C. Land surface elevation 1227.46 ft. MSL

D. Surface seal, bottom 1226.46 ft. MSL or 1.0 ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

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

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

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis):

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

F. Fine sand, top 1209.6 ft. MSL or 17.9 ft.

G. Filter pack, top 1205.5 ft. MSL or 22.0 ft.

H. Well screen, top 1203.5 ft. MSL or 24.0 ft.

I. Well screen bottom 1193.5 ft. MSL or 34.0 ft.

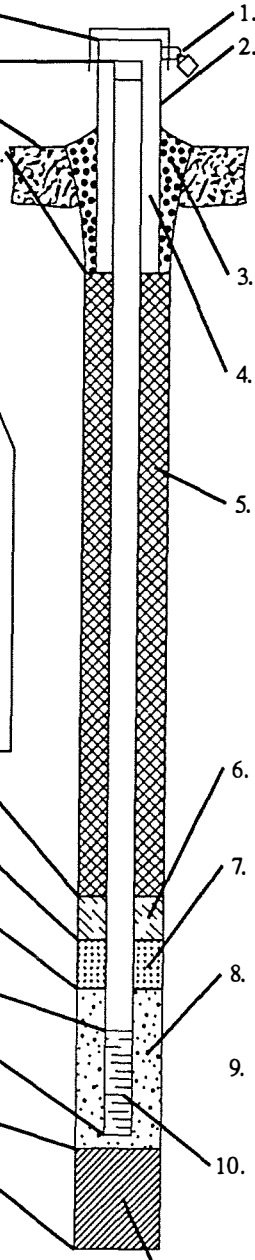
J. Filter pack, bottom 1192.5 ft. MSL or 35.0 ft.

K. Borehole, bottom 1192.5 ft. MSL or 35.0 ft.

L. Borehole, diameter 8.0 in.

M. O.D. well casing 2.3 in.

N. I.D. well casing 2.0 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter 6.5 in.
b. Length: 1.0 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; Annular space seal ☐; ____ Other ☐ ____

5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight.. Bentonite-sand slurry ☐ 35
10 Lbs/gal mud weight..... Bentonite slurry ☒ 31
____ % Bentonite..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☐ 08

6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ ____

7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added 0.8 ft³

8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added 3.5 ft³

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

10. Screen material: Same ____
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ____
Manufacturer Northern Aire
Slot size: 0.010 in.
Slotted length: 10.0 ft.

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

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

MONITORING WELL CONSTRUCTION

Form 4400-113A 8-89

Facility/Project Name: **3M Greystone Wausau**	Grid Location: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: **GPIMW-2**
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number: ____ DNR Well Number: ____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐ E. ☐ W.	Date Well Installed: m m / d d / y y = **05/31/91**
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) **Ross Creighton, Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation **1227.52** ft. MSL

B. Well casing, top elevation **1226.99** ft. MSL

C. Land surface elevation **1227.52** ft. MSL

D. Surface seal, bottom **1226.52** ft. MSL or **1.0** ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

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

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

16. Drilling additives used? ☐ Yes ☒ No

Describe ____

17. Source of water (attach analysis):

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

F. Fine sand, top **1202.5** ft. MSL or **25.0** ft.

G. Filter pack, top **1200.5** ft. MSL or **27.0** ft.

H. Well screen, top **1198.5** ft. MSL or **29.0** ft.

I. Well screen bottom **1188.5** ft. MSL or **39.0** ft.

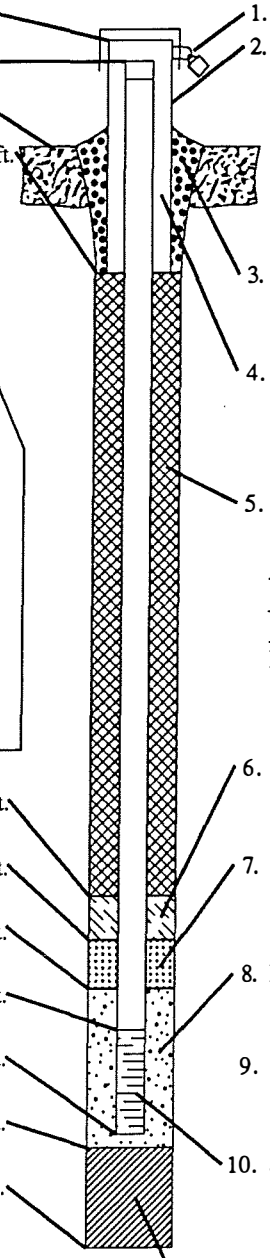
J. Filter pack, bottom **1187.5** ft. MSL or **40.0** ft.

K. Borehole, bottom **1187.5** ft. MSL or **40.0** ft.

L. Borehole, diameter **8.0** in.

M. O.D. well casing **2.3** in.

N. I.D. well casing **2.0** in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter **6.5** in.
b. Length: **1.0** 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; Annular space seal ☐; ____ Other ☐ ____

5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight.. Bentonite-sand slurry ☐ 35
10 Lbs/gal mud weight..... Bentonite slurry ☒ 31
____ % Bentonite..... Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08

6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ ____

7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added ____ ft³

8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added ____ ft³

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

10. Screen material: **Same** ____
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ____
Manufacturer **Northern Aire**
Slot size: **0.010** in.
Slotted length: **10.0** ft.

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

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

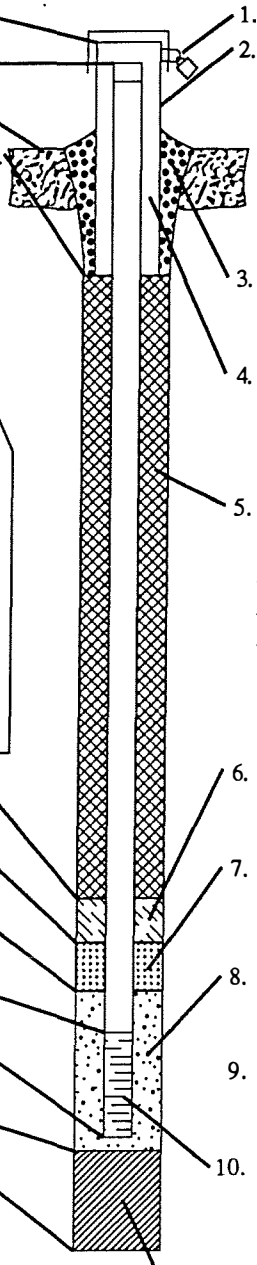
MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: **3M Greystone Wausau**	Grid Location: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: **GPIMW-3**
Facility License, Permit or Monitoring Number: ____		Wis. Unique Well Number: ____ DNR Well Number: ____
Type of Well: Water Table Observation Well ☒ 11, Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐E. ☐W.	Date Well Installed: m m / d d / y y = **05/31/91**
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm) **Ross Creighton, Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation **1225.94** ft. MSL
B. Well casing, top elevation **1225.33** ft. MSL
C. Land surface elevation **1225.94** ft. MSL
D. Surface seal, bottom **1224.94** ft. MSL or **1.0** ft.

12. USCS classification of soil near screen:
☐ GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP
☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH
☐ Bedrock
13. Sieve analysis attached? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; ____ Other ☐ ____
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
Describe ____
17. Source of water (attach analysis): ____

E. Bentonite seal, top ____.__ ft. MSL or ____.__ ft.
F. Fine sand, top **1208.0** ft. MSL or **17.9** ft.
G. Filter pack, top **1205.9** ft. MSL or **20.0** ft.
H. Well screen, top **1203.9** ft. MSL or **22.0** ft.
I. Well screen bottom **1193.9** ft. MSL or **32.0** ft.
J. Filter pack, bottom **1192.9** ft. MSL or **33.0** ft.
K. Borehole, bottom **1192.9** ft. MSL or **33.0** ft.
L. Borehole, diameter **8.0** in.
M. O.D. well casing **2.3** in.
N. I.D. well casing **2.0** in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter **6.5** in.
b. Length: **1.0** ft.
c. Material: Steel ☐ 04; **Aluminum** 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; Annular space seal ☐; ____ Other ☐ ____
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight . . Bentonite-sand slurry ☐ 35
10 Lbs/gal mud weight . . . . . Bentonite slurry ☒ 31
____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None Other ☒ ____
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added **0.7** ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added **3.5** ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; ____ Other ☐ ____
10. Screen material: **Same** ____
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; ____ Other ☐ ____
Manufacturer **Northern Aire**
Slot size: **0.010** in.
Slotted length: **10.0** ft.
11. Backfill material (below filter pack): None ☒; ____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

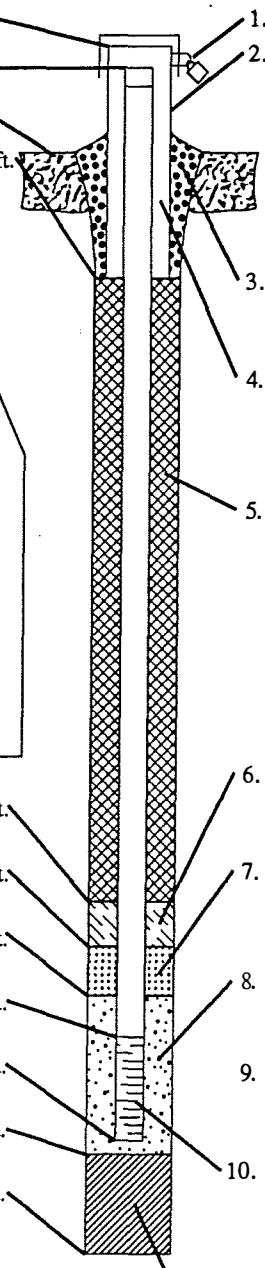
MONITORING WELL CONSTRUCTION
Form 4400-113A 8-89

Facility/Project Name: 3M Greystone Wausau	Grid Location: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: GFOMW-1
Facility License, Permit or Monitoring Number: _____		Wis. Unique Well Number: _____ DNR Well Number: _____
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location: ____ 1/4 of ____ 1/4 of Section ____, T____ N, R____ ☐E. ☐W.	Date Well Installed: 05/31/91 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ____ ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☐ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): Ross Creighton; Geraghty & Miller, Inc.
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation 1226.37 ft. MSL
B. Well casing, top elevation 1225.84 ft. MSL
C. Land surface elevation 1226.37 ft. MSL
D. Surface seal, bottom 1225.37 ft. MSL or 1.0 ft.

12. USCS classification of soil near screen:
☐ GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP
☐ SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH
☐ Bedrock
13. Sieve analysis attached? ☐ Yes ☒ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☒ 41; _____ Other ☐ ____
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99
16. Drilling additives used? ☐ Yes ☒ No
Describe _____
17. Source of water (attach analysis):
_____

E. Bentonite seal, top ____.__ ft. MSL or ___.__ ft.
F. Fine sand, top 1203.9 ft. MSL or 22.5 ft.
G. Filter pack, top 1202.3 ft. MSL or 24.1 ft.
H. Well screen, top 1199.4 ft. MSL or 27.0 ft.
I. Well screen bottom 1189.4 ft. MSL or 37.0 ft.
J. Filter pack, bottom 1188.4 ft. MSL or 38.0 ft.
K. Borehole, bottom 1188.4 ft. MSL or 38.0 ft.
L. Borehole, diameter 8.0 in.
M. O.D. well casing 2.3 in.
N. I.D. well casing 2.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter 6.5 in.
b. Length: 1.0 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; Annular space seal ☐; _____ Other ☐ ____
5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
10 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
_____ Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: Bentonite granules ☐ 33
☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
None _____ Other ☒ ____
7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravel, Granusil 3050
Volume added _____ ft³
8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravel, Red Flint #30
Volume added _____ ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; _____ Other ☐ ____
10. Screen material: Same ____
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; _____ Other ☐ ____
Manufacturer Northern Aire
Slot size: 0.010 in.
Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒; _____ Other ☐

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

Signature	Firm
	Geraghty & Miller, Inc.

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State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A 4/90

Facility/Project Name: **3M - Wausau, Greystone Quarry**	Local Grid Location of Well: ____ ft. ☐ N. ☐ S. ____ ft. ☐ E. ☐ W.	Well Name: **GQMW-1**
Facility License, Permit or Monitoring Number:	Grid Origin Location: Lat. ____ Long. ____ or St. Plane ____ ft. N, ____ ft. E.	Wis. Unique Well Number / DNR Well Number
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12	Section Location of Waste/Source: ☒ E. **SE** 1/4 of **NW** 1/4 of Sec. **11**, T **29** N, R. **7** ☐ W.	Date Well Installed: m m **05** / d d **31** / y y **91**
Distance Well Is From Waste/Source Boundary: **Thru & below former UST excav.** ft.	Location of Well Relative to Waste/Source: ☐ Upgradient ☐ Sidegradient ☒ Downgradient ☐ Not Known	Well Installed By: (Person's Name and Firm): **Ross M. Creighton**, **Geraghty & Miller, Inc.**
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No		

A. Protective pipe, top elevation **1316.48** ft. MSL

B. Well casing, top elevation **1316.48** ft. MSL

C. Land surface elevation **1314.09** ft. MSL

D. Surface seal, bottom **1309.09** ft. MSL or **5.0** ft.

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

13. Sieve analysis attached? ☐ Yes ☒ No

14. Drilling method used: Rotary ☒ 50; Hollow Stem Auger ☒ 41; **HSA, 0-22'**, Other ☐ ____ **Rotary air hammer 22-49.5'**

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):
Not applicable

E. Bentonite seal, top **1309.1** ft. MSL or **5.0** ft.

F. Fine sand, top **1280.5** ft. MSL or **33.6** ft.

G. Filter pack, top **1278.3** ft. MSL or **35.8** ft.

H. Well screen, top **1276.1** ft. MSL or **38.0** ft.

I. Well screen bottom **1266.1** ft. MSL or **48.0** ft.

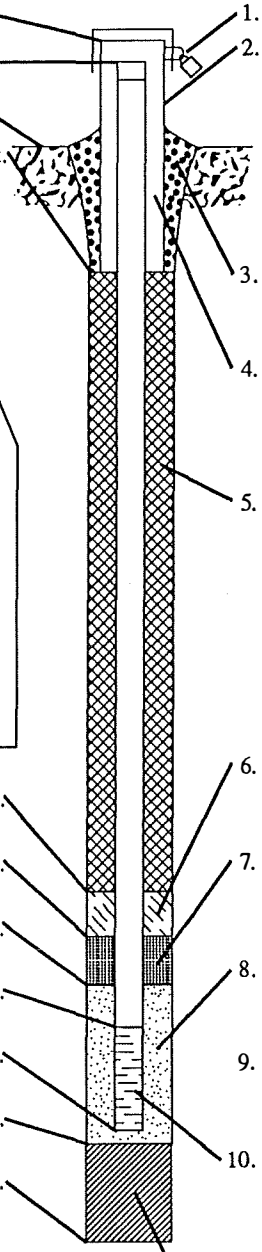
J. Filter pack, bottom **1264.6** ft. MSL or **49.5** ft.

K. Borehole, bottom **1264.6** ft. MSL or **49.5** ft.

L. Borehole, diameter **6.0** in.

M. O.D. well casing **2.3** in.

N. I.D. well casing **2.0** in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter **4.0** in.
b. Length: **7.0** ft.
c. Material: Steel ☒ 04; Other ☐ ____
d. Additional protection? ☒ Yes ☐ No
If yes, describe: **3" dia. bumper poles**

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

4. Material between well casing and protective pipe: Bentonite ☒ 30; Annular space seal ☐; Other ☐ ____

5. Annular space seal: Granular Bentonite ☐ 33
____ Lbs/gal mud weight .. Bentonite-sand slurry ☐ 35
12 Lbs/gal mud weight ..... Bentonite slurry ☒ 31
____ % Bentonite ..... Bentonite-cement grout ☐ 50
2.7 Ft³ volume added for any of the above
How installed: Tremie ☐ 01; Tremie pumped ☒ 02; Gravity ☐ 08

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

7. Fine sand material: Manufacturer, product name and mesh size
Waupaca Snd & Gravl, Granusil 3050
Volume added **0.4** ft³

8. Filter pack material: Manufacturer, product name and mesh size
Eau Claire Snd & Gravl, Red Flint #30
Volume added **2.4** ft³

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

10. Screen material: **Same**
Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐ ____
Manufacturer **Northern Aire**
Slot size: **0.010** in.
Slotted length: **10.0** ft.

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

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

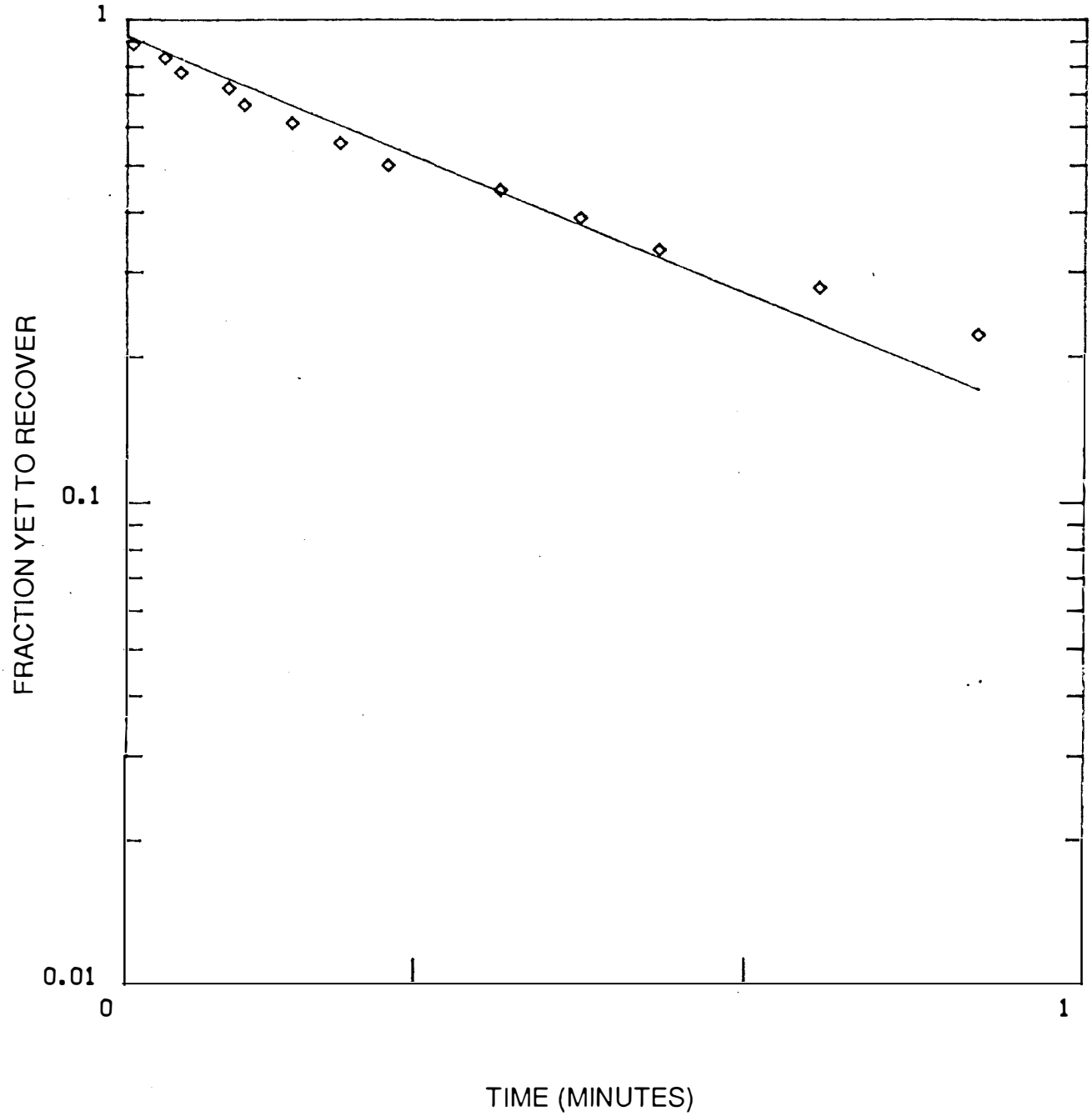
Signature	Firm
Ross M. Creighton	**Geraghty & Miller, Inc.**

Please complete and return both sides of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis Adm. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than $10, nor more than $5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than $10,000 for each day of violation.
NOTE: Shaded areas are for DNR use only. See instructions for more information.

WI212.02 - 0344.02 0317.01

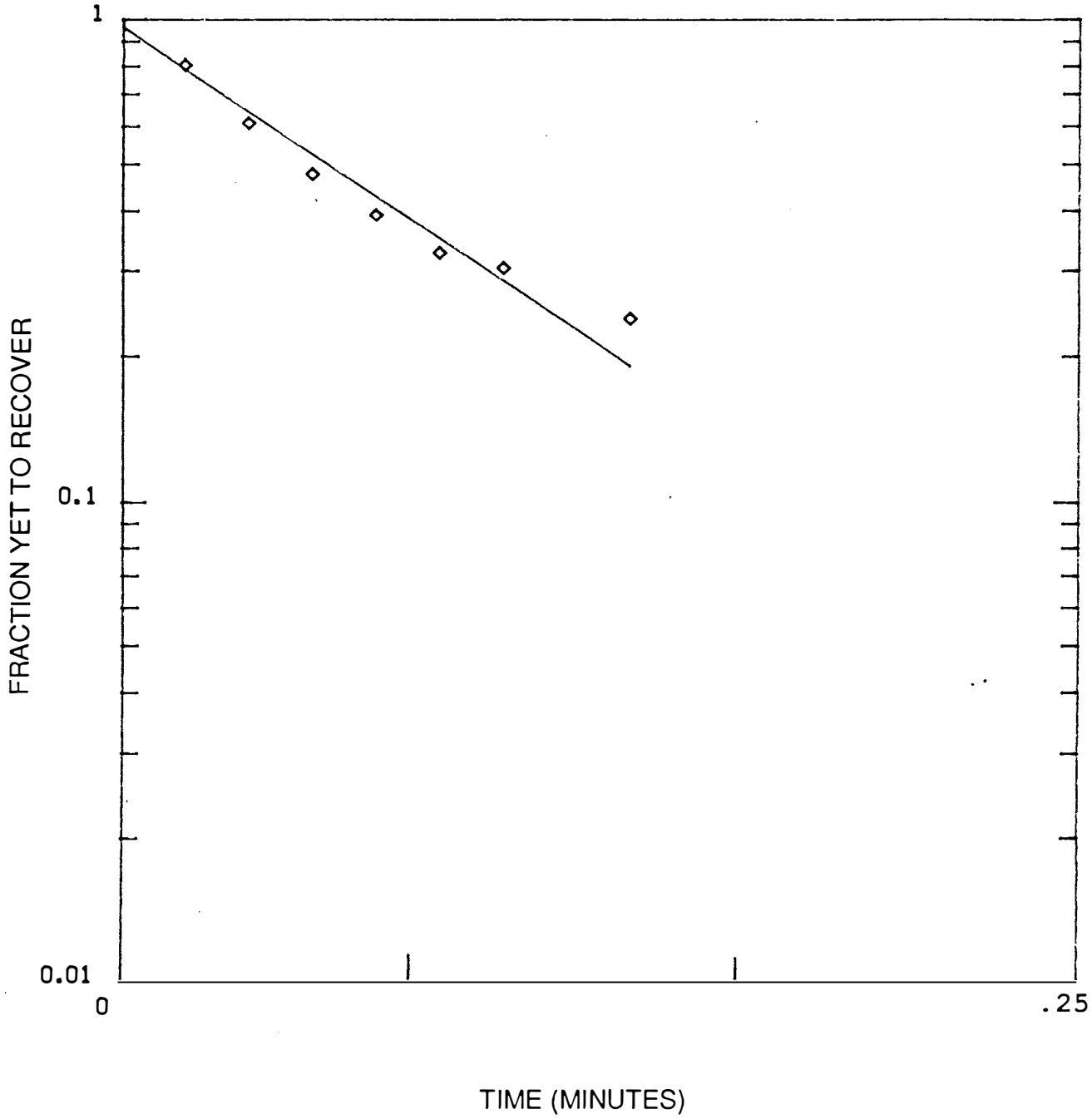
APPENDIX C

RESULTS FROM TESTS OF IN-SITU HYDRAULIC CONDUCTIVITY



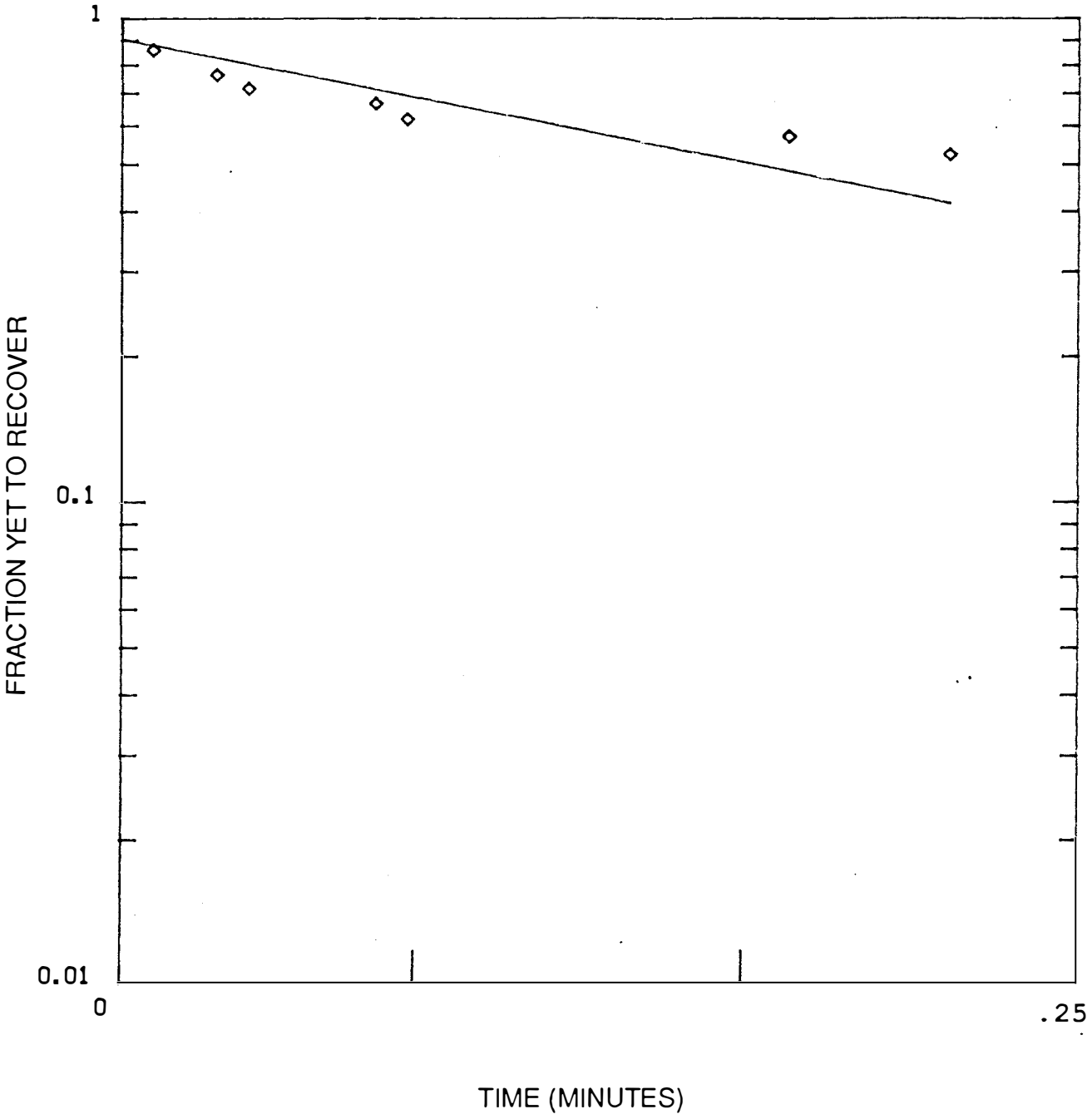
OBSERVATION WELL DFOMW-2
SLUG-TEST IN
HYDRAULIC CONDUCTIVITY =
6.5×10^{-4} cm/sec
$R^2 = .972$
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

GERAGHTY & MILLER, INC.
Environmental Services



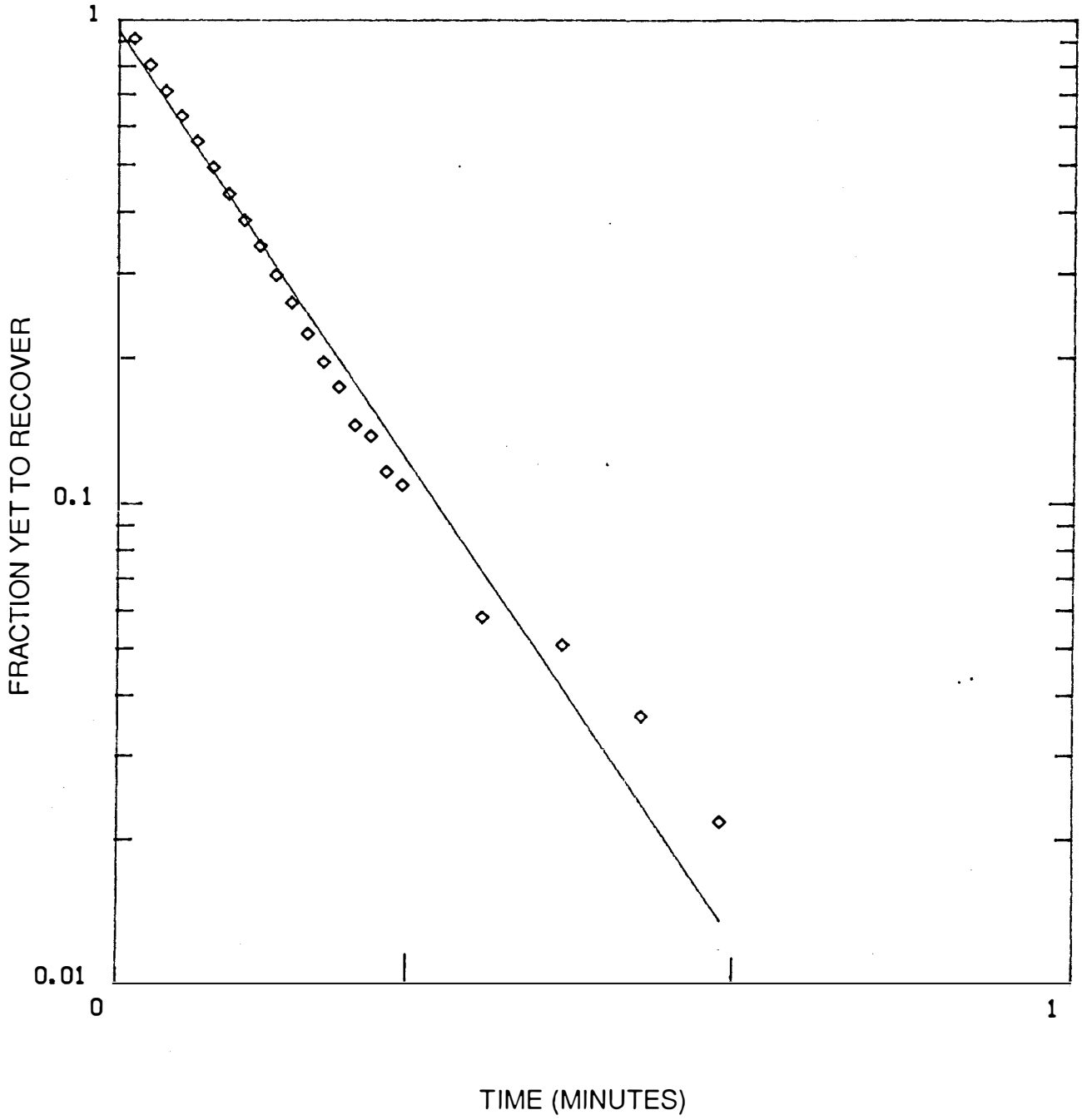
OBSERVATION WELL DFOMW-2
SLUG-TEST OUT
HYDRAULIC CONDUCTIVITY =
4.2×10^{-3} cm/sec
$R^2 = .986$
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

GERAGHTY & MILLER, INC.
Environmental Services



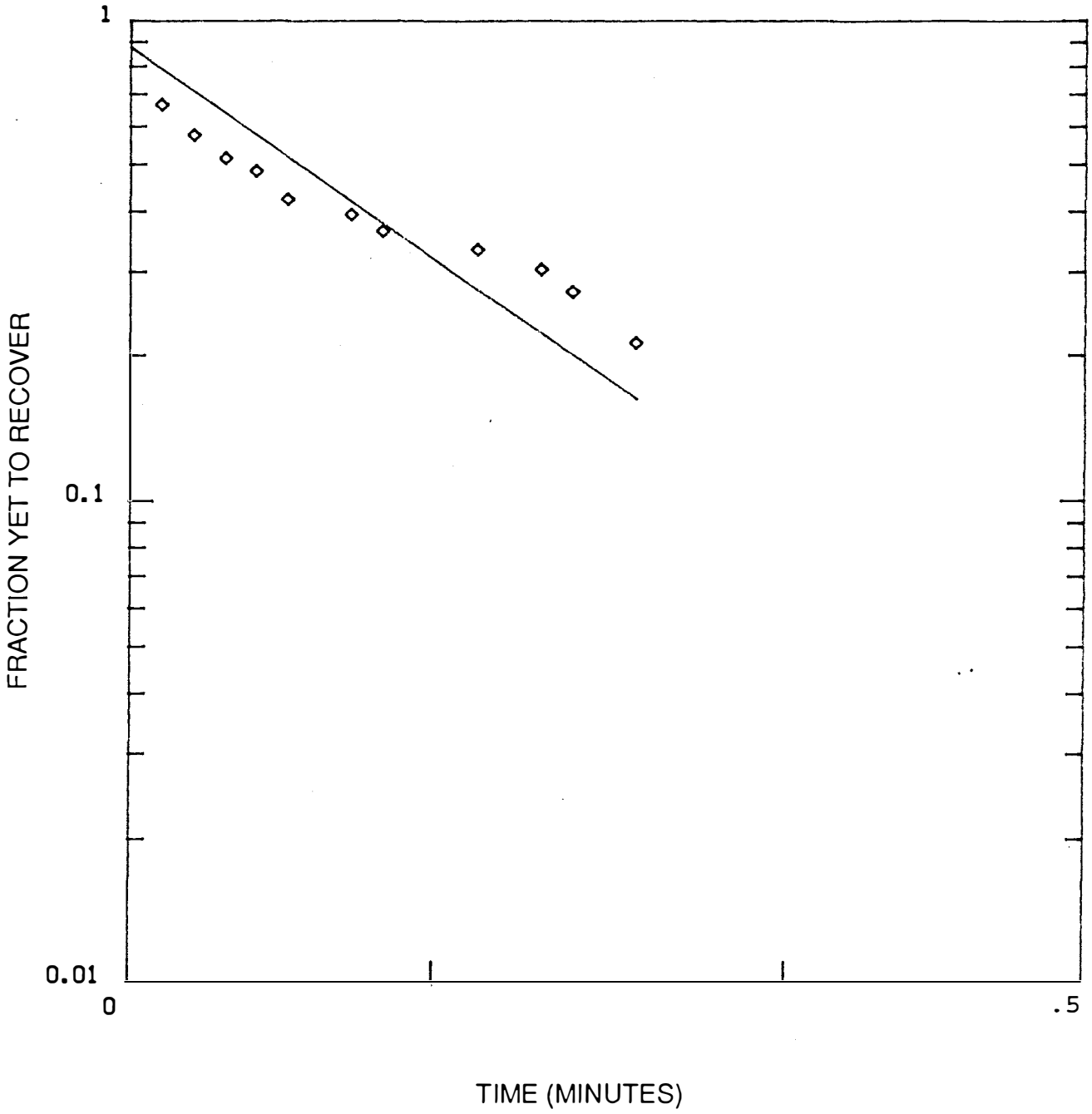
OBSERVATION WELL DFOMW-4
SLUG-TEST IN
HYDRAULIC CONDUCTIVITY =
1.6 X 10^{-3} cm/sec
R^2 = .858
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

GERAGHTY & MILLER, INC.
Environmental Services



OBSERVATION WELL DFOMW-4
SLUG-TEST OUT
HYDRAULIC CONDUCTIVITY =
2.6×10^{-3} cm/sec
$R^2 = .990$
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

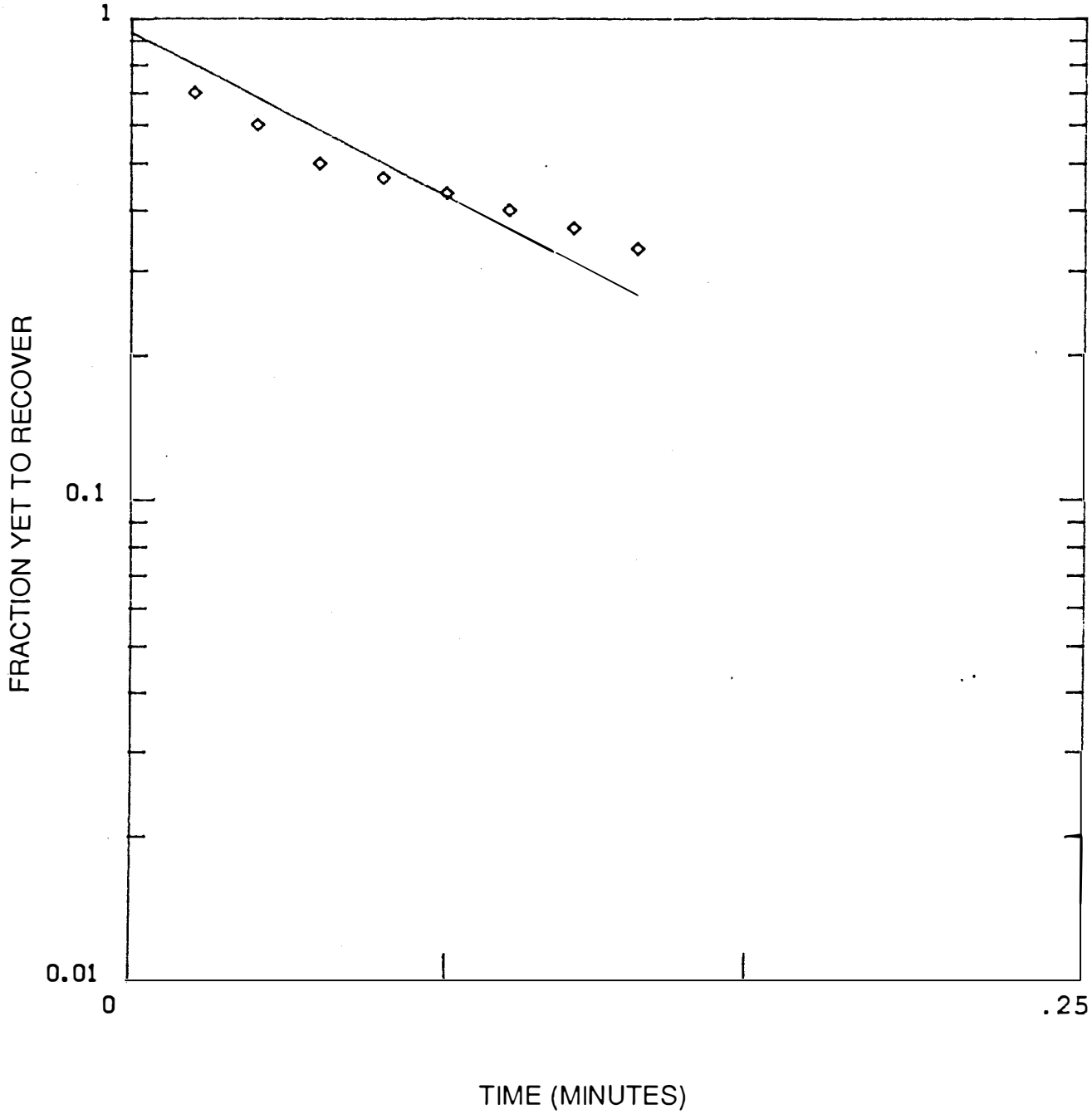
GERAGHTY & MILLER, INC.
Environmental Services



OBSERVATION WELL GPIMW-2
SLUG-TEST IN
HYDRAULIC CONDUCTIVITY =
2.4 X 10^{-3} cm/sec
R^2 = .937

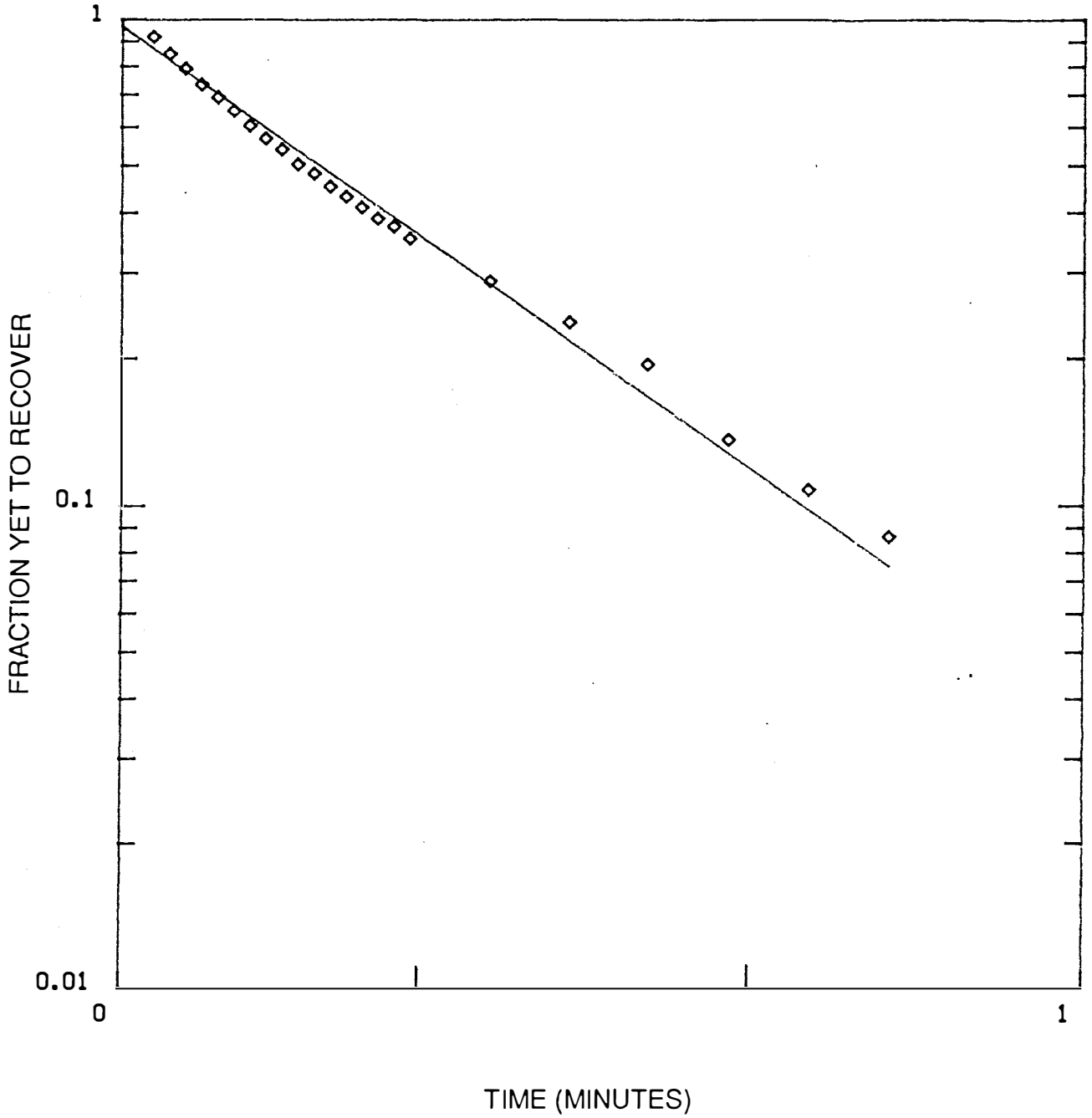
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

GERAGHTY & MILLER, INC.
Environmental Services



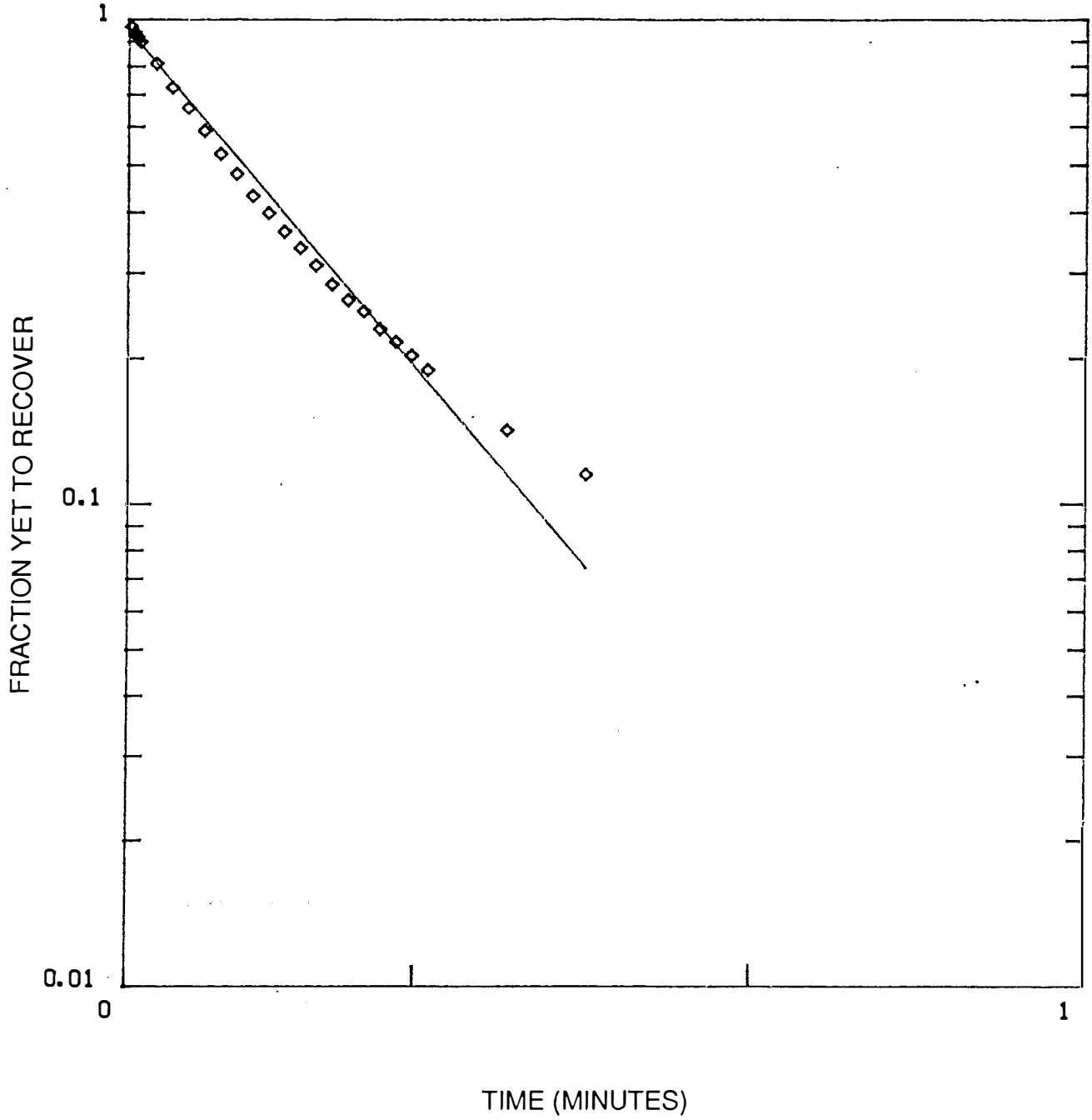
OBSERVATION WELL GPIMW-2
SLUG-TEST OUT
HYDRAULIC CONDUCTIVITY =
4.0×10^{-3} cm/sec
$R^2 = .965$
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

GERAGHTY & MILLER, INC.
Environmental Services



OBSERVATION WELL GQMW-1
SLUG-TEST IN
HYDRAULIC CONDUCTIVITY =
1.2×10^{-3} cm/sec
$R^2 = .995$
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

GERAGHTY & MILLER, INC.
Environmental Services



OBSERVATION WELL GQMW-1
SLUG-TEST OUT
HYDRAULIC CONDUCTIVITY =
2.0×10^{-3} cm/sec
$R^2 = .988$
3 M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.10

GERAGHTY & MILLER, INC.
Environmental Services

APPENDIX D

LABORATORY RESULTS FROM SOIL SAMPLES

SOIL SAMPLES

5/23/91

(TRIP BLANK)

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#:	91-3582B
Order Number:	P43547
Order Date:	05/23/91
Client:	07053
Sampled By:	R.C./E.C.
Sample Date:	N/S
Sample Time:	N/S

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

N/S = Not Submitted

R E S U L T S

reported on the following page(s)

mments: PPB = Parts Per Billion, ug/l; BDL = Below Detection Limit.
Method Reference: Federal Register 40 CFR Part 136, July 1, 1988.

Approved By : Peter Shuba

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-3582B-1
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: TRIP BLANK Sample Date: N/S Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	100	

Sample ID.: TRIP BLANK Test Parameters continued on next page

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-3582B-1
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: TRIP BLANK Sample Date: N/S Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	88	

end of report

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3582B

METHOD: 601-602

GC - VOLATILES

LAB ID	CLIENT ID	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED	QC BATCH	QC BLANK
91-3582B-1	TRIP BLANK	N/S	05-23-91	05-25-91	R036	B

N/S = NOT SUBMITTED

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

WM12
WATER VOLATILE MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

BATCH NUMBER: R036 SAMPLE SPIKED AND DUPLICATED = 91-3603A-1

METHOD/REFERENCE: 601-602/Federal Register, 40 CFR, Part 136, July 1, 1988

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	MS CONCENTRATION (ug/l)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50	BDL	49	98	61-145
Trichloroethene	50	BDL	52	104	71-120
Benzene	50	BDL	54	108	76-127
Toluene	50	BDL	53	106	76-125
Chlorobenzene	50	BDL	50	100	75-130

COMPOUND	SPIKE ADDED (ug/l)	MSD CONCENTRATION (ug/l)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50	46	92	6	14	61-145
Trichloroethene	50	50	100	4	14	71-120
Benzene	50	53	106	2	11	76-127
Toluene	50	54	108	2	13	76-125
Chlorobenzene	50	50	100	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY			TOT OUT
		TriF-toluene	2Br,Cl-propane	LIMITS	
MS	05-26-91	100 %	110 %	70-130	0
MSD	05-26-91	101 %	104 %	70-130	0

D = SURROGATE DILUTED OUT

NOTES: Units in ug/l = Parts Per Billion
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____
_____
_____
_____

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QC12
INDEPENDENT QC CHECK (IQC)

BATCH NUMBER: R036

METHOD/REFERENCE: 601-602/Federal Register, 40 CFR, Part 136, July 1, 1988.

PARAMETERS	EXPECTED VALUE	QC RESULTS	% RECOVERY	% REC. LIMITS
1,1-Dichloroethene	50	47	94	61-145
Trichloroethene	50	45	90	71-120
Benzene	50	53	106	76-127
Toluene	50	52	104	76-125
Chlorobenzene	50	52	104	75-130

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY			TOT OUT
		TriF-toluene	2Br,Cl-propane	LIMITS	
IQC	05-27-91	111 %	90 %	70-130	0

NOTE: PPB = Parts per Billion, ug/l
BDL = Below Detection limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

COMMENTS: _____

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

BW12
METHOD INSTRUMENT BLANK

BATCH NUMBER: R036

METHOD/REFERENCE: 601-602/Federal Register, 40 CFR, Part 136, July 1, 1988.

	DETECTION LIMITS	BLANK A (05-25-91) RESULTS	BLANK B (05-26-91) RESULTS	BLANK C (05-27-91) RESULTS
BENZENE	1	BDL	BDL	BDL
BROMODICHLOROMETHANE	1	BDL	BDL	BDL
BROMOFORM	2	BDL	BDL	BDL
BROMOMETHANE	2	BDL	BDL	BDL
CARBON TETRACHLORIDE	1	BDL	BDL	BDL
CHLOROBENZENE	1	BDL	BDL	BDL
CHLOROETHANE	5	BDL	BDL	BDL
2-CHLOROETHYLVINYL ETHER	5	BDL	BDL	BDL
CHLOROFORM	2	BDL	BDL	BDL
CHLOROMETHANE	5	BDL	BDL	BDL
DIBROMOCHLOROETHANE	5	BDL	BDL	BDL
1,2-DICHLOROBENZENE	2	BDL	BDL	BDL
1,3-DICHLOROBENZENE	2	BDL	BDL	BDL
1,4-DICHLOROBENZENE	2	BDL	BDL	BDL
DICHLORODIFLUOROMETHANE	5	BDL	BDL	BDL
1,1-DICHLOROETHANE	1	BDL	BDL	BDL
1,2-DICHLOROETHANE	1	BDL	BDL	BDL
1,1-DICHLOROETHENE	1	BDL	BDL	BDL
TRANS-1,2-DICHLOROETHYLENE	1	BDL	BDL	BDL
1,2-DICHLOROPROPANE	1	BDL	BDL	BDL
CIS-1,3-DICHLOROPROPENE	1	BDL	BDL	BDL
TRANS-1,3-DICHLOROPROPENE	1	BDL	BDL	BDL
ETHYL BENZENE	1	BDL	BDL	BDL
METHYLENE CHLORIDE	3	BDL	BDL	BDL
METHYL TERT-BUTYL ETHER	5	BDL	BDL	BDL
1,1,2,2-TETRACHLOROETHANE	1	BDL	BDL	BDL
TETRACHLOROETHENE	3	BDL	BDL	BDL
TOLUENE	5	BDL	BDL	BDL
1,1,1-TRICHLOROETHANE	1	BDL	BDL	BDL
1,1,2-TRICHLOROETHANE	2	BDL	BDL	BDL
TRICHLOROETHENE	1	BDL	BDL	BDL
TRICHLOROFLUOROMETHANE	1	BDL	BDL	BDL
VINYL CHLORIDE	1	BDL	BDL	BDL
XYLENE	2	BDL	BDL	BDL
A,A,A-TRIFLUOROTOLUENE *SURR*	%REC	100	99	110
2-BROMO-1-CHLOROPROPANE *SURR*	%REC	107	121	123

NOTES: Units in ug/l = Parts Per Billion
BDL = Below Detection Limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
Samples within the same calibration period may display different dates due to operation past midnight.
N/A = NOT APPLICABLE

SOIL SAMPLES

5/20 - 22/91

(DOWNTOWN)

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-3582A
Order Number: P43546
Order Date: 05/23/91
Client: 07053
Sampled By: R.C./E.C.
Sample Date: 05/20-22
Sample Time: N/S

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
3582A-1	DSOMW-1/16-18'	DIESEL	PPM	540	5.0
3582A-2	DSOMW-1/22-24'	MINERAL SPIRITS/DIESEL	PPM	750/340	5.0
3582A-3	DSOMW-2/14-16'	TPH/GC/FID	PPM	BDL	5.0
3582A-4	DSOMW-2/24-26'	DIESEL	PPM	48	5.0
3582A-5	DSOMW-3/18-20'	TPH/GC/FID	PPM	BDL	5.0
3582A-6	DSOMW-3/26-28'	DIESEL	PPM	2510	5.0
3582A-7	DFOMW5/12-14'	TPH/GC/FID	PPM	BDL	5.0
3582A-8	DFOMW-5/24-26'	DIESEL	PPM	3080	5.0

Comments: PPM = Parts Per Million, mg/kg on a dry basis; PPB = Parts Per Billion, ug/kg on a dry basis. Method Reference: SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits. D = Dilute Out.

Approved By : Peter Shuba

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-1
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-1/16-18' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	54
BENZYL CHLORIDE	PPB	BDL	270
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2700
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2700
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	54
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	54
CHLOROACETALDEHYDE	PPB	BDL	54
CHLOROBENZENE	PPB	BDL	54
CHLOROETHANE	PPB	BDL	270
2-CHLOROETHYLVINYL ETHER	PPB	BDL	270
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	270
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2700
CHLOROTOLUENE	PPB	BDL	54
DIBROMOCHLOROMETHANE	PPB	BDL	270
DIBROMOMETHANE	PPB	BDL	270
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	270
1,1-DICHLOROETHANE	PPB	BDL	54
1,2-DICHLOROETHANE	PPB	BDL	54
1,1-DICHLOROETHENE	PPB	BDL	54
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	54
DICHLOROMETHANE	PPB	BDL	270
1,2-DICHLOROPROPANE	PPB	BDL	54
CIS-1,3-DICHLOROPROPENE	PPB	BDL	54
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	54
ETHYLBENZENE	PPB	BDL	54
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	54
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	54
TETRACHLOROETHENE	PPB	BDL	160

Sample ID.: DSOMW-1/16-18' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-1
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-1/16-18' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	BDL	270
1,1,1-TRICHLOROETHANE	PPB	BDL	54
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	54
TRICHLOROFLUOROMETHANE	PPB	BDL	54
TRICHLOROPROPANE	PPB	BDL	270
VINYL CHLORIDE	PPB	BDL	54
XYLENE	PPB	310	110
1-CHLOROHEXANE	PPB	BDL	270
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	91	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	106	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-2
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-1/22-24' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	120
BENZYL CHLORIDE	PPB	BDL	600
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	6000
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	6000
BROMOBENZENE	PPB	BDL	360
BROMODICHLOROMETHANE	PPB	BDL	120
BROMOFORM	PPB	BDL	240
BROMOMETHANE	PPB	BDL	240
CARBON TETRACHLORIDE	PPB	BDL	120
CHLOROACETALDEHYDE	PPB	BDL	120
CHLOROBENZENE	PPB	BDL	120
CHLOROETHANE	PPB	BDL	600
2-CHLOROETHYLVINYL ETHER	PPB	BDL	600
CHLOROFORM	PPB	BDL	240
CHLOROMETHANE	PPB	BDL	600
CHLOROMETHYLMETHYL ETHER	PPB	BDL	6000
CHLOROTOLUENE	PPB	BDL	120
DIBROMOCHLOROMETHANE	PPB	BDL	600
DIBROMOMETHANE	PPB	BDL	600
1,2-DICHLOROBENZENE	PPB	BDL	240
1,3-DICHLOROBENZENE	PPB	BDL	240
1,4-DICHLOROBENZENE	PPB	BDL	240
DICHLORODIFLUOROMETHANE	PPB	BDL	600
1,1-DICHLOROETHANE	PPB	BDL	120
1,2-DICHLOROETHANE	PPB	BDL	120
1,1-DICHLOROETHENE	PPB	BDL	120
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	120
DICHLOROMETHANE	PPB	BDL	600
1,2-DICHLOROPROPANE	PPB	BDL	120
CIS-1,3-DICHLOROPROPENE	PPB	BDL	120
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	120
ETHYLBENZENE	PPB	2700	120
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	120
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	120
TETRACHLOROETHENE	PPB	BDL	360

Sample ID.: DSOMW-1/22-24' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-2
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-1/22-24' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	3500	600
1,1,1-TRICHLOROETHANE	PPB	BDL	120
1,1,2-TRICHLOROETHANE	PPB	BDL	240
TRICHLOROETHENE	PPB	BDL	120
TRICHLOROFLUOROMETHANE	PPB	BDL	120
TRICHLOROPROPANE	PPB	BDL	600
VINYL CHLORIDE	PPB	BDL	120
XYLENE	PPB	19000	240
1-CHLOROHEXANE	PPB	BDL	600
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	D	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	D	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-3
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-2/14-16' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	57
BENZYL CHLORIDE	PPB	BDL	290
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2900
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2900
BROMOBENZENE	PPB	BDL	170
BROMODICHLOROMETHANE	PPB	BDL	57
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	57
CHLOROACETALDEHYDE	PPB	BDL	57
CHLOROBENZENE	PPB	BDL	57
CHLOROETHANE	PPB	BDL	290
2-CHLOROETHYLVINYL ETHER	PPB	BDL	290
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	290
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2900
CHLOROTOLUENE	PPB	BDL	57
DIBROMOCHLOROMETHANE	PPB	BDL	290
DIBROMOMETHANE	PPB	BDL	290
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	290
1,1-DICHLOROETHANE	PPB	BDL	57
1,2-DICHLOROETHANE	PPB	BDL	57
1,1-DICHLOROETHENE	PPB	BDL	57
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	57
DICHLOROMETHANE	PPB	BDL	290
1,2-DICHLOROPROPANE	PPB	BDL	57
CIS-1,3-DICHLOROPROPENE	PPB	BDL	57
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	57
ETHYLBENZENE	PPB	BDL	57
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	57
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	57
TETRACHLOROETHENE	PPB	BDL	170

Sample ID.: DSOMW-2/14-16' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-3
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-2/14-16' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	BDL	290
1,1,1-TRICHLOROETHANE	PPB	BDL	57
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	57
TRICHLOROFLUOROMETHANE	PPB	BDL	57
TRICHLOROPROPANE	PPB	BDL	290
VINYL CHLORIDE	PPB	BDL	57
XYLENE	PPB	BDL	110
1-CHLOROHEXANE	PPB	BDL	290
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	91	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	116	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-4
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-2/24-26' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	57
BENZYL CHLORIDE	PPB	BDL	290
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2900
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2900
BROMOBENZENE	PPB	BDL	170
BROMODICHLOROMETHANE	PPB	BDL	57
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	57
CHLOROACETALDEHYDE	PPB	BDL	57
CHLOROBENZENE	PPB	BDL	57
CHLOROETHANE	PPB	BDL	290
2-CHLOROETHYLVINYL ETHER	PPB	BDL	290
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	290
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2900
CHLOROTOLUENE	PPB	BDL	57
DIBROMOCHLOROMETHANE	PPB	BDL	290
DIBROMOMETHANE	PPB	BDL	290
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	290
1,1-DICHLOROETHANE	PPB	BDL	57
1,2-DICHLOROETHANE	PPB	BDL	57
1,1-DICHLOROETHENE	PPB	BDL	57
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	57
DICHLOROMETHANE	PPB	BDL	290
1,2-DICHLOROPROPANE	PPB	BDL	57
CIS-1,3-DICHLOROPROPENE	PPB	BDL	57
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	57
ETHYLBENZENE	PPB	BDL	57
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	57
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	57
TETRACHLOROETHENE	PPB	BDL	170

Sample ID.: DSOMW-2/24-26' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-4
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-2/24-26' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	BDL	290
1,1,1-TRICHLOROETHANE	PPB	BDL	57
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	57
TRICHLOROFLUOROMETHANE	PPB	BDL	57
TRICHLOROPROPANE	PPB	BDL	290
VINYL CHLORIDE	PPB	BDL	57
XYLENE	PPB	130	110
1-CHLOROHEXANE	PPB	BDL	290
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	95	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	106	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-5
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-3/18-20' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	52
BENZYL CHLORIDE	PPB	BDL	260
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2600
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2600
BROMOBENZENE	PPB	BDL	150
BROMODICHLOROMETHANE	PPB	BDL	52
BROMOFORM	PPB	BDL	100
BROMOMETHANE	PPB	BDL	100
CARBON TETRACHLORIDE	PPB	BDL	52
CHLOROACETALDEHYDE	PPB	BDL	52
CHLOROBENZENE	PPB	BDL	52
CHLOROETHANE	PPB	BDL	260
2-CHLOROETHYLVINYL ETHER	PPB	BDL	260
CHLOROFORM	PPB	BDL	100
CHLOROMETHANE	PPB	BDL	260
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2600
CHLOROTOLUENE	PPB	BDL	52
DIBROMOCHLOROMETHANE	PPB	BDL	260
DIBROMOMETHANE	PPB	BDL	260
1,2-DICHLOROBENZENE	PPB	BDL	100
1,3-DICHLOROBENZENE	PPB	BDL	100
1,4-DICHLOROBENZENE	PPB	BDL	100
DICHLORODIFLUOROMETHANE	PPB	BDL	260
1,1-DICHLOROETHANE	PPB	BDL	52
1,2-DICHLOROETHANE	PPB	BDL	52
1,1-DICHLOROETHENE	PPB	BDL	52
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	52
DICHLOROMETHANE	PPB	BDL	260
1,2-DICHLOROPROPANE	PPB	BDL	52
CIS-1,3-DICHLOROPROPENE	PPB	BDL	52
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	52
ETHYLBENZENE	PPB	BDL	52
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	52
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	52
TETRACHLOROETHENE	PPB	BDL	150

Sample ID.: DSOMW-3/18-20' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-5
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-3/18-20' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	BDL	260
1,1,1-TRICHLOROETHANE	PPB	BDL	52
1,1,2-TRICHLOROETHANE	PPB	BDL	100
TRICHLOROETHENE	PPB	BDL	52
TRICHLOROFLUOROMETHANE	PPB	BDL	52
TRICHLOROPROPANE	PPB	BDL	260
VINYL CHLORIDE	PPB	BDL	52
XYLENE	PPB	BDL	100
1-CHLOROHEXANE	PPB	BDL	260
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	94	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	117	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-6
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-3/26-28' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	56
BENZYL CHLORIDE	PPB	BDL	280
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2800
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2800
BROMOBENZENE	PPB	BDL	170
BROMODICHLOROMETHANE	PPB	BDL	56
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	56
CHLOROACETALDEHYDE	PPB	BDL	56
CHLOROBENZENE	PPB	BDL	56
CHLOROETHANE	PPB	BDL	280
2-CHLOROETHYLVINYL ETHER	PPB	BDL	280
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	280
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2800
CHLOROTOLUENE	PPB	BDL	56
DIBROMOCHLOROMETHANE	PPB	BDL	280
DIBROMOMETHANE	PPB	BDL	280
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	280
1,1-DICHLOROETHANE	PPB	BDL	56
1,2-DICHLOROETHANE	PPB	BDL	56
1,1-DICHLOROETHENE	PPB	BDL	56
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	56
DICHLOROMETHANE	PPB	BDL	280
1,2-DICHLOROPROPANE	PPB	BDL	56
CIS-1,3-DICHLOROPROPENE	PPB	BDL	56
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	56
ETHYLBENZENE	PPB	BDL	56
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	56
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	56
TETRACHLOROETHENE	PPB	BDL	170

Sample ID.: DSOMW-3/26-28' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-6
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DSOMW-3/26-28' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	BDL	280
1,1,1-TRICHLOROETHANE	PPB	BDL	56
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	56
TRICHLOROFLUOROMETHANE	PPB	BDL	56
TRICHLOROPROPANE	PPB	BDL	280
VINYL CHLORIDE	PPB	BDL	56
XYLENE	PPB	1300	110
1-CHLOROHEXANE	PPB	BDL	280
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	82	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	108	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-7
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DFOMW5/12-14' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	53
BENZYL CHLORIDE	PPB	BDL	260
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2600
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2600
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	53
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	53
CHLOROACETALDEHYDE	PPB	BDL	53
CHLOROBENZENE	PPB	BDL	53
CHLOROETHANE	PPB	BDL	260
2-CHLOROETHYLVINYL ETHER	PPB	BDL	260
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	260
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2600
CHLOROTOLUENE	PPB	BDL	53
DIBROMOCHLOROMETHANE	PPB	BDL	260
DIBROMOMETHANE	PPB	BDL	260
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	260
1,1-DICHLOROETHANE	PPB	BDL	53
1,2-DICHLOROETHANE	PPB	BDL	53
1,1-DICHLOROETHENE	PPB	BDL	53
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	53
DICHLOROMETHANE	PPB	BDL	260
1,2-DICHLOROPROPANE	PPB	BDL	53
CIS-1,3-DICHLOROPROPENE	PPB	BDL	53
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	53
ETHYLBENZENE	PPB	BDL	53
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	53
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	53
TETRACHLOROETHENE	PPB	BDL	160

Sample ID.: DFOMW5/12-14' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-7
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DFOMW5/12-14' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	BDL	260
1,1,1-TRICHLOROETHANE	PPB	BDL	53
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	53
TRICHLOROFLUOROMETHANE	PPB	BDL	53
TRICHLOROPROPANE	PPB	BDL	260
VINYL CHLORIDE	PPB	BDL	53
XYLENE	PPB	BDL	110
1-CHLOROHEXANE	PPB	BDL	260
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	103	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	114	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-8
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DFOMW-5/24-26' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	54
BENZYL CHLORIDE	PPB	BDL	270
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2700
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2700
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	54
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	54
CHLOROACETALDEHYDE	PPB	BDL	54
CHLOROBENZENE	PPB	BDL	54
CHLOROETHANE	PPB	BDL	270
2-CHLOROETHYLVINYL ETHER	PPB	BDL	270
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	270
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2700
CHLOROTOLUENE	PPB	BDL	54
DIBROMOCHLOROMETHANE	PPB	BDL	270
DIBROMOMETHANE	PPB	BDL	270
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	270
1,1-DICHLOROETHANE	PPB	BDL	54
1,2-DICHLOROETHANE	PPB	BDL	54
1,1-DICHLOROETHENE	PPB	BDL	54
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	54
DICHLOROMETHANE	PPB	BDL	270
1,2-DICHLOROPROPANE	PPB	BDL	54
CIS-1,3-DICHLOROPROPENE	PPB	BDL	54
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	54
ETHYLBENZENE	PPB	2900	54
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	54
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	54
TETRACHLOROETHENE	PPB	BDL	160

Sample ID.: DFOMW-5/24-26' Test Parameters continued on next page

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3582A-8
Order Date: 05/23/91
Sampled By: R.C./E.C.

Sample ID.: DFOMW-5/24-26' Sample Date: 05/20-22 Time: N/S

VOL/8010&8020 VOLATILE METHODS 8010 & 8020 continued

Parameter	Units	Result	Detection Limit
TOLUENE	PPB	330	270
1,1,1-TRICHLOROETHANE	PPB	BDL	54
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	54
TRICHLOROFLUOROMETHANE	PPB	BDL	54
TRICHLOROPROPANE	PPB	BDL	270
VINYL CHLORIDE	PPB	BDL	54
XYLENE	PPB	4900	110
1-CHLOROHEXANE	PPB	BDL	270
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	87	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	109	

end of report

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3582A

METHOD: 8010-8020

GC - VOLATILES

LAB ID	CLIENT ID	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED	QC BATCH	QC BLANK
91-3582A-1	DSOMW-1/16-18'	05-21-91	05-23-91	05-25-91	G044	A
91-3582A-2	DSOMW-1/22-24'	05-21-91	05-23-91	05-26-91	G044	B
91-3582A-3	DSOMW-2/14-16'	05-20-91	05-23-91	05-25-91	G044	A
91-3582A-4	DSOMW-2/24-26'	05-20-91	05-23-91	05-26-91	G044	B
91-3582A-5	DSOMW-3/18-20'	05-21-91	05-23-91	05-25-91	G044	A
91-3582A-6	DSOMW-3/26-28'	05-21-91	05-23-91	05-25-91	G044	A
91-3582A-7	DFOMW-5/12-14'	05-22-91	05-23-91	05-26-91	G044	B
91-3582A-8	DFOMW-5/24-26'	05-22-91	05-23-91	05-28-91	G045	A

N/S = NOT SUBMITTED

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SM12
SOIL VOLATILE MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

BATCH NUMBER: G044 SAMPLE SPIKED AND DUPLICATED = 91-3582A-1

METHOD/REFERENCE: 8010-8020/SW-846, 3rd Edition, November 1986.

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	543	BDL	472	87	59-172
Trichloroethene	543	BDL	471	87	62-137
Benzene	543	BDL	486	90	66-142
Toluene	543	BDL	598	110	59-139
Chlorobenzene	543	BDL	629	116	60-133

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	543	487	90	3	22	59-172
Trichloroethene	543	510	94	8	24	62-137
Benzene	543	581	107	17	21	66-142
Toluene	543	689	127	14	21	59-139
Chlorobenzene	543	653	120	3	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY			TOT OUT
		TriF-toluene	2Br,Cl-propane	LIMITS	
MS	05-25-91	96 %	104 %	70-130	0
MSD	05-25-91	100 %	103 %	70-130	0

D = SURROGATE DILUTED OUT

NOTES: Units in ug/kg = Parts Per Billion
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____
_____
_____
_____

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QC12
INDEPENDENT QC CHECK (IQC)

BATCH NUMBER: G044

METHOD/REFERENCE: 8010-8020/SW-846,3rd Edition, November 1986.

PARAMETERS	EXPECTED VALUE	QC RESULTS	% RECOVERY	% REC. LIMITS
1,1-Dichloroethene	50	50	100	61-145
Trichloroethene	50	44	88	71-120
Benzene	50	45	90	76-127
Toluene	50	50	100	76-125
Chlorobenzene	50	50	100	75-130

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY			TOT OUT
		TriF-toluene	2Br,Cl-propane	LIMITS	
IQC	05-27-91	98 %	78 %	70-130	0

NOTE: PPB = Parts per Billion, ug/l
BDL = Below Detection limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

COMMENTS: _____
_____
_____
_____

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

BS12
METHOD INSTRUMENT BLANK

BATCH NUMBER: G044

METHOD/REFERENCE: 8010-8020/SW-846, 3rd Edition, November 1986.

	DETECTION LIMITS	BLANK A (05-25-91) RESULTS	BLANK B (05-26-91) RESULTS	BLANK C (05-27-91) RESULTS
BENZENE	50	BDL	BDL	BDL
BENZYL CHLORIDE	250	BDL	BDL	BDL
BIS(2-CHLOROETHOXY)METHANE	2500	BDL	BDL	BDL
BIS(2-CHLOROISOPROPYL)ETHER	2500	BDL	BDL	BDL
BROMOBENZENE	150	BDL	BDL	BDL
BROMODICHLOROMETHANE	50	BDL	BDL	BDL
BROMOFORM	100	BDL	BDL	BDL
BROMOMETHANE	100	BDL	BDL	BDL
CARBON TETRACHLORIDE	50	BDL	BDL	BDL
CHLOROACETALDEHYDE	50	BDL	BDL	BDL
CHLOROBENZENE	50	BDL	BDL	BDL
CHLOROETHANE	250	BDL	BDL	BDL
2-CHLOROETHYLVINYL ETHER	250	BDL	BDL	BDL
CHLOROFORM	100	BDL	BDL	BDL
CHLOROMETHANE	250	BDL	BDL	BDL
CHLOROMETHYLMETHYL ETHER	2500	BDL	BDL	BDL
CHLOROTOLUENE	50	BDL	BDL	BDL
DIBROMOCHLOROETHANE	250	BDL	BDL	BDL
DIBROMOMETHANE	100	BDL	BDL	BDL
1,2-DICHLOROBENZENE	100	BDL	BDL	BDL
1,3-DICHLOROBENZENE	100	BDL	BDL	BDL
1,4-DICHLOROBENZENE	100	BDL	BDL	BDL
DICHLORODIFLUOROMETHANE	250	BDL	BDL	BDL
1,1-DICHLOROETHANE	50	BDL	BDL	BDL
1,2-DICHLOROETHANE	50	BDL	BDL	BDL
1,1-DICHLOROETHENE	50	BDL	BDL	BDL
TRANS-1,2-DICHLOROETHENE	50	BDL	BDL	BDL
DICHLOROMETHANE	150	BDL	BDL	BDL
1,2-DICHLOROPROPANE	50	BDL	BDL	BDL
TRANS-1,3-DICHLOROPROPENE	50	BDL	BDL	BDL
ETHYL BENZENE	50	BDL	BDL	BDL
METHYL TERT-BUTYL ETHER	250	BDL	BDL	BDL

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

	DETECTION LIMITS	BLANK A (05-25-91) RESULTS	BLANK B (05-26-91) RESULTS	BLANK C (05-27-91) RESULTS
1,1,1,2-TETRACHLOROETHANE	50	BDL	BDL	BDL
1,1,2,2-TETRACHLOROETHANE	150	BDL	BDL	BDL
TETRACHLOROETHENE	50	BDL	BDL	BDL
TOLUENE	250	BDL	BDL	BDL
1,1,1-TRICHLOROETHANE	50	BDL	BDL	BDL
1,1,2-TRICHLOROETHANE	100	BDL	BDL	BDL
TRICHLOROETHENE	50	BDL	BDL	BDL
TRICHLOROFLUOROMETHANE	50	BDL	BDL	BDL
TRICHLOROPROPANE	250	BDL	BDL	BDL
VINYL CHLORIDE	50	BDL	BDL	BDL
XYLENE	100	BDL	BDL	BDL
1-CHLOROHEXANE	250	BDL	BDL	BDL
A,A,A-TRIFLUOROTOLUENE *SURR*	%REC	90	113	95
2-BROMO-1-CHLOROPROPANE *SURR*	%REC	117	124	103

Note: Units in ug/kg = Parts Per Billion.
BDL = Below Detection Limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
Samples within the same calibration period may display different dates due to operation past midnight.
N/A = NOT APPLICABLE

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SM12
SOIL VOLATILE MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

BATCH NUMBER: G045 SAMPLE SPIKED AND DUPLICATED = 91-3621-1

METHOD/REFERENCE: 8010-8020/SW-846, 3rd Edition, November 1986.

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	543	BDL	595	110	59-172
Trichloroethene	543	BDL	614	113	62-137
Benzene	543	BDL	538	99	66-142
Toluene	543	BDL	504	93	59-139
Chlorobenzene	543	BDL	490	90	60-133

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	543	567	104	6	22	59-172
Trichloroethene	543	671	124	9	24	62-137
Benzene	543	600	110	11	21	66-142
Toluene	543	584	108	15	21	59-139
Chlorobenzene	543	562	103	13	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY			TOT OUT
		TriF-toluene	2Br,Cl-propane	LIMITS	
MS	05-30-91	100 %	103 %	70-130	0
MSD	05-30-91	104 %	108 %	70-130	0

D = SURROGATE DILUTED OUT

NOTES: Units in ug/kg = Parts Per Billion
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____
_____
_____
_____

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QC12
INDEPENDENT QC CHECK (IQC)

BATCH NUMBER: G045

METHOD/REFERENCE: 8010-8020/SW-846,3rd Edition, November 1986.

PARAMETERS	EXPECTED VALUE	QC RESULTS	% RECOVERY	% REC. LIMITS
1,1-Dichloroethene	50	46	90	61-145
Trichloroethene	50	51	102	71-120
Benzene	50	43	86	76-127
Toluene	50	47	94	76-125
Chlorobenzene	50	47	94	75-130

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY			TOT OUT
		TriF-toluene	2Br,Cl-propane	LIMITS	
IQC	05-30-91	102 %	114 %	70-130	0

NOTE: PPB = Parts per Billion, ug/l
BDL = Below Detection limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

COMMENTS: _____

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

BS12
METHOD INSTRUMENT BLANK

BATCH NUMBER: G045

METHOD/REFERENCE: 8010-8020/SW-846, 3rd Edition, November 1986.

	DETECTION LIMITS	BLANK A (05-28-91) RESULTS	BLANK B (05-29-91) RESULTS	BLANK C (05-30-91) RESULTS
BENZENE	50	BDL	BDL	BDL
BENZYL CHLORIDE	250	BDL	BDL	BDL
BIS(2-CHLOROETHOXY)METHANE	2500	BDL	BDL	BDL
BIS(2-CHLOROISOPROPYL)ETHER	2500	BDL	BDL	BDL
BROMOBENZENE	150	BDL	BDL	BDL
BROMODICHLOROMETHANE	50	BDL	BDL	BDL
BROMOFORM	100	BDL	BDL	BDL
BROMOMETHANE	100	BDL	BDL	BDL
CARBON TETRACHLORIDE	50	BDL	BDL	BDL
CHLOROACETALDEHYDE	50	BDL	BDL	BDL
CHLOROBENZENE	50	BDL	BDL	BDL
CHLOROETHANE	250	BDL	BDL	BDL
2-CHLOROETHYLVINYL ETHER	250	BDL	BDL	BDL
CHLOROFORM	100	BDL	BDL	BDL
CHLOROMETHANE	250	BDL	BDL	BDL
CHLOROMETHYLMETHYL ETHER	2500	BDL	BDL	BDL
CHLOROTOLUENE	50	BDL	BDL	BDL
DIBROMOCHLOROETHANE	250	BDL	BDL	BDL
DIBROMOMETHANE	100	BDL	BDL	BDL
1,2-DICHLOROBENZENE	100	BDL	BDL	BDL
1,3-DICHLOROBENZENE	100	BDL	BDL	BDL
1,4-DICHLOROBENZENE	100	BDL	BDL	BDL
DICHLORODIFLUOROMETHANE	250	BDL	BDL	BDL
1,1-DICHLOROETHANE	50	BDL	BDL	BDL
1,2-DICHLOROETHANE	50	BDL	BDL	BDL
1,1-DICHLOROETHENE	50	BDL	BDL	BDL
TRANS-1,2-DICHLOROETHENE	50	BDL	BDL	BDL
DICHLOROMETHANE	150	BDL	BDL	BDL
1,2-DICHLOROPROPANE	50	BDL	BDL	BDL
TRANS-1,3-DICHLOROPROPENE	50	BDL	BDL	BDL
ETHYL BENZENE	50	BDL	BDL	BDL
METHYL TERT-BUTYL ETHER	250	BDL	BDL	BDL

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

	DETECTION LIMITS	BLANK A (05-28-91) RESULTS	BLANK B (05-30-91) RESULTS	BLANK C (05-30-91) RESULTS
1,1,1,2-TETRACHLOROETHANE	50	BDL	BDL	BDL
1,1,2,2-TETRACHLOROETHANE	150	BDL	BDL	BDL
TETRACHLOROETHENE	50	BDL	BDL	BDL
TOLUENE	250	BDL	BDL	BDL
1,1,1-TRICHLOROETHANE	50	BDL	BDL	BDL
1,1,2-TRICHLOROETHANE	100	BDL	BDL	BDL
TRICHLOROETHENE	50	BDL	BDL	BDL
TRICHLOROFLUOROMETHANE	50	BDL	BDL	BDL
TRICHLOROPROPANE	250	BDL	BDL	BDL
VINYL CHLORIDE	50	BDL	BDL	BDL
XYLENE	100	BDL	BDL	BDL
1-CHLOROHEXANE	250	BDL	BDL	BDL
A,A,A-TRIFLUOROTOLUENE *SURR*	%REC	101	105	105
2-BROMO-1-CHLOROPROPANE *SURR*	%REC	111	123	121

Note: Units in ug/kg = Parts Per Billion.
BDL = Below Detection Limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
Samples within the same calibration period may display different dates due to operation past midnight.
N/A = NOT APPLICABLE

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3582A BATCH: 63S

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-3582A-1	DSOMW-1/16-18'	05-24-91	06-06-91
91-3582A-2	DSOMW-1/22-24'	05-24-91	06-06-91
91-3582A-3	DSOMW-2/14-16'	05-24-91	06-06-91
91-3582A-4	DSOMW-2/24-26'	05-24-91	06-06-91
91-3582A-5	DSOMW-3/18-20'	05-24-91	06-06-91
91-3582A-6	DSOMW-3/26-28'	05-24-91	06-06-91
91-3582A-7	DFOMW-5/12-14'	05-24-91	06-06-91
91-3582A-8	DFOMW-5/24-26'	05-24-91	06-06-91
MATRIX SPIKE		05-23-91	05-24-91
MATRIX SPIKE DUP.		05-23-91	05-24-91
BLANK		05-24-91	05-28-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	MATRIX SPIKE RESULTS	MATRIX SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC MATRIX SPIKE	%REC MATRIX SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	5	BDL	99	98	140	71	70	37-133	1	30

NOTES: PPM = Parts Per Million, mg/kg.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and reference below.
SAMPLE SPIKED AND DUPLICATED - 91-3582A-5.

REFERENCE: SW-846, 3rd Edition, November 1986.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

ient: GM Inc. WI.
thod of Shipment Fedx
te Received: 5/23/91
mple Type: Soil

there a chain of custody?	(Y)	N
the chain of custody signed?	(Y)	N
re samples received cold?	(Y)	N
re any containers broken?	Y	(N)
re samples preserved correctly?	(Y)	N
re samples received within lding time?	(Y)	N

OJECT NUMBER WI 21202
RCHASE ORDER NUMBER
. LEVEL 1 (2) 3 4

MMENTS:
Temp. 4°C

ATI Lab I.D.# 91-3582

Sample 1	DSomw-1/16-18'
2	DSomw-1/22-24'
3	DSomw-2/14-16'
4	DSomw-2/24-26'
5	DSomw-3/18-20'
6	DSomw-3/26-28'
7	DfOmw-5/12-14'
8	DfOmw-5/24-26'
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

ENT NOTIFIED YES ( ) NO (X)
/TIME:
ES:

INSPECTED BY: Prathesia Catchings
DATE INSPECTED: 5/23/91

Environmental Services

Project Number WI 21202

Project Location Wausa, WI

Laboratory ATI

Sampler(s)/Affiliation R. Creighton
E. CARMAN

(see attached)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

91-3582 A/B

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID											TOTAL
DSOMW-1/16-18'		5/21/91			1	1								2 A1
DSOMW-1/22-24'		5/21/91			1	1								2 A2
DSOMW-2/14-16'		5/20/91			1	1								2 A3
DSOMW-2/24-26'		5/20/91			1	1								2 A4
DSOMW-3/18-20'		5/21/91			1	1								2 A5
DSOMW-3/26-28'		5/21/91			1	1								2 A6
DFOMW5/12-14'		5/22/91			1	1								2 A7
DFOMW-5/24-26'		5/22/91			1	1								2 A8
Trip Blank														B1
					8	8								

R.C.

Sample Code: L = Liquid; (S) Solid; A = Air

Total No. of Bottles/ Containers: 16

Relinquished by: E. CARMAN Organization: Geraghty + Miller Date 5/22/91 Time 6:00 Seal Intact? (Yes) No N/A

Received by: _____ Organization: _____

Relinquished by: Katherine Catchings Organization: ATI Date 5/23/91 Time 10:00 Seal Intact? Yes No N/A

Received by: _____ Organization: _____

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

G&M Form 09 1-90

Southprint 90-0136

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: GM INC. WI

Method of Shipment fedx

Date Received: 5/23/91

Sample Type: Soil

Is there a chain of custody?	(Y)	N
Is the chain of custody signed?	(Y)	N
Were samples received cold?	(Y)	N
Were any containers broken?	Y	(N)
Were samples preserved correctly?	(Y)	N
Were samples received within holding time?	(Y)	N

PROJECT NUMBER WI 21202

PURCHASE ORDER NUMBER_____

Q.C. LEVEL 1 (2) 3 4

COMMENTS:

Temp. 4°C

ATI Lab I.D.# 91-3582

Sample 1	DSOMW-1/16-18'
2	DSOMW-1/22-24'
3	DSOMW-2/14-16'
4	DSOMW-2/24-26'
5	DSOMW-3/18-20'
6	DSOMW-3/26-28'
7	DFOMW-5/12-14'
8	DFOMW-5/24-26'
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

CLIENT NOTIFIED YES ( ) NO (X)
DATE/TIME:_____

NOTES:_____

INSPECTED BY: Prathesia Catchings

DATE INSPECTED: 5/23/91

& MILLER, INC.
Environmental Services

Laboratory Task Order No. 3516 (see attached)

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number WI 21202
Project Location Wausa, WI
Laboratory ATI
Sampler(s)/Affiliation R. Creighton
E. CARMAN

SAMPLE BOTTLE / CONTAINER DESCRIPTION

9117582 A/B
#175.00
#1160

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID		TPH 4 oz jar 8015 mod	BTEX 4 oz jar 8020							TOTAL
DSOMW-1/16-18'		5/21/91			1	1							2 A1
DSOMW-1/22-24'		5/21/91			1	1							2 A2
DSOMW-2/14-16'		5/20/91			1	1							2 A3
DSOMW-2/24-26'		5/20/91			1	1							2 A4
DSOMW-3/18-20'		5/21/91			1	1							2 A5
DSOMW-3/26-28'		5/21/91			1	1							2 A6
DFOMW5/12-14'		5/22/91			1	1							2 A7
DFOMW-5/24-26'		5/22/91			1	1			#140.00 ~~135~~ RC				2 A8
Trip Blank													B1
						RC							
					8	8							

Sample Code: L = Liquid; (S) = Solid; A = Air

Total No. of Bottles/Containers: 16

Relinquished by: E. CARMAN Received by:	Organization: Geraghty & Miller Organization:	Date 5/22/91 Time 6:00	Seal Intact? (Yes) No N/A
Relinquished by: Pratheria Catchings Received by:	Organization: ATI Organization:	Date 5/23/91 Time 10:00	Seal Intact? (Yes) No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☑ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

G&M Form 09 1-90 Southprint 90-0136

G & M MILLER, INC.
Environmental Services

Laboratory Task Order No. 3316

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number WI21202

Project Location 3M/Wausau, WI

Laboratory ATI, Pensacola

Sampler(s)/Affiliation Ross C./Geraghty & Miller Inc.

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	SAMPLE BOTTLE / CONTAINER DESCRIPTION: 4oz. clear glass jar TPH mod. 8015	4oz clear glass jar BETX 8010, 8020	4oz clear glass jar TPH mod. 8015 & Total Pb	4oz clear glass jar [redacted] MTBE VOC's ATL	GI-3779	TOTAL
GMFOMW-1/14-16'		5/28/91	A-1	1		1			2
GMFOMW-1/28-30		5/28/91	A-2	1		1			2
GMQMW-1/16-18'		5/30/91	B-1	1	1				2
GMPIMW-1/8-10'		5/29/91	C-1		1	1			2
GMPIMW-1/26-28'		5/30/91	C-2		1	1			2
GMPIMW2/16-18'		5/29/91	C-3		1	1			2
GMPIMW2/28-30'		5/29/91	C-4		1	1			2
GMPIMW3/18-20'		5/29/91	C-5		1	1			2
GMPIMW3/24-26'		5/29/91	C-6		1	1			2

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 18

Relinquished by: Thom M. Creighton Organization: Geraghty & Miller Inc Date 5/31/91 Time 14:00 Seal Intact? (Yes) No N/A

Received by: _____ Organization: _____

Relinquished by: _____ Organization: _____

Received by: [signature] Organization: ATL Date 6/1/91 Time 1020 Seal Intact? (Yes) No N/A

Special Instructions/Remarks: Any questions call Eric Carman at 414-276-7742

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

G&M Form 09 1-90

SOIL SAMPLES

5/24/91

(DOWNTOWN)

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-3637
Order Number: P43633
Order Date: 05/25/91
Client: 07053
Sampled By: ROSS C.
Sample Date: N/S
Sample Time: N/S

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
3637-1	DFOMW-1/14-16'	DIESEL	PPM	4640	5
3637-2	DFOMW-1/22-24'	DIESEL	PPM	7500	5
37-3	DFOMW-2/12-14'	TPH/GC/FID	PPM	BDL	5
37-4	DFOMW-2/22-24'	TPH/GC/FID	PPM	BDL	5
3637-5	DFOMW-3/14-16'	TPH/GC/FID	PPM	BDL	5
37-6	DFOMW-3/24-26'	DIESEL	PPM	2450	5
37-7	DFOMW-4/14-16'	TPH/GC/FID	PPM	BDL	5
637-8	DFOMW-4/24-26'	TPH/GC/FID	PPM	BDL	5
3637-9	DSOMW-4/14-16'	TPH/GC/FID	PPM	BDL	5
37-10	DSOMW-4/24-26'	TPH/GC/FID	PPM	BDL	5

mments: PPM = Parts Per Million, mg/kg on a dry basis; PPB = Parts Per Billion, ug/kg on a dry basis. Method Reference: SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits. D = Diluted Out.

Approved By : Peter Shuba

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3637-1
Order Date: 05/25/91
Sampled By: ROSS C.

Sample ID.: DFOMW-1/14-16' Sample Date: N/S Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	53
ETHYL BENZENE	PPB	BDL	53
TOLUENE	PPB	BDL	260
XYLENE	PPB	260	110
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	115	

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3637-2
Order Date: 05/25/91
Sampled By: ROSS C.

Sample ID.: DFOMW-1/22-24' Sample Date: N/S Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1100
ETHYL BENZENE	PPB	16000	1100
TOLUENE	PPB	BDL	5600
XYLENE	PPB	56000	2200
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	D	

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3637-3
Order Date: 05/25/91
Sampled By: ROSS C.

Sample ID.: DFOMW-2/12-14' Sample Date: N/S Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	53
ETHYL BENZENE	PPB	BDL	53
TOLUENE	PPB	BDL	260
XYLENE	PPB	BDL	110
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	98	

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3637-4
Order Date: 05/25/91
Sampled By: ROSS C.

Sample ID.: DFOMW-2/22-24' Sample Date: N/S Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	53
ETHYL BENZENE	PPB	BDL	53
TOLUENE	PPB	BDL	260
XYLENE	PPB	BDL	110
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3637-5
Order Date: 05/25/91
Sampled By: ROSS C.

Sample ID.: DFOMW-3/14-16' Sample Date: N/S Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	52
ETHYL BENZENE	PPB	BDL	52
TOLUENE	PPB	BDL	260
XYLENE	PPB	BDL	100
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	104	

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3637-6
Order Date: 05/25/91
Sampled By: ROSS C.

Sample ID.: DFOMW-3/24-26' Sample Date: N/S Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	58
ETHYL BENZENE	PPB	BDL	58
TOLUENE	PPB	BDL	290
XYLENE	PPB	BDL	120
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	94	

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3637-7
Order Date: 05/25/91
Sampled By: ROSS C.

Sample ID.: DFOMW-4/14-16' Sample Date: N/S Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	52
ETHYL BENZENE	PPB	BDL	52
TOLUENE	PPB	BDL	260
XYLENE	PPB	BDL	100
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3637

METHOD: 8020

GC - VOLATILES

LAB ID	CLIENT ID	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED	QC BATCH	QC BLANK
91-3637-1	DFOMW-1/14-16'	N/S	05-25-91	05-25-91	LS068	B
91-3637-2	DFOMW-1/22-24'	N/S	05-25-91	05-26-91	LS068	B
91-3637-3	DFOMW-2/12-14'	N/S	05-25-91	05-25-91	LS068	B
91-3637-4	DFOMW-2/22-24'	N/S	05-25-91	05-26-91	LS068	B
91-3637-5	DFOMW-3/14-16'	N/S	05-25-91	05-26-91	LS068	B
91-3637-6	DFOMW-3/24-26'	N/S	05-25-91	05-26-91	LS069	A
91-3637-7	DFOMW-4/14-16'	N/S	05-25-91	05-26-91	LS068	B
91-3637-8	DFOMW-4/24-26'	N/S	05-25-91	05-26-91	LS068	B
91-3637-9	DSOMW-4/14-16'	N/S	05-25-91	05-26-91	LS069	A
91-3637-10	DSOMW-4/24-26'	N/S	05-25-91	05-26-91	LS069	A

N/S = NOT SUBMITTED

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

MS2
METHANOL SPIKE/SPIKE DUPLICATE RECOVERY

BATCH NUMBER: LS068

METHOD/REFERENCE: 8020/SW-846, 3rd Edition, November 1986.

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	SP CONCENTRATION (ug/kg)	SP % REC #	QC LIMITS REC.
Benzene	500	BDL	502	100	76-127
Toluene	500	BDL	506	101	76-125
Chlorobenzene	500	BDL	505	101	75-130

COMPOUND	SPIKE ADDED (ug/kg)	SPD CONCENTRATION (ug/kg)	SPD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	500	488	98	2	11	76-127
Toluene	500	491	98	3	13	76-125
Chlorobenzene	500	485	97	4	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 3 outside limits
Spike Recovery: 0 out of 6 outside limits

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	LIMITS	TOT OUT
SP	05-24-91	97 %	70-130	0
SPD	05-24-91	99 %	70-130	0

D = SURROGATE DILUTED OUT

NOTES: Units in ug/kg = Parts Per Billion
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____
_____
_____
_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QC2
INDEPENDENT QC CHECK (IQC)

BATCH NUMBER: LS068

METHOD/REFERENCE: 8020/SW-846,3rd Edition, November 1986.

PARAMETERS	EXPECTED VALUE	QC RESULTS	% RECOVERY	% REC. LIMITS
Benzene	50	48	96	76-127
Toluene	50	48	96	76-125
Chlorobenzene	50	48	96	75-130

ITEM ID	ANALYSIS DATE	SURROGATE RECOVERY		TOT OUT
		TriF-toluene	LIMITS	
IQC	05-24-91	98 %	70-130	0

NOTES: Units in ug/l = Parts Per Billion
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

COMMENTS: _____
_____
_____
_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

BS2
METHOD INSTRUMENT BLANK

BATCH NUMBER: LS068

METHOD/REFERENCE: 8020/SW-846, 3rd Edition, November 1986.

	DETECTION LIMITS	BLANK A (05-24-91) RESULTS	BLANK B (05-25-91) RESULTS
BENZENE	50	BDL	BDL
CHLOROBENZENE	50	BDL	BDL
1,2-DICHLOROBENZENE	100	BDL	BDL
1,3-DICHLOROBENZENE	100	BDL	BDL
1,4-DICHLOROBENZENE	100	BDL	BDL
ETHYL BENZENE	50	BDL	BDL
TOLUENE	250	BDL	BDL
XYLENE	100	BDL	BDL
METHYL TERT-BUTYL ETHER	250	BDL	BDL
A,A,A-TRIFLUOROTOLUENE *SURR*	%REC	106	102

NOTES: Units in ug/kg = Parts Per Billion
BDL = Below Detection Limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the reference below.
Samples within the same calibration period may display different dates due to operation past midnight.
N/A = NOT APPLICABLE

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

MS2
METHANOL SPIKE/SPIKE DUPLICATE RECOVERY

BATCH NUMBER: LS069

METHOD/REFERENCE: 8020/SW-846, 3rd Edition, November 1986.

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	SP CONCENTRATION (ug/kg)	SP % REC #	QC LIMITS REC.
Benzene	500	BDL	504	101	76-127
Toluene	500	BDL	502	100	76-125
Chlorobenzene	500	BDL	499	100	75-130

COMPOUND	SPIKE ADDED (ug/kg)	SPD CONCENTRATION (ug/kg)	SPD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	500	502	100	1	11	76-127
Toluene	500	502	100	0	13	76-125
Chlorobenzene	500	493	99	1	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 3 outside limits
Spike Recovery: 0 out of 6 outside limits

ITEM ID.	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	LIMITS	TOT OUT
SP	05-26-91	101 %	70-130	0
SPD	05-26-91	86 %	70-130	0

D = SURROGATE DILUTED OUT

NOTES: Units in ug/kg = Parts Per Billion
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____
_____
_____
_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QC2
INDEPENDENT QC CHECK (IQC)

BATCH NUMBER: LS069

METHOD/REFERENCE: 8020/SW-846,3rd Edition, November 1986.

PARAMETERS	EXPECTED VALUE	QC RESULTS	% RECOVERY	% REC. LIMITS
Benzene	50	50	100	76-127
Toluene	50	49	98	76-125
Chlorobenzene	50	50	100	75-130

ITEM ID	ANALYSIS DATE	SURROGATE RECOVERY		TOT OUT
		TriF-toluene	LIMITS	
IQC	05-26-91	94 %	70-130	0

NOTES: Units in ug/l = Parts Per Billion
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

COMMENTS: _____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

BS2
METHOD INSTRUMENT BLANK

BATCH NUMBER: LS069

METHOD/REFERENCE: 8020/SW-846, 3rd Edition, November 1986.

	DETECTION LIMITS	BLANK A (05-26-91) RESULTS	BLANK B (05-27-91) RESULTS
BENZENE	50	BDL	BDL
CHLOROBENZENE	50	BDL	BDL
1,2-DICHLOROBENZENE	100	BDL	BDL
1,3-DICHLOROBENZENE	100	BDL	BDL
1,4-DICHLOROBENZENE	100	BDL	BDL
ETHYL BENZENE	50	BDL	BDL
TOLUENE	250	BDL	BDL
XYLENE	100	BDL	BDL
METHYL TERT-BUTYL ETHER	250	BDL	BDL
A,A,A-TRIFLUOROTOLUENE *SURR*	%REC	109	108

NOTES: Units in ug/kg = Parts Per Billion
BDL = Below Detection Limits
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the reference below.
Samples within the same calibration period may display different dates due to operation past midnight.
N/A = NOT APPLICABLE

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3637 BATCH: 66S

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-3637-1	DFOMW-1/14-16'	05-29-91	05-31-91
91-3637-2	DFOMW-1/22-24'	05-29-91	05-31-91
91-3637-3	DFOMW-2/12-14'	05-29-91	05-31-91
91-3637-4	DFOMW-2/22-24'	05-29-91	05-31-91
91-3637-5	DFOMW-3/14-16'	05-29-91	05-31-91
91-3637-6	DFOMW-3/24-26'	05-29-91	05-31-91
91-3637-7	DFOMW-4/14-16'	05-29-91	05-31-91
91-3637-8	DFOMW-4/24-26'	05-29-91	05-31-91
91-3637-9	DSOMW-4/14-16'	05-29-91	05-31-91
91-3637-10	DSOMW-4/24-26'	05-29-91	05-31-91
MATRIX SPIKE		05-29-91	05-31-91
MATRIX SPIKE DUP.		05-29-91	05-31-91
BLANK		05-29-91	05-31-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	MATRIX SPIKE RESULTS	MATRIX SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC MATRIX SPIKE	%REC MATRIX SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	5	BDL	103	104	140	74	74	37-133	0	30

NOTES: PPM = Parts Per Million, mg/kg.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and reference below.
SAMPLE SPIKED AND DUPLICATED - 91-3637-3.

REFERENCE: SW-846, 3rd Edition, November 1986.

AnalyticalTechnologies,Inc.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

lient: G + M WI

thod of Shipment Fed Ex

ate Received: 5/25/91

mple Type: Soil

there a chain of custody?	(Y)	N
the chain of custody signed?	(Y)	N
re samples received cold?	(Y)	N
ere any containers broken?	Y	(N)
re samples preserved correctly?	(Y)	N
ere samples received within olding time?	(Y)	N

OJECT NUMBER WI21202

RCHASE ORDER NUMBER______

C. LEVEL 1 2 3 4

MMENTS:

Cooler temp 20° C

ATI Lab I.D.# 91 3637

Sample	
1	DFOMW-1 /14-16'
2	DFOMW-1 /22-24'
3	DFOMW-2 /12-14'
4	DFOMW-2 /22-24'
5	DFOMW-3 /14-16'
6	DFOMW-3/24-26'
7	DFOMW-4 /14-16'
8	DFOMW-4 /24-26'
9	DSOMW-4 /14-16'
10	DSOMW-4/24-26'
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

IENT NOTIFIED YES ( ) NO (✓)
TE/TIME:

TES:

INSPECTED BY: [signature]

DATE INSPECTED: 5/25/91

& MILLER, INC.
Environmental Services

Laboratory Task Order No. 3??

CHAIN-OF-CUSTODY RECORD

Project Number WT 21202

Project Location Wausau, WI.

Laboratory ATI, Pensacola

Sampler(s)/Affiliation Ross C. / Geraghty & Miller Inc

SAMPLE BOTTLE / CONTAINER DESCRIPTION

97-3637

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	40ml clear glass for BETX 8010, 8020	40ml clear glass for TPH mod. 8015								TOTAL
DFOMW-1/14-16'			1	1	1								2
DFOMW1/22-24'			2	1	1								2
DFOMW2/12-14'			3	1	1								2
DFOMW2/22-24'			4	1	1								2
DFOMW-3/14-16'			5	1	1								2
DFOMW-3/24-26'			6	1	1								2
DFOMW-4/14-16'			7	1	1								2
DFOMW-4/24-26'			8	1	1								2
DSOMW-4/14-16'			9	1	1								2
DSOMW4/24-26'			10	1	1								2

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 20

Relinquished by: Ross M. Geraghty Received by:	Organization: Geraghty & Miller Inc Organization:	Date 5/24/91 Time 17:45	Seal Intact? (Yes) No N/A
Relinquished by: Received by: [illegible]	Organization: Organization: ATI	Date 5/25/91 Time 1000	Seal Intact? (Yes) No N/A

Special Instructions/Remarks: Any questions call Eric Carman at 414 276 7742

Delivery Method: ☐ In Person ☑ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

G&M Form 09 1-90

Southprint 90-0136

SOIL SAMPLES

5/28 - 30/91

(GREYSTONE)

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-3779C
Order Number: P43890
Order Date: 06/01/91
Client: 07053
Sampled By: ROSS C.
Sample Date: 05/29&30
Sample Time: N/S

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
3779C-1	GMPIMW-1/8-10'	LEAD	PPM	BDL	3.0
3779C-2	GMPIMW-1/26-28'	LEAD	PPM	BDL	3.0
3779C-3	GMPIMW2/16-18'	LEAD	PPM	3.3	3.0
3779C-4	GMPIMW2/28-30'	LEAD	PPM	BDL	3.0
3779C-5	GMPIMW3/18-20'	LEAD	PPM	BDL	3.0
3779C-6	GMPIMW3/24-26'	LEAD	PPM	BDL	3.0
3779C-1	GMPIMW-1/8-10'	DIESEL	PPM	165	5.0
3779C-2	GMPIMW-1/26-28'	TPH/GC/FID	PPM	BDL	5.0
3779C-3	GMPIMW2/16-18'	TPH/GC/FID	PPM	BDL	5.0
3779C-4	GMPIMW2/28-30'	TPH/GC/FID	PPM	BDL	5.0
3779C-5	GMPIMW3/18-20'	TPH/GC/FID	PPM	BDL	5.0
3779C-6	GMPIMW3/24-26'	TPH/GC/FID	PPM	BDL	5.0

Comments: PPM = Parts Per Million, mg/kg on an as is basis; PPB = Parts Per Billion, ug/kg on a dry basis. Method Reference: SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits.

Approved By : Peter Shuba

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-1
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW-1/8-10' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	54
BENZYL CHLORIDE	PPB	BDL	270
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2700
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2700
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	54
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	54
CHLOROACETALDEHYDE	PPB	BDL	54
CHLOROBENZENE	PPB	BDL	54
CHLOROETHANE	PPB	BDL	270
2-CHLOROETHYLVINYL ETHER	PPB	BDL	270
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	270
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2700
CHLOROTOLUENE	PPB	BDL	54
DIBROMOCHLOROMETHANE	PPB	BDL	270
DIBROMOMETHANE	PPB	BDL	270
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	270
1,1-DICHLOROETHANE	PPB	BDL	54
1,2-DICHLOROETHANE	PPB	BDL	54
1,1-DICHLOROETHENE	PPB	BDL	54
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	54
DICHLOROMETHANE	PPB	BDL	270
1,2-DICHLOROPROPANE	PPB	BDL	54
CIS-1,3-DICHLOROPROPENE	PPB	BDL	54
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	54
ETHYLBENZENE	PPB	BDL	54
METHYLTERTBUTYLETHER	PPB	BDL	270
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	54
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	54

Sample ID.: GMPIMW-1/8-10' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-1
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW-1/8-10' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	160
TOLUENE	PPB	BDL	270
1,1,1-TRICHLOROETHANE	PPB	BDL	54
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	54
TRICHLOROFLUOROMETHANE	PPB	BDL	54
TRICHLOROPROPANE	PPB	BDL	270
VINYL CHLORIDE	PPB	BDL	54
XYLENE	PPB	BDL	110
1-CHLOROHEXANE	PPB	BDL	270
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	88	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	99	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-2
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW-1/26-28' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	58
BENZYL CHLORIDE	PPB	BDL	290
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2900
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2900
BROMOBENZENE	PPB	BDL	170
BROMODICHLOROMETHANE	PPB	BDL	58
BROMOFORM	PPB	BDL	120
BROMOMETHANE	PPB	BDL	120
CARBON TETRACHLORIDE	PPB	BDL	58
CHLOROACETALDEHYDE	PPB	BDL	58
CHLOROBENZENE	PPB	BDL	58
CHLOROETHANE	PPB	BDL	290
2-CHLOROETHYLVINYL ETHER	PPB	BDL	290
CHLOROFORM	PPB	BDL	120
CHLOROMETHANE	PPB	BDL	290
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2900
CHLOROTOLUENE	PPB	BDL	58
DIBROMOCHLOROMETHANE	PPB	BDL	290
DIBROMOMETHANE	PPB	BDL	290
1,2-DICHLOROBENZENE	PPB	BDL	120
1,3-DICHLOROBENZENE	PPB	BDL	120
1,4-DICHLOROBENZENE	PPB	BDL	120
DICHLORODIFLUOROMETHANE	PPB	BDL	290
1,1-DICHLOROETHANE	PPB	BDL	58
1,2-DICHLOROETHANE	PPB	BDL	58
1,1-DICHLOROETHENE	PPB	BDL	58
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	58
DICHLOROMETHANE	PPB	BDL	290
1,2-DICHLOROPROPANE	PPB	BDL	58
CIS-1,3-DICHLOROPROPENE	PPB	BDL	58
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	58
ETHYLBENZENE	PPB	BDL	58
METHYLTERTBUTYLETHER	PPB	BDL	290
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	58
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	58

Sample ID.: GMPIMW-1/26-28' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-2
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW-1/26-28' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	170
TOLUENE	PPB	BDL	290
1,1,1-TRICHLOROETHANE	PPB	BDL	58
1,1,2-TRICHLOROETHANE	PPB	BDL	120
TRICHLOROETHENE	PPB	BDL	58
TRICHLOROFLUOROMETHANE	PPB	BDL	58
TRICHLOROPROPANE	PPB	BDL	290
VINYL CHLORIDE	PPB	BDL	58
XYLENE	PPB	BDL	120
1-CHLOROHEXANE	PPB	BDL	290
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	84	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	97	

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-3
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW2/16-18' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	53
BENZYL CHLORIDE	PPB	BDL	260
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2600
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2600
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	53
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	53
CHLOROACETALDEHYDE	PPB	BDL	53
CHLOROBENZENE	PPB	BDL	53
CHLOROETHANE	PPB	BDL	260
2-CHLOROETHYLVINYL ETHER	PPB	BDL	260
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	260
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2600
CHLOROTOLUENE	PPB	BDL	53
DIBROMOCHLOROMETHANE	PPB	BDL	260
DIBROMOMETHANE	PPB	BDL	260
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	260
1,1-DICHLOROETHANE	PPB	BDL	53
1,2-DICHLOROETHANE	PPB	BDL	53
1,1-DICHLOROETHENE	PPB	BDL	53
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	53
DICHLOROMETHANE	PPB	BDL	260
1,2-DICHLOROPROPANE	PPB	BDL	53
CIS-1,3-DICHLOROPROPENE	PPB	BDL	53
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	53
ETHYLBENZENE	PPB	BDL	53
METHYLTERTBUTYLETHER	PPB	BDL	260
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	53
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	53

Sample ID.: GMPIMW2/16-18' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-3
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW2/16-18' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	160
TOLUENE	PPB	BDL	260
1,1,1-TRICHLOROETHANE	PPB	BDL	53
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	53
TRICHLOROFLUOROMETHANE	PPB	BDL	53
TRICHLOROPROPANE	PPB	BDL	260
VINYL CHLORIDE	PPB	BDL	53
XYLENE	PPB	BDL	110
1-CHLOROHEXANE	PPB	BDL	260
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	87	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	100	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-4
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW2/28-30' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	54
BENZYL CHLORIDE	PPB	BDL	270
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2700
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2700
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	54
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	54
CHLOROACETALDEHYDE	PPB	BDL	54
CHLOROBENZENE	PPB	BDL	54
CHLOROETHANE	PPB	BDL	270
2-CHLOROETHYLVINYL ETHER	PPB	BDL	270
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	270
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2700
CHLOROTOLUENE	PPB	BDL	54
DIBROMOCHLOROMETHANE	PPB	BDL	270
DIBROMOMETHANE	PPB	BDL	270
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	270
1,1-DICHLOROETHANE	PPB	BDL	54
1,2-DICHLOROETHANE	PPB	BDL	54
1,1-DICHLOROETHENE	PPB	BDL	54
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	54
DICHLOROMETHANE	PPB	BDL	270
1,2-DICHLOROPROPANE	PPB	BDL	54
CIS-1,3-DICHLOROPROPENE	PPB	BDL	54
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	54
ETHYLBENZENE	PPB	BDL	54
METHYLTERTBUTYLETHER	PPB	BDL	270
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	54
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	54

Sample ID.: GMPIMW2/28-30' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-4
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW2/28-30' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	160
TOLUENE	PPB	BDL	270
1,1,1-TRICHLOROETHANE	PPB	BDL	54
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	54
TRICHLOROFLUOROMETHANE	PPB	BDL	54
TRICHLOROPROPANE	PPB	BDL	270
VINYL CHLORIDE	PPB	BDL	54
XYLENE	PPB	BDL	110
1-CHLOROHEXANE	PPB	BDL	270
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	90	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	102	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-5
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW3/18-20' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	54
BENZYL CHLORIDE	PPB	BDL	270
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2700
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2700
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	54
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	54
CHLOROACETALDEHYDE	PPB	BDL	54
CHLOROBENZENE	PPB	BDL	54
CHLOROETHANE	PPB	BDL	270
2-CHLOROETHYLVINYL ETHER	PPB	BDL	270
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	270
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2700
CHLOROTOLUENE	PPB	BDL	54
DIBROMOCHLOROMETHANE	PPB	BDL	270
DIBROMOMETHANE	PPB	BDL	270
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	270
1,1-DICHLOROETHANE	PPB	BDL	54
1,2-DICHLOROETHANE	PPB	BDL	54
1,1-DICHLOROETHENE	PPB	BDL	54
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	54
DICHLOROMETHANE	PPB	BDL	270
1,2-DICHLOROPROPANE	PPB	BDL	54
CIS-1,3-DICHLOROPROPENE	PPB	BDL	54
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	54
ETHYLBENZENE	PPB	BDL	54
METHYLTERTBUTYLETHER	PPB	BDL	270
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	54
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	54

Sample ID.: GMPIMW3/18-20' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-5
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW3/18-20' Sample Date: 05/29&30 Time: N/S

/OL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	160
TOLUENE	PPB	BDL	270
1,1,1-TRICHLOROETHANE	PPB	BDL	54
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	54
TRICHLOROFLUOROMETHANE	PPB	BDL	54
TRICHLOROPROPANE	PPB	BDL	270
VINYL CHLORIDE	PPB	BDL	54
XYLENE	PPB	BDL	110
1-CHLOROHEXANE	PPB	BDL	270
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	86	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	106	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-6
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW3/24-26' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	59
BENZYL CHLORIDE	PPB	BDL	290
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2900
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2900
BROMOBENZENE	PPB	BDL	180
BROMODICHLOROMETHANE	PPB	BDL	59
BROMOFORM	PPB	BDL	120
BROMOMETHANE	PPB	BDL	120
CARBON TETRACHLORIDE	PPB	BDL	59
CHLOROACETALDEHYDE	PPB	BDL	59
CHLOROBENZENE	PPB	BDL	59
CHLOROETHANE	PPB	BDL	290
2-CHLOROETHYLVINYL ETHER	PPB	BDL	290
CHLOROFORM	PPB	BDL	120
CHLOROMETHANE	PPB	BDL	290
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2900
CHLOROTOLUENE	PPB	BDL	59
DIBROMOCHLOROMETHANE	PPB	BDL	290
DIBROMOMETHANE	PPB	BDL	290
1,2-DICHLOROBENZENE	PPB	BDL	120
1,3-DICHLOROBENZENE	PPB	BDL	120
1,4-DICHLOROBENZENE	PPB	BDL	120
DICHLORODIFLUOROMETHANE	PPB	BDL	290
1,1-DICHLOROETHANE	PPB	BDL	59
1,2-DICHLOROETHANE	PPB	BDL	59
1,1-DICHLOROETHENE	PPB	BDL	59
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	59
DICHLOROMETHANE	PPB	BDL	290
1,2-DICHLOROPROPANE	PPB	BDL	59
CIS-1,3-DICHLOROPROPENE	PPB	BDL	59
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	59
ETHYLBENZENE	PPB	BDL	59
METHYLTERTBUTYLETHER	PPB	BDL	290
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	59
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	59

Sample ID.: GMPIMW3/24-26' Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU WI
Sample Type: SOIL

Lab I.D.#: 91-3779C-6
Order Date: 06/01/91
Sampled By: ROSS C.

Sample ID.: GMPIMW3/24-26' Sample Date: 05/29&30 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	180
TOLUENE	PPB	BDL	290
1,1,1-TRICHLOROETHANE	PPB	BDL	59
1,1,2-TRICHLOROETHANE	PPB	BDL	120
TRICHLOROETHENE	PPB	BDL	59
TRICHLOROFLUOROMETHANE	PPB	BDL	59
TRICHLOROPROPANE	PPB	BDL	290
VINYL CHLORIDE	PPB	BDL	59
XYLENE	PPB	BDL	120
1-CHLOROHEXANE	PPB	BDL	290
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	80	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	105	

end of report

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3779C

METHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

LEVEL: II

LAB ID:	CLIENT ID:	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	QC BATCH	QC BLANK
91-3779C-1	GMPIMW-1/8-10'	05-29-91	06-01-91	N/A	06-05-91	GS048	B
91-3779C-2	GMPIMW-1/26-28'	05-30-91	06-01-91	N/A	06-05-91	GS048	A
91-3779C-3	GMPIMW2/16-18'	05-29-91	06-01-91	N/A	06-05-91	GS048	A
91-3779C-4	GMPIMW2/28-30'	05-29-91	06-01-91	N/A	06-05-91	GS048	A
91-3779C-5	GMPIMW3/18-20'	05-29-91	06-01-91	N/A	06-05-91	GS048	A
91-3779C-6	GMPIMW3/24-26'	05-29-91	06-01-91	N/A	06-05-91	GS048	B

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SOIL MATRIX SPIKE

BATCH NUMBER: GS048 SAMPLE SPIKED: 91-3773-1 DRY WEIGHT: .93

METHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
1,1-DICHLOROETHENE	537.6	BDL	566.6	105	59-172
TRICHLOROETHENE	537.6	BDL	684.9	127	62-137
BENZENE	537.6	BDL	646.2	120	66-142
TOLUENE	537.6	BDL	609.6	113	59-139
CHLOROBENZENE	537.6	BDL	595.6	111	60-133

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
1,1-DICHLOROETHENE	537.6	BDL	552.6	103	2	22	59-172
TRICHLOROETHENE	537.6	BDL	650.5	121	5	24	62-137
BENZENE	537.6	BDL	663.4	123	2	21	66-142
TOLUENE	537.6	BDL	577.4	107	5	21	59-139
CHLOROBENZENE	537.6	BDL	554.8	103	7	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
MS	06-05-91	102	118	70-130
MSD	06-05-91	89	104	70-130

D = DILUTED OUT

NOTE: Units in ug/kg = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

_____

_____

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

BATCH NUMBER: GS048

METHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

PAGE ONE OF 8010/8020 COMPONENT LIST

PARAMETERS	DETECTION LIMIT	BLANK A	BLANK B	BLANK C
ANALYSIS DATE		06-04-91	06-05-91	N/A
		RESULTS	RESULTS	RESULTS
BROMODICHLOROMETHANE	50	BDL	BDL	BDL
BROMOFORM	100	BDL	BDL	BDL
BROMOMETHANE	100	BDL	BDL	BDL
CARBON TETRACHLORIDE	50	BDL	BDL	BDL
CHLOROETHANE	250	BDL	BDL	BDL
2 CHLOROETHYLVINYL ETHER	250	BDL	BDL	BDL
CHLOROFORM	100	BDL	BDL	BDL
CHLOROMETHANE	250	BDL	BDL	BDL
DIBROMOCHLOROMETHANE	250	BDL	BDL	BDL
DICHLORODIFLUOROMETHANE	250	BDL	BDL	BDL
1,1-DICHLOROETHANE	50	BDL	BDL	BDL
1,2-DICHLOROETHANE	50	BDL	BDL	BDL
1,1-DICHLOROETHENE	50	BDL	BDL	BDL
TRANS-1,2-DICHLOROETHYLENE	50	BDL	BDL	BDL
1,2-DICHLOROPROPANE	50	BDL	BDL	BDL
CIS-1,3-DICHLOROPROPENE	50	BDL	BDL	BDL
TRANS-1,3-DICHLOROPROPENE	50	BDL	BDL	BDL
METHYLENE CHLORIDE	150	BDL	BDL	BDL
1,1,2,2-TETRACHLOROETHANE	50	BDL	BDL	BDL
TETRACHLOROETHENE	150	BDL	BDL	BDL
1,1,1-TRICHLOROETHANE	50	BDL	BDL	BDL
1,1,2-TRICHLOROETHANE	100	BDL	BDL	BDL
TRICHLOROETHENE	50	BDL	BDL	BDL
TRICHLOROFLUOROMETHANE	50	BDL	BDL	BDL
VINYL CHLORIDE	50	BDL	BDL	BDL
METHYL TERT-BUTYL ETHER	250	BDL	BDL	BDL
BENZENE	50	BDL	BDL	BDL
TOLUENE	250	BDL	BDL	BDL
CHLOROBENZENE	50	BDL	BDL	BDL
ETHYL BENZENE	50	BDL	BDL	BDL
XYLENES	100	BDL	BDL	BDL
1,3-DICHLOROBENZENE	100	BDL	BDL	BDL
1,2-DICHLOROBENZENE	100	BDL	BDL	BDL
1,4-DICHLOROBENZENE	100	BDL	BDL	BDL
Trif-toluene (70-130)		095	87	N/A
2 Br,Cl-propane (70-130)		119	118	N/A

NOTE: Units in ug/kg = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

PAGE TWO OF 8010 COMPONENT LIST

METHOD: 8010-8020 / SW 846, 3rd Edition, November 1986.

PARAMETERS	DETECTION LIMIT	BLANK A RESULTS	BLANK B RESULTS	BLANK C RESULTS
BENZYLCHLORIDE	250	BDL	BDL	BDL
BIS(2-CHLORETHOXY)METHANE	2500	BDL	BDL	BDL
BIS(2-CHLOROISOPROPYL)ETHER	2500	BDL	BDL	BDL
BROMOBENZENE	150	BDL	BDL	BDL
CHLOROACETALDEHYDE	50	BDL	BDL	BDL
1-CHLOROHEXANE	250	BDL	BDL	BDL
CHLOROMETHYLMETHYL ETHER	2500	BDL	BDL	BDL
2-CHLOROTOLUENE	50	BDL	BDL	BDL
DIBROMOMETHANE	250	BDL	BDL	BDL
1,1,1,2-TETRACHLOROETHANE	50	BDL	BDL	BDL
1,2,3-TRICHLOROPROPANE	250	BDL	BDL	BDL

NOTE: Units in ug/kg = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED
N/A = NOT APPLICABLE

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

NDEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: GS048

ETHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	46	92	61-145
TRICHLOROETHENE	50	BDL	44	88	71-120
BENZENE	50	BDL	48	96	76-127
TOLUENE	50	BDL	49	98	76-125
CHLOROBENZENE	50	BDL	49	98	75-130

" Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
IQC	06-05-91	98	89	70-130

OTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

NDEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: GS048

ETHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	46	92	61-145
TRICHLOROETHENE	50	BDL	44	88	71-120
BENZENE	50	BDL	48	96	76-127
TOLUENE	50	BDL	49	98	76-125
CHLOROBENZENE	50	BDL	49	98	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
IQC	06-05-91	98	89	70-130

OTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

_____

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

QC LEVEL II

LAB ID: 91-3779C BATCH: 69S

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-3779C-1	GMPIMW-1/8-10'	06-03-91	06-04-91
91-3779C-2	GMPIMW-1/26-28'	06-03-91	06-04-91
91-3779C-3	GMPIMW2/16-18'	06-03-91	06-04-91
91-3779C-4	GMPIMW2/28-30'	06-03-91	06-04-91
91-3779C-5	GMPIMW3/18-20'	06-03-91	06-04-91
91-3779C-6	GMPIMW3/24-26'	06-03-91	06-04-91
MS		06-03-91	06-04-91
MS DUP.		06-03-91	06-04-91
DI BLANK		06-03-91	06-04-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	MATRIX SPIKE RESULTS	MATRIX SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	% REC MATRIX SPIKE	% REC MATRIX SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	5	BDL	79	80	140	56	57	37-133	2	30

NOTES: PPM = Parts Per Million, mg/kg.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and reference below.
SAMPLE SPIKED AND DUPLICATED: 91-3741-3

REFERENCE: SW-846, 3rd Edition, November 1986.

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT NAME: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3779C

QC LEVEL: II

LAB ID	CLIENT ID
91-3779C-1	GMPIMW-1/8-10'
91-3779C-2	GMPIMW-1/26-28'
91-3779C-3	GMPIMW2/16-18'
91-3779C-4	GMPIMW2/28-30'
91-3779C-5	GMPIMW3/18-20'
91-3779C-6	GMPIMW3/24-26'

PARAMETER	PREPARATION DATE	ANALYSIS DATE	BATCH#	METHOD	DETECTION LIMIT	BLANK RESULT	SAMPLE RESULT	DUPLIC RESULT	RPD SAMPLE	MAX RPD	MATRIX SPIKE RESULT	TRUE MS RESULT	%REC MS	%REC CONTROL LIMITS	QC RESULT	TRUE QC RESULT	%REC QC	%REC CONTROL LIMITS
LEAD	06-03-91	06-06-91	PbS-72	6010	3.0	BDL	42	36	15	20	40	50	80	75-125	5.2	5.0	104	90-110

PARAMETER	LCS RESULT	TRUE LCS RESULT	LCS %REC	LCS CONTROL LIMITS	SAMPLE DUPLIC	SAMPLE SPIKED
LEAD	41	38	108	50-121	3697-1	3697-1

Notes: PPM = Parts Per Million, mg/kg and mg/l.
BDL = Below Detection Limit.
Results recorded are blank corrected.
Control limits are from ATI's internal quality assurance program and the referenced method.

Reference: SW-846, 3rd Edition, November 1986.

AnalyticalTechnologies,Inc.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Page 1 of 1

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: G&M

Method of Shipment: Fed EX

Date Received: 6/1/91

Sample Type: Soil

Is there a chain of custody?	(Y)	N
Is the chain of custody signed?	(Y)	N
Were samples received cold?	(Y)	N
Were any containers broken?	Y	(N)
Were samples preserved correctly?	(Y)	N
Were samples received within holding time?	(Y)	N

PROJECT NUMBER WL 21202

PURCHASE ORDER NUMBER

Q.C. LEVEL 1 2 3 4

COMMENTS:

ATI Lab I.D.# 91-3779 / C

Sample	
1	GMPIMW-1/8-10'
2	GMPIMW-1/26-28'
3	GMPIMW-2/16-18'
4	GMPIMW-2/28-30'
5	GMPIMW-3/18-20'
6	GMPIMW-3/24-26'
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

CLIENT NOTIFIED YES ( ) NO (✓)
DATE/TIME:

NOTES:

INSPECTED BY: Jerry Dawson

DATE INSPECTED: 6/1/91

G & M MILLER, INC. Environmental Services

Laboratory Task Order No. 3316

CHAIN-OF-CUSTODY RECORD

Project Number WI 21202

Project Location 3M / Wausau, WI

Laboratory ATI, Pensacola

Sampler(s)/Affiliation Ross C. / Geraghty & Miller Inc.

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	4oz. clear glass jar TPH mod. 8015	4oz clear glass jar BETX 8010, 8020	4oz clear glass jar TPH mod. & Total Pb 8015	4oz clear glass jar VOC's incl. MTBE	GI-3779				TOTAL
GMFOMW-1/14-16'		5/28/91	A-1	1			1					2
GMFOMW-1/28-30		5/28/91	A-2	1			1					2
GMQMW-1/16-18'		5/30/91	B-1	1	1							2
GMPIMW-1/8-10'		5/29/91	C-1			1	1					2
GMPIMW-1/26-28'		5/30/91	C-2			1	1					2
GMPIMW2/16-18'		5/29/91	C-3			1	1					2
GMPIMW2/28-30'		5/29/91	C-4			1	1					2
GMPIMW3/18-20'		5/29/91	C-5			1	1					2
GMPIMW3/24-26'		5/29/91	C-6			1	1					2

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 18

Relinquished by: Thom M. Creighton Organization: Geraghty & Miller Inc Date 5/31/91 Time 14:00 Seal Intact? (Yes) No N/A

Received by: _____ Organization: _____

Relinquished by: _____ Organization: _____

Received by: Larry Dawson Organization: ATL Date 6/1/91 Time 1020 Seal Intact? (Yes) No N/A

Special Instructions/Remarks: Any questions call Eric Carman at 414-276-7742

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-3779A
Order Number: P43888
Order Date: 06/01/91
Client: 07053
Sampled By: R.C.
Sample Date: 05/28/91
Sample Time: N/S

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
3779A-1	GMFOMW-1/14-16'	DIESEL	PPM	245	5.0
3779A-2	GMFOMW-1/28-30	TPH/GC/FID	PPM	BDL	5.0

Comments: PPM = Parts Per Million, mg/kg on a dry basis; PPB = Parts Per Billion, ug/kg on a dry basis. Method Reference: SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits.

Approved By : Peter Shuba

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3779A-1
Order Date: 06/01/91
Sampled By: R.C.

Sample ID.: GMFOMW-1/14-16' Sample Date: 05/28/91 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	52
BENZYL CHLORIDE	PPB	BDL	260
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2600
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2600
BROMOBENZENE	PPB	BDL	150
BROMODICHLOROMETHANE	PPB	BDL	52
BROMOFORM	PPB	BDL	100
BROMOMETHANE	PPB	BDL	100
CARBON TETRACHLORIDE	PPB	BDL	52
CHLOROACETALDEHYDE	PPB	BDL	52
CHLOROBENZENE	PPB	BDL	52
CHLOROETHANE	PPB	BDL	260
2-CHLOROETHYLVINYL ETHER	PPB	BDL	260
CHLOROFORM	PPB	BDL	100
CHLOROMETHANE	PPB	BDL	260
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2600
CHLOROTOLUENE	PPB	BDL	52
DIBROMOCHLOROMETHANE	PPB	BDL	260
DIBROMOMETHANE	PPB	BDL	260
1,2-DICHLOROBENZENE	PPB	BDL	100
1,3-DICHLOROBENZENE	PPB	BDL	100
1,4-DICHLOROBENZENE	PPB	BDL	100
DICHLORODIFLUOROMETHANE	PPB	BDL	260
1,1-DICHLOROETHANE	PPB	BDL	52
1,2-DICHLOROETHANE	PPB	BDL	52
1,1-DICHLOROETHENE	PPB	BDL	52
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	52
DICHLOROMETHANE	PPB	BDL	260
1,2-DICHLOROPROPANE	PPB	BDL	52
CIS-1,3-DICHLOROPROPENE	PPB	BDL	52
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	52
ETHYLBENZENE	PPB	BDL	52
METHYLTERTBUTYLETHER	PPB	BDL	260
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	52
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	52

Sample ID.: GMFOMW-1/14-16' Test Parameters continued on next page

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3779A-1
Order Date: 06/01/91
Sampled By: R.C.

Sample ID.: GMFOMW-1/14-16' Sample Date: 05/28/91 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	150
TOLUENE	PPB	BDL	260
1,1,1-TRICHLOROETHANE	PPB	BDL	52
1,1,2-TRICHLOROETHANE	PPB	BDL	100
TRICHLOROETHENE	PPB	BDL	52
TRICHLOROFLUOROMETHANE	PPB	BDL	52
TRICHLOROPROPANE	PPB	BDL	260
VINYL CHLORIDE	PPB	BDL	52
XYLENE	PPB	BDL	100
1-CHLOROHEXANE	PPB	BDL	260
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	81	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	101	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3779A-2
Order Date: 06/01/91
Sampled By: R.C.

Sample ID.: GMFOMW-1/28-30 Sample Date: 05/28/91 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	54
BENZYL CHLORIDE	PPB	BDL	270
BIS(2-CHLOROETHOXY)METHANE	PPB	BDL	2700
BIS(2-CHLOROISOPROPYL)ETHER	PPB	BDL	2700
BROMOBENZENE	PPB	BDL	160
BROMODICHLOROMETHANE	PPB	BDL	54
BROMOFORM	PPB	BDL	110
BROMOMETHANE	PPB	BDL	110
CARBON TETRACHLORIDE	PPB	BDL	54
CHLOROACETALDEHYDE	PPB	BDL	54
CHLOROBENZENE	PPB	BDL	54
CHLOROETHANE	PPB	BDL	270
2-CHLOROETHYLVINYL ETHER	PPB	BDL	270
CHLOROFORM	PPB	BDL	110
CHLOROMETHANE	PPB	BDL	270
CHLOROMETHYLMETHYL ETHER	PPB	BDL	2700
CHLOROTOLUENE	PPB	BDL	54
DIBROMOCHLOROMETHANE	PPB	BDL	270
DIBROMOMETHANE	PPB	BDL	270
1,2-DICHLOROBENZENE	PPB	BDL	110
1,3-DICHLOROBENZENE	PPB	BDL	110
1,4-DICHLOROBENZENE	PPB	BDL	110
DICHLORODIFLUOROMETHANE	PPB	BDL	270
1,1-DICHLOROETHANE	PPB	BDL	54
1,2-DICHLOROETHANE	PPB	BDL	54
1,1-DICHLOROETHENE	PPB	BDL	54
TOTAL 1,2-DICHLOROETHENE	PPB	BDL	54
DICHLOROMETHANE	PPB	BDL	270
1,2-DICHLOROPROPANE	PPB	BDL	54
CIS-1,3-DICHLOROPROPENE	PPB	BDL	54
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	54
ETHYLBENZENE	PPB	BDL	54
METHYLTERTBUTYLETHER	PPB	BDL	270
1,1,1,2-TETRACHLOROETHANE	PPB	BDL	54
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	54

Sample ID.: GMFOMW-1/28-30 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3779A-2
Order Date: 06/01/91
Sampled By: R.C.

Sample ID.: GMFOMW-1/28-30 Sample Date: 05/28/91 Time: N/S

VOL/8010&8020+MTB VOLATILE METHODS 8010 & 8020 + MTBE continued

Parameter	Units	Result	Detection Limit
TETRACHLOROETHENE	PPB	BDL	160
TOLUENE	PPB	BDL	270
1,1,1-TRICHLOROETHANE	PPB	BDL	54
1,1,2-TRICHLOROETHANE	PPB	BDL	110
TRICHLOROETHENE	PPB	BDL	54
TRICHLOROFLUOROMETHANE	PPB	BDL	54
TRICHLOROPROPANE	PPB	BDL	270
VINYL CHLORIDE	PPB	BDL	54
XYLENE	PPB	BDL	110
1-CHLOROHEXANE	PPB	BDL	270
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	91	
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	110	

end of report

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3779A

METHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

LEVEL: II

LAB ID:	CLIENT ID:	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	QC BATCH	QC BLANK
91-3779A-1	GMFOMW-1/14-16'	05-28-91	06-01-91	N/A	06-04-91	GS048	A
91-3779A-2	GMFOMW-1/28-30'	05-28-91	06-01-91	N/A	06-06-91	GS048	B

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

BATCH NUMBER: GS048

METHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

PAGE ONE OF 8010/8020 COMPONENT LIST

PARAMETERS	DETECTION LIMIT	BLANK A	BLANK B	BLANK C
ANALYSIS DATE		06-04-91	06-05-91	N/A
		RESULTS	RESULTS	RESULTS
BROMODICHLOROMETHANE	50	BDL	BDL	BDL
BROMOFORM	100	BDL	BDL	BDL
BROMOMETHANE	100	BDL	BDL	BDL
CARBON TETRACHLORIDE	50	BDL	BDL	BDL
CHLOROETHANE	250	BDL	BDL	BDL
2-CHLOROETHYLVINYL ETHER	250	BDL	BDL	BDL
CHLOROFORM	100	BDL	BDL	BDL
CHLOROMETHANE	250	BDL	BDL	BDL
DIBROMOCHLOROMETHANE	250	BDL	BDL	BDL
DICHLORODIFLUOROMETHANE	250	BDL	BDL	BDL
,1-DICHLOROETHANE	50	BDL	BDL	BDL
,2-DICHLOROETHANE	50	BDL	BDL	BDL
,1-DICHLOROETHENE	50	BDL	BDL	BDL
TRANS-1,2-DICHLOROETHYLENE	50	BDL	BDL	BDL
,2-DICHLOROPROPANE	50	BDL	BDL	BDL
CIS-1,3-DICHLOROPROPENE	50	BDL	BDL	BDL
TRANS-1,3-DICHLOROPROPENE	50	BDL	BDL	BDL
METHYLENE CHLORIDE	150	BDL	BDL	BDL
,1,2,2-TETRACHLOROETHANE	50	BDL	BDL	BDL
TETRACHLOROETHENE	150	BDL	BDL	BDL
,1,1-TRICHLOROETHANE	50	BDL	BDL	BDL
,1,2-TRICHLOROETHANE	100	BDL	BDL	BDL
TRICHLOROETHENE	50	BDL	BDL	BDL
TRICHLOROFLUOROMETHANE	50	BDL	BDL	BDL
VINYL CHLORIDE	50	BDL	BDL	BDL
METHYL TERT-BUTYL ETHER	250	BDL	BDL	BDL
BENZENE	50	BDL	BDL	BDL
TOLUENE	250	BDL	BDL	BDL
CHLOROBENZENE	50	BDL	BDL	BDL
ETHYL BENZENE	50	BDL	BDL	BDL
XYLENES	100	BDL	BDL	BDL
,3-DICHLOROBENZENE	100	BDL	BDL	BDL
,2-DICHLOROBENZENE	100	BDL	BDL	BDL
,4-DICHLOROBENZENE	100	BDL	BDL	BDL
Trif-toluene (70-130)		95	87	N/A
-Br,Cl-propane (70-130)		119	118	N/A

NOTE: Units in ug/kg = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

ETHOD INSTRUMENT BLANK

AGE TWO OF 8010 COMPONENT LIST

ETHOD: 8010-8020 / SW 846, 3rd Edition, November 1986.

PARAMETERS	DETECTION LIMIT	BLANK A RESULTS	BLANK B RESULTS	BLANK C RESULTS
ENZYLCHLORIDE	250	BDL	BDL	BDL
IS(2-CHLOROETHOXY)METHANE	2500	BDL	BDL	BDL
BIS(2-CHLOROISOPROPYL)ETHER	2500	BDL	BDL	BDL
BROMOBENZENE	150	BDL	BDL	BDL
HLOROACETALDEHYDE	50	BDL	BDL	BDL
-CHLOROHEXANE	250	BDL	BDL	BDL
CHLOROMETHYLMETHYL ETHER	2500	BDL	BDL	BDL
2-CHLOROTOLUENE	50	BDL	BDL	BDL
IBROMOMETHANE	250	BDL	BDL	BDL
,1,1,2-TETRACHLOROETHANE	50	BDL	BDL	BDL
1,2,3-TRICHLOROPROPANE	250	BDL	BDL	BDL

OTE: Units in ug/kg = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED
N/A = NOT APPLICABLE

AnalyticalTechnologies,Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SOIL MATRIX SPIKE

ATCH NUMBER: GS048 SAMPLE SPIKED: 91-3773-1 DRY WEIGHT: .93

ETHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
1,1-DICHLOROETHENE	537.6	BDL	566.6	105	59-172
TRICHLOROETHENE	537.6	BDL	684.9	127	62-137
BENZENE	537.6	BDL	646.2	120	66-142
TOLUENE	537.6	BDL	609.6	113	59-139
CHLOROBENZENE	537.6	BDL	595.6	111	60-133

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
1,1-DICHLOROETHENE	537.6	BDL	552.6	103	2	22	59-172
TRICHLOROETHENE	537.6	BDL	650.5	121	5	24	62-137
BENZENE	537.6	BDL	663.4	123	2	21	66-142
TOLUENE	537.6	BDL	577.4	107	5	21	59-139
CHLOROBENZENE	537.6	BDL	554.8	103	7	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	SURROGATE RECOVERY 2Br,1Cl-prop	QC LIMITS
MS	06-05-91	102	118	70-130
MSD	06-05-91	89	104	70-130

= DILUTED OUT

OTE: Units in ug/kg = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

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_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

DEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: GW049

METHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	45	90	61-145
TRICHLOROETHENE	50	BDL	45	90	71-120
BENZENE	50	BDL	38	76	76-127
TOLUENE	50	BDL	47	94	76-125
CHLOROBENZENE	50	BDL	46	92	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
IQC	06-08-91	102	99	70-130

NOTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

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Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

NDEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: GW049

ETHOD: 8010/8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	45	90	61-145
TRICHLOROETHENE	50	BDL	45	90	71-120
BENZENE	50	BDL	38	76	76-127
TOLUENE	50	BDL	47	94	76-125
CHLOROBENZENE	50	BDL	46	92	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	SURROGATE RECOVERY 2Br,1Cl-prop	QC LIMITS
IQC	06-08-91	102	99	70-130

OTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

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Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3779A BATCH: 69S

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-3779A-1	GMFOMW-1/14-16'	06-03-91	06-04-91
91-3779A-2	GMFOMW-1/28-30	06-03-91	06-04-91
MATRIX SPIKE		06-05-91	06-07-91
MATRIX SPIKE DUP.		06-05-91	06-07-91
BLANK		06-03-91	06-04-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	MATRIX SPIKE RESULTS	MATRIX SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC MATRIX SPIKE	%REC MATRIX SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	5	BDL	79	80	140	56	57	37-133	2	30

NOTES: PPM = Parts Per Million, mg/kg.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and reference below.
SAMPLE SPIKED AND DUPLICATED - 91-3779C-2.

REFERENCE: SW-846, 3rd Edition, November 1986.

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: GM

Method of Shipment Fed Ex

Date Received: 6/1/91

Sample Type: Soil

ATI Lab I.D.# 91377 A

Sample 1	GM-OMW-1/14-16'
2	GM-OMW-1/25-30'
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Is there a chain of custody?	(Y)	N
Is the chain of custody signed?	(Y)	N
Were samples received cold?	(Y)	N
Were any containers broken?	Y	(N)
Were samples preserved correctly?	(Y)	N
Were samples received within holding time?	(Y)	N

PROJECT NUMBER 21202

PURCHASE ORDER NUMBER

Q.C. LEVEL 1 2 3 4

COMMENTS:

CLIENT NOTIFIED YES ( ) NO (✓)
DATE/TIME:

NOTES:

INSPECTED BY: Joseph B Davidson

DATE INSPECTED: 6/1/91

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: GSM

Method of Shipment FedEx

Date Received: 6/19

Sample Type: Soil

Is there a chain of custody?	(Y)	N
Is the chain of custody signed?	(Y)	N
Were samples received cold?	(Y)	N
Were any containers broken?	Y	(N)
Were samples preserved correctly?	(Y)	N
Were samples received within holding time?	(Y)	N

PROJECT NUMBER 212-01202

PURCHASE ORDER NUMBER _____

Q.C. LEVEL 1 2 3 4

COMMENTS:

ATI Lab I.D.# 913779 B

Sample 1	GMW-1/16-18
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

- - - - - LIMIT OF LIABILITY - - - - -

ATI WILL PERFORM THE SERVICES IN ACCORDANCE WITH NORMAL PROFESSIONAL STANDARDS FOR THE INDUSTRY. THE TOTAL LIABILITY OF ATI, ITS OFFICERS, AGENTS, EMPLOYEES OR SUCCESSORS, TO CLIENTS, ARISING OUT OF OR IN CONNECTION WITH THE SERVICES TO BE PROVIDED HEREIN, SHALL NOT EXCEED THE INVOICE AMOUNT FOR SAID SERVICES. CLIENT ACCEPTANCE OF A PROPOSAL RELEASES ATI FROM ANY LIABILITY IN EXCESS THEREOF, NOT WITHSTANDING ANY PROVISION TO THE CONTRARY IN ANY CLIENT PURCHASE ORDER OR CONTRACT.

CLIENT NOTIFIED YES ( ) NO (✓)
DATE/TIME: _____

NOTES: _____

INSPECTED BY: _____

DATE INSPECTED: 6/19/91

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: GSM

Method of Shipment Fed Ex

Date Received: 6/1/9,

Sample Type: Soil

Is there a chain of custody?	Y	N
Is the chain of custody signed?	Y	N
Were samples received cold?	Y	N
Were any containers broken?	Y	N
Were samples preserved correctly?	Y	N
Were samples received within holding time?	Y	N

PROJECT NUMBER WL 21202

PURCHASE ORDER NUMBER

Q.C. LEVEL 1 2 3 4

COMMENTS:

ATI Lab I.D.# 91-3779, C

Sample 1	GMPIMW-1/8-10'
2	GMPEMW-1/26-28'
3	GMPIMW-2/6-15'
4	GMPIMW-2/28-30'
5	GMPIMW-3/15-20'
6	GMPIMW-3/24-26'
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
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19	
20	

CLIENT NOTIFIED YES ( ) NO ( )

DATE/TIME:

NOTES:

INSPECTED BY: Regina Davidson

DATE INSPECTED: 6/14,

& MILLER, INC.
Environmental Services

Laboratory Task Order No. 3316

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number WI 21202

Project Location 3M/Wausau WI

Laboratory ATI, Pensacola

Sampler(s)/Affiliation Ross C./Geraghty & Miller Inc.

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	SAMPLE BOTTLE / CONTAINER DESCRIPTION: 4 oz clear glass jar	4 oz clear glass jar TPH mod. 8015	4 oz clear glass jar BETX 8020	4 oz clear glass jar TPH mod. 8015 & Total Pb	4 oz clear glass jar VOCs incl. MTBE	GL-3776	A/B/C			TOTAL
GMFOMW-1/14-16'		5/28/91	A-1	1			1						2
GMFOMW-1/28-30		5/24/91	A-2	1			1						2
GMQMW-1/16-18'		5/30/91	B-1	1	1								2
GMPIMW-1/8-10'		5/29/91	C-1				1	1					2
GMPIMW-1/26-28'		5/30/91	C-2				1	1					2
GMPIMW-1/16-18'		5/29/91	C-3				1	1					2
GMPIMW3/28-30'		5/29/91	C-4				1	1					2
GMPIMW3/18-20'		5/29/91	C-5				1	1					2
GMPIMW3/24-26'		5/29/91	C-6				1	1					2

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 18

Relinquished by: Ross M. Coughlin	Organization: Geraghty & Miller Inc.	Date 5/31/91	Time 14:00	Seal Intact? (Yes) No N/A
Received by:	Organization:			
Relinquished by:	Organization:			Seal Intact? Yes No N/A
Received by: Federal Express	Organization:	Date 6/1/91	Time 10:00	

Special Instructions/Remarks: Any questions call Eric Carman at 414-276-7742

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

G&M Form 09 1-90

Southprint 90-0136

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-3779B
Order Number: P43889
Order Date: 06/01/91
Client: 07053
Sampled By: R.C.
Sample Date: 05/30/91
Sample Time: N/S

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
3779B-1	GMQMW-1/16-18'	DIESEL	PPM	2140	5

Comments: PPM = Parts Per Million, mg/kg on a dry basis; PPB = Parts Per Billion, ug/kg on a dry basis. Method Reference: SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits.

Approved By : Peter Shuba

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-3779B-1
Order Date: 06/01/91
Sampled By: R.C.

Sample ID.: GMQMW-1/16-18' Sample Date: 05/30/91 Time: N/S

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	59
ETHYL BENZENE	PPB	BDL	59
TOLUENE	PPB	BDL	290
XYLENE	PPB	BDL	120
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	106	

end of report

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3779B

METHOD: 8020 / SW 846, 3rd Edition, November 1986

LEVEL: II

LAB ID:	CLIENT ID:	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	QC BATCH	QC BLANK
91-3779B-1	GMQMW-1/16-18'	05-30-91	06-01-91	N/A	06-02-91	LS072	A

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

ETHOD INSTRUMENT BLANK

ATCH NUMBER: LS072

ETHOD: 8020 / SW 846, 3rd Edition, November 1986

PARAMETERS	DETECTION LIMIT	ANALYSIS DATE	BLANK A 06-02-91	BLANK B 06-03-91	BLANK C N/A
			RESULTS	RESULTS	RESULTS
TBE	250		BDL	BDL	BDL
ENZENE	50		BDL	BDL	BDL
OLUENE	250		BDL	BDL	BDL
HLOROBENZENE	50		BDL	BDL	BDL
THYL BENZENE	50		BDL	BDL	BDL
YLENES	100		BDL	BDL	BDL
3-DCB	100		BDL	BDL	BDL
,2-DCB	100		BDL	BDL	BDL
,4-DCB	100		BDL	BDL	BDL
riF-toluene	(70-130)		110	121	N/A

OTE: Units in ug/kg = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED N/A = NOT APPLICABLE

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA. FLORIDA 32514

SOIL MATRIX SPIKE

BATCH NUMBER: LS072 SAMPLE SPIKED: 91-3773-1 DRY WEIGHT: .93

METHOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
BENZENE	537.6	BDL	573.1	107	66-142
TOLUENE	537.6	BDL	572	106	59-139
CHLOROBENZENE	537.6	BDL	535.4	100	60-133

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
BENZENE	537.6	BDL	587	109	2	21	66-142
TOLUENE	537.6	BDL	583.8	109	3	21	59-139
CHLOROBENZENE	537.6	BDL	554.8	103	3	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
MS	06-03-91		109 %	70-130
MSD	06-03-91		110 %	70-130

NOTE: Units in ug/kg = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

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Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

INDEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: LS073

METHOD: 8020 / SW 846, 3RD EDITION, NOVEMBER 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
BENZENE	50	BDL	50	100	76-127
TOLUENE	50	BDL	47	94	76-125
CHLOROBENZENE	50	BDL	48	96	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
IQC	06-04-91		103 %	70-130

NOTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

_____

_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3779B BATCH: 69S

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-3779B-1	GMQMW-1/16-18'	06-03-91	06-04-91
MATRIX SPIKE		06-05-91	06-07-91
MATRIX SPIKE DUP.		06-05-91	06-07-91
BLANK		06-03-91	06-04-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	MATRIX SPIKE RESULTS	MATRIX SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC MATRIX SPIKE	%REC MATRIX SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	5	BDL	79	80	140	56	57	37-133	2	30

NOTES: PPM = Parts Per Million, mg/kg.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and reference below.
SAMPLE SPIKED AND DUPLICATED - 91-3779C-2.

REFERENCE: SW-846, 3rd Edition, November 1986.

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: GM

Method of Shipment Fed Ex

Date Received: 6/1/91

Sample Type: Soil

Is there a chain of custody?	(Y)	N
Is the chain of custody signed?	(Y)	N
Were samples received cold?	(Y)	N
Are any containers broken?	Y	(N)
Were samples preserved correctly?	(Y)	N
Were samples received within holding time?	(Y)	N

PROJECT NUMBER WL 21202

PURCHASE ORDER NUMBER

QC. LEVEL 1 2 3 4

COMMENTS:

ATI Lab I.D.# 91-3779, C

Sample 1	GMPIMW-1/8-10'
2	GMPIMW-1/26-28'
3	GMPIMW-2/6-18'
4	GMPIMW-3/28-30'
5	GMPIMW-3/15-20'
6	GMPIMW-3/24-26'
7	
8	
9	
10	
11	
12	
13	
14	
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16	
17	
18	
19	
20	

- - - - - LIMIT OF LIABILITY - - - - -

ATI WILL PERFORM THE SERVICES IN ACCORDANCE WITH NORMAL PROFESSIONAL STANDARDS FOR THE INDUSTRY. THE TOTAL LIABILITY OF ATI, ITS OFFICERS, AGENTS, EMPLOYEES OR SUCCESSORS, TO CLIENTS, ARISING OUT OF OR IN CONNECTION WITH THE SERVICES TO BE PROVIDED HEREIN, SHALL NOT EXCEED THE INVOICE AMOUNT FOR SAID SERVICES. CLIENT ACCEPTANCE OF A PROPOSAL RELEASES ATI FROM ANY LIABILITY IN EXCESS THEREOF, NOT WITHSTANDING ANY PROVISION TO THE CONTRARY IN ANY CLIENT PURCHASE ORDER OR CONTRACT.

CLIENT NOTIFIED YES ( ) NO ( )
DATE/TIME:

NOTES:

INSPECTED BY: Peggy Dawson

DATE INSPECTED: 6/1/91

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: GSM

Method of Shipment FedEx

Date Received: 6/19/

Sample Type: Soil

Is there a chain of custody?	(Y)	N
Is the chain of custody signed?	(Y)	N
Are samples received cold?	(Y)	N
Were any containers broken?	Y	(N)
Are samples preserved correctly?	(Y)	N
Were samples received within holding time?	(Y)	N

PROJECT NUMBER ~~212~~ 121202

PURCHASE ORDER NUMBER _____

QC. LEVEL 1 2 3 4

COMMENTS:

ATI Lab I.D.# 913779, B

Sample 1	GMW16-1/16-18
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

- - - - - LIMIT OF LIABILITY - - - - -

ATI WILL PERFORM THE SERVICES IN ACCORDANCE WITH NORMAL PROFESSIONAL STANDARDS FOR THE INDUSTRY. THE TOTAL LIABILITY OF ATI, ITS OFFICERS, AGENTS, EMPLOYEES OR SUCCESSORS, TO CLIENTS, ARISING OUT OF OR IN CONNECTION WITH THE SERVICES TO BE PROVIDED HEREIN, SHALL NOT EXCEED THE INVOICE AMOUNT FOR SAID SERVICES. CLIENT ACCEPTANCE OF A PROPOSAL RELEASES ATI FROM ANY LIABILITY IN EXCESS THEREOF, NOT WITHSTANDING ANY PROVISION TO THE CONTRARY IN ANY CLIENT PURCHASE ORDER OR CONTRACT.

CLIENT NOTIFIED YES ( ) NO (✓)
DATE/TIME: _____

NOTES: _____

INSPECTED BY: Jerry L Bartlett

DATE INSPECTED: 6/19/

AnalyticalTechnologies,Inc.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Page 1 of 1

SAMPLE INSPECTION AND IDENTIFICATION SHEET

lient: G&M

thod of Shipment FedEx

ate Received: 6/1/91

mple Type: Soil

there a chain of custody? (Y) N

the chain of custody signed? (Y) N

re samples received cold? (Y) N

ere any containers broken? Y (N)

re samples preserved correctly? (Y) N

ere samples received within olding time? (Y) N

OJECT NUMBER 21203

RCHASE ORDER NUMBER ____

. LEVEL 1 2 3 4

MMENTS:

ATI Lab I.D.# 913779 A

Sample	
1	GMI-OMW-1/14-16'
2	GMI-OMW-1/25-30'
3	
4	
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6	
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12	
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16	
17	
18	
19	
20	

- - - - - LIMIT OF LIABILITY - - - - -

ENT NOTIFIED YES ( ) NO (✓)
/TIME:

ES:

INSPECTED BY: [signature]

DATE INSPECTED: 6/1/91

SOIL SAMPLES

6/12/91

(SOIL CUTTINGS)

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-4060C
Order Number: P44289
Order Date: 06/13/91
Client: 07053
Sampled By: G&M
Sample Date: 06/12/91
Sample Time: 1210

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
4060C-1	SOIL CUTTINGS	TPH/GC/FID	PPM	BDL	5.0

Comments: PPM = Parts Per Million, mg/kg on a dry basis; PPB = Parts Per Billion, ug/kg on a dry basis. Method Reference: SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits.

Approved By : Peter Shuba

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: SOIL

Lab I.D.#: 91-4060C-1
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: SOIL CUTTINGS Sample Date: 06/12/91 Time: 1210

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	52
ETHYL BENZENE	PPB	BDL	52
TOLUENE	PPB	BDL	260
XYLENE	PPB	BDL	100
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	90	

end of report

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060C

METHOD: 8020 / SW 846, 3rd Edition, November 1986

LEVEL: II

LAB ID:	CLIENT ID:	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	QC BATCH	QC BLANK
91-4060C-1	SOIL CUTTINGS	06-12-91	06-13-91	N/A	06-14-91	LS078	A

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

BATCH NUMBER: LS078

METHOD: 8020 / SW 846, 3rd Edition, November 1986

PARAMETERS	DETECTION LIMIT		BLANK A	BLANK B	BLANK C
		ANALYSIS DATE	06-14-91	06-15-91	N/A
			RESULTS	RESULTS	RESULTS
MTBE	250		BDL	BDL	BDL
BENZENE	50		BDL	BDL	BDL
TOLUENE	250		BDL	BDL	BDL
CHLOROBENZENE	50		BDL	BDL	BDL
ETHYL BENZENE	50		BDL	BDL	BDL
XYLENES	100		BDL	BDL	BDL
1,3-DCB	100		BDL	BDL	BDL
1,2-DCB	100		BDL	BDL	BDL
1,4-DCB	100		BDL	BDL	BDL
TriF-toluene	(70-130)		104	96	N/A

NOTE: Units in ug/kg = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED
N/A = NOT APPLICABLE

AnalyticalTechnologies,Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SOIL MATRIX SPIKE

BATCH NUMBER: LS078 SAMPLE SPIKED: 91-4099B-1 DRY WEIGHT: .87

METHOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
BENZENE	574.7	BDL	528.7	92	66-142
TOLUENE	574.7	BDL	532.1	93	59-139
CHLOROBENZENE	574.7	BDL	489.6	85	60-133

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
BENZENE	574.7	BDL	474.7	83	10	21	66-142
TOLUENE	574.7	BDL	471.2	82	13	21	59-139
CHLOROBENZENE	574.7	BDL	448.2	78	9	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
MS	06-15-91	N/A	97 %	70-130
MSD	06-15-91	N/A	90 %	70-130

D = DILUTED OUT

NOTE: Units in ug/kg = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

_____

_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

DEPENDENT QUALITY CONTROL CHECK

ORM NUMBER: LS078

THOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
BENZENE	50	BDL	51	102	76-127
TOLUENE	50	BDL	48	96	76-125
CHLOROBENZENE	50	BDL	48	96	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
IQC	06-14-91	N/A	95 %	70-130

TE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

MMENTS: _____

_____

_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060C BATCH: 76S

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-4060C-1	SOIL CUTTINGS	06-14-91	06-18-91
MATRIX SPIKE		06-14-91	06-18-91
MATRIX SPIKE DUP.		06-14-91	06-18-91
BLANK		06-14-91	06-18-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	MATRIX SPIKE RESULTS	MATRIX SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC MATRIX SPIKE	%REC MATRIX SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	5	BDL	96	111	100	96	111	37-133	14	30

NOTES: PPM = Parts Per Million, mg/kg.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and reference below.
SAMPLE SPIKED AND DUPLICATED - 91-4060C-1.

REFERENCE: SW-846, 3rd Edition, November 1986.

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: SS-5
Lab ID: 015785-0001-SA
Matrix: SOIL Sampled: 12 JUL 91 Received: 13 JUL 91
Authorized: 13 JUL 91 Prepared: 22 JUL 91 Analyzed: 27 JUL 91

Parameter	Result	Wet Wt. Units	Reporting Limit
2-Chlorophenol	ND	mg/kg	2.0
2-Nitrophenol	ND	mg/kg	3.0
Phenol	ND	mg/kg	0.90
2,4-Dimethylphenol	ND	mg/kg	2.0
2,4-Dichlorophenol	ND	mg/kg	3.0
2,4,6-Trichlorophenol	ND	mg/kg	4.0
4-Chloro-3-methylphenol	ND	mg/kg	2.0
2,4-Dinitrophenol	ND	mg/kg	87
4,6-Dinitro-2-methylphenol	ND	mg/kg	110
Pentachlorophenol	ND	mg/kg	50
4-Nitrophenol	ND	mg/kg	40

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

SOIL SAMPLES

7/31/91

(DOWNTOWN)

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW10/19-21
Lab ID: 016106-0002-SA
Matrix: SOIL Sampled: 31 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	3100	ug/kg	1000
Toluene	5900	ug/kg	1000
Ethylbenzene	49000	ug/kg	1000
Xylenes (total)	190000	ug/kg	1000
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	74	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW6/21-23
Lab ID: 016106-0003-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet Wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	101	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW6/23-25
Lab ID: 016106-0004-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	101	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW6/34-36
Lab ID: 016106-0005-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet Wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	101	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW8/16-18
Lab ID: 016106-0006-SA
Matrix: SOIL Sampled: 29 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	94	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW8/24-26
Lab ID: 016106-0007-SA
Matrix: SOIL Sampled: 29 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	102	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW8/34-36
Lab ID: 016106-0008-SA
Matrix: SOIL Sampled: 29 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	76	ug/kg	50
Xylenes (total)	77	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	98	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW7/14-16
Lab ID: 016106-0009-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	101	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW7/22-24
Lab ID: 016106-0010-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	101	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW7/34-36
Lab ID: 016106-0011-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	60	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	99	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW12/19-21
Lab ID: 016106-0012-SA
Matrix: SOIL Sampled: 31 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	103	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW12/23-25
Lab ID: 016106-0013-SA
Matrix: SOIL Sampled: 31 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: NA Analyzed: 02 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	50
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	103	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW10/14-16
Lab ID: 016106-0001-SA
Matrix: SOIL Sampled: 31 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit	
Total Chromatographable Organics	4.8	mg/kg	4.0	1
Surrogate	Recovery			
o-Terphenyl	113	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C22-C29.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW10/19-21
Lab ID: 016106-0002-SA
Matrix: SOIL Sampled: 31 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit	
Total Chromatographable Organics	47000	mg/kg	80	1
Surrogate	Recovery			
o-Terphenyl	ND	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C8-C13.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW6/21-23
Lab ID: 016106-0003-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet Wt. Units	Reporting Limit
Total Chromatographable Organics	ND	mg/kg	4.0
Surrogate	**Recovery**		
o-Terphenyl	92	%	

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW6/23-25
Lab ID: 016106-0004-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 06 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Total Chromatographable Organics	ND	mg/kg	4.0
Surrogate	**Recovery**		
o-Terphenyl	79	%	

ND = Not detected
NA = Not applicable

Reported By: Heather Esbenson Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW6/34-36
Lab ID: 016106-0005-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 06 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit	
Total Chromatographable Organics	80	mg/kg	4.0	1
Surrogate	Recovery			
o-Terphenyl	78	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C9-C28.

ND = Not detected
NA = Not applicable

Reported By: Heather Esbenson Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW8/16-18
Lab ID: 016106-0006-SA
Matrix: SOIL Sampled: 29 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet Wt. Units	Reporting Limit
Total Chromatographable Organics	ND	mg/kg	4.0
Surrogate	Recovery		
o-Terphenyl	94	%	

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW8/24-26
Lab ID: 016106-0007-SA
Matrix: SOIL Sampled: 29 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet Wt. Units	Reporting Limit	
Total Chromatographable Organics	290	mg/kg	4.0	1
Surrogate	Recovery			
o-Terphenyl	92	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C9-C24.

ND = Not detected
NA = Not applicable

Reported By: Heather Esbenson Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW8/34-36
Lab ID: 016106-0008-SA
Matrix: SOIL Sampled: 29 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit	
Total Chromatographable Organics	170	mg/kg	4.0	1
Surrogate	Recovery			
o-Terphenyl	70	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C9-C28.

ND = Not detected
NA = Not applicable

Reported By: Heather Esbenson Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW7/14-16
Lab ID: 016106-0009-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet Wt. Units	Reporting Limit
Total Chromatographable Organics	ND	mg/kg	4.0
Surrogate	**Recovery**		
o-Terphenyl	72	%	

ND = Not detected
NA = Not applicable

Reported By: Heather Esbenson Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW7/22-24
Lab ID: 016106-0010-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet Wt. Units	Reporting Limit
Total Chromatographable Organics	ND	mg/kg	4.0
Surrogate	Recovery		
o-Terphenyl	95	%	

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW7/34-36
Lab ID: 016106-0011-SA
Matrix: SOIL Sampled: 30 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 08 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit	
Total Chromatographable Organics	890	mg/kg	40	1
Surrogate	Recovery			
o-Terphenyl	195	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C10-C26.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW12/19-21
Lab ID: 016106-0012-SA
Matrix: SOIL Sampled: 31 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 08 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Total Chromatographable Organics	ND	mg/kg	4.0
Surrogate	**Recovery**		
o-Terphenyl	93	%	

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW12/23-25
Lab ID: 016106-0013-SA
Matrix: SOIL Sampled: 31 JUL 91 Received: 01 AUG 91
Authorized: 01 AUG 91 Prepared: 03 AUG 91 Analyzed: 07 AUG 91

Parameter	Result	Wet wt. Units	Reporting Limit
Total Chromatographable Organics	ND	mg/kg	4.0
Surrogate	**Recovery**		
o-Terphenyl	99	%	

ND = Not detected
NA = Not applicable

Reported By: Heather Esbenson Approved By: Mike Hoffman

APPENDIX E

LABORATORY RESULTS FROM GROUND-WATER SAMPLES

GROUND-WATER SAMPLES

5/30/91

(DOWNTOWN)

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-3800
Order Number: P43919
Order Date: 06/03/91
Client: 07053
Sampled By: E.D./T.P.
Sample Date: 05/30/91
Sample Time: VARIOUS

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
3800-1	DSOMW-2	TPH/GC/FID	PPM	BDL	3
3800-2	DSOMW-3	DIESEL	PPM	51	3

Comments: PPM = Parts Per Million, mg/l. PPB = Parts Per Billion, ug/l. Method Ref: SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits.

Approved By : Peter Shuba

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-3800-1
Order Date: 06/03/91
Sampled By: E.D./T.P.

Sample ID.: DSOMW-2 Sample Date: 05/30/91 Time: VARIOUS

ACID/8270 ACID EXTRACTABLES - METHOD 8270

Parameter	Units	Result	Detection Limit
BENZOIC ACID	PPB	BDL	50
4-CHLORO-3-METHYLPHENOL	PPB	BDL	10
2-CHLOROPHENOL	PPB	BDL	10
2,4-DICHLOROPHENOL	PPB	BDL	10
2,6-DICHLOROPHENOL	PPB	BDL	10
2,4-DIMETHYLPHENOL	PPB	BDL	10
4,6-DINITRO-2-METHYLPHENOL	PPB	BDL	50
2,4-DINITROPHENOL	PPB	BDL	50
2-METHYLPHENOL	PPB	BDL	10
4-METHYLPHENOL	PPB	BDL	10
2-NITROPHENOL	PPB	BDL	10
4-NITROPHENOL	PPB	BDL	50
PENTACHLOROPHENOL	PPB	BDL	50
PHENOL	PPB	BDL	10
2,3,4,6-TETRACHLOROPHENOL	PPB	BDL	10
2,4,5-TRICHLOROPHENOL	PPB	BDL	50
2,4,6-TRICHLOROPHENOL	PPB	BDL	10

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-3800-2
Order Date: 06/03/91
Sampled By: E.D./T.P.

Sample ID.: DSOMW-3 Sample Date: 05/30/91 Time: VARIOUS

ACID/8270 ACID EXTRACTABLES - METHOD 8270

Parameter	Units	Result	Detection Limit
BENZOIC ACID	PPB	BDL	500
4-CHLORO-3-METHYLPHENOL	PPB	BDL	100
2-CHLOROPHENOL	PPB	BDL	100
2,4-DICHLOROPHENOL	PPB	BDL	100
2,6-DICHLOROPHENOL	PPB	BDL	100
2,4-DIMETHYLPHENOL	PPB	BDL	100
4,6-DINITRO-2-METHYLPHENOL	PPB	BDL	500
2,4-DINITROPHENOL	PPB	BDL	500
2-METHYLPHENOL	PPB	BDL	100
4-METHYLPHENOL	PPB	BDL	100
2-NITROPHENOL	PPB	BDL	100
4-NITROPHENOL	PPB	BDL	500
PENTACHLOROPHENOL	PPB	BDL	500
PHENOL	PPB	BDL	100
2,3,4,6-TETRACHLOROPHENOL	PPB	BDL	100
2,4,5-TRICHLOROPHENOL	PPB	BDL	500
2,4,6-TRICHLOROPHENOL	PPB	BDL	100

end of report

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3800

METHOD: 8270

BATCH: A67

SEMIVOLATILES

LAB ID	CLIENT ID	DATE SAMPLED	DATE RECEIVED	EXTRACTION DATE	ANALYSIS DATE
91-3800-1	DSO MW-2	05-30-91	06-01-91	06-04-91	06-05-91
91-3800-2	DSO MW-3	05-30-91	06-01-91	06-04-91	06-05-91

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	EXTRACTION DATE	ANALYSIS DATE
MS	06-03-91	06-07-91
MSD	06-03-91	06-07-91
BLANK	06-04-91	06-05-91

SAMPLE SPIKED & DUPLICATED - 91-3732-1

BATCH: A67

METHOD/REFERENCE: 8270/SW-846, 3rd Edition, November 1986.

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	MS CONCENTRATION (ug/l)	MS % REC #	QC LIMITS REC.
Phenol	400	BDL	192	48	12-89
2-Chlorophenol	400	BDL	192	48	27-123
1,4-Dichlorobenzene	200	BDL	116	58	36-97
N-Nitroso-di-n-prop.(1)	200	BDL	120	60	41-116
1,2,4-Trichlorobenzene	200	BDL	116	58	39-98
4-Chloro-3-methylphenol	400	BDL	192	48	23-97
Acenaphthene	200	BDL	132	66	46-118
4-Nitrophenol	400	BDL	188	47	10-80
2,4-Dinitrotoluene	200	BDL	120	60	24-96
Pentachlorophenol	400	BDL	248	62	9-103
Pyrene	200	BDL	156	78	26-127

COMPOUND	SPIKE ADDED (ug/l)	MSD CONCENTRATION (ug/l)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	400	200	50	4	42	12-89
2-Chlorophenol	400	204	51	6	40	27-123
1,4-Dichlorobenzene	200	112	56	4	28	36-97
N-Nitroso-di-n-prop.(1)	200	120	60	0	38	41-116
1,2,4-Trichlorobenzene	200	112	56	4	28	39-98
4-Chloro-3-methylphenol	400	204	51	6	42	23-97
Acenaphthene	200	132	66	0	31	46-118
4-Nitrophenol	400	184	46	2	50	10-80
2,4-Dinitrotoluene	200	124	62	3	38	24-96
Pentachlorophenol	400	256	64	3	50	9-103
Pyrene	200	156	78	0	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits -

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

NOTES: PPB = Parts Per Billion, ug/l.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

WATER SEMIVOLATILE SURROGATE RECOVERY

BATCH: A67

METHOD/REFERENCE: 8270/SW-846, 3rd Edition, November 1986.

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	3800-1	46	66	66	35	38	59		0
02	3800-2	42	58	44	26	28	49		0
03	MS.	40	44	36	29	32	30		0
04	MS. DUP.	42	44	36	30	34	30		0
05	BLANK 06-05	64	64	72	22	38	84		0
						QC LIMITS			

S1 (NBZ) = Nitrobenzene-d5 (35-114)
S2 (FBP) = 2-Fluorobiphenyl (43-116)
S3 (TPH) = Terphenyl (33-141)
S4 (PHL) = Phenol-d5 (10-94)
S5 (2FP) = 2-Fluorophenol (21-100)
S6 (TBP) = 2,4,6-Tribromophenol (10-123)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

Amount added - Acids - 100 PPB.
Amount added - Bases - 50 PPB.

NOTES: PPB = Parts Per Billion, ug/l
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

BATCH: A67

METHOD/REFERENCE: 8270/SW-846, 3rd Edition, November 1986.

	METHOD DETECTION LIMITS	INSTRUMENT BLANK (06-05-91) RESULTS
BENZOIC ACID	50	BDL
4-CHLORO-3-METHYLPHENOL	10	BDL
2-CHLOROPHENOL	10	BDL
2,4-DICHLOROPHENOL	10	BDL
2,6-DICHLOROPHENOL	10	BDL
2,4-DIMETHYLPHENOL	10	BDL
4,6-DINITRO-2-METHYLPHENOL	50	BDL
2,4-DINITROPHENOL	50	BDL
2-METHYLPHENOL	10	BDL
4-METHYLPHENOL	10	BDL
2-NITROPHENOL	10	BDL
4-NITROPHENOL	50	BDL
PENTACHLOROPHENOL	50	BDL
PHENOL	10	BDL
2,3,4,6-TETRACHLOROPHENOL	10	BDL
2,4,5-TRICHLOROPHENOL	50	BDL
2,4,6-TRICHLOROPHENOL	10	BDL

NOTES: PPB = Parts Per Billion, ug/l.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

BATCH: A67

METHOD/REFERENCE: 8270/SW-846, 3rd Edition, November 1986.

EPA QC

PARAMETERS	EXPECTED VALUE	EPA QC RESULTS	% RECOVERY	% REC. LIMITS
PHENOL	100	79	79	17-120
2-CHLOROPHENOL	100	90	90	36-120
2-NITROPHENOL	100	109	109	45-167
2,4-DIMETHYL PHENOL	100	95	95	42-109
2,4-DICHLOROPHENOL	100	94	94	52-122
NAPHTHALENE	50	55	110	36-120
HEXACHLOROBUTADINE	50	51	102	38-102
4-CHLORO-3-METHYL PHENOL	100	99	99	41-128
2,4,6-TRICHLOROPHENOL	100	89	89	52-129
ACENAPHATHENE	100	95	95	60-132
2,4-DINITROPHENOL	100	48	48	31-104
4-NITROPHENOL	100	75	75	13-116
FLOURENE	50	46	92	72-118
4,6-DINITRO-2-METHYLPHENOL	100	97	97	53-110
N-NITROSODIPHENYLAMINE	50	47	94	27-108
PENTACHLOROPHENOL	100	100	100	38-152
PHENANTHRENE	50	56	112	28-121
ANTHRACENE	50	53	106	43-118
FLOURANTHENE	100	117	117	42-121
PYRENE	50	60	120	32-146
BENZO (A) ANTHRACENE	50	50	100	29-121
DI-N-OCTYLPHTHALATE	50	58	116	19-132
BENZO (K) FLOURANTHENE	50	55	110	11-162
BENZO (A) PYRENE	100	106	112	32-163
INDENO(1,2,3-C,D)PYRENE	50	52	104	34-119
DIBENZO(A,H)ANTHRACENE	50	55	110	25-227
BENZO(G,H,I)PERYLENE	50	51	102	36-219

NOTES: PPB = Parts per Billion, ug/l.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.

AnalyticalTechnologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-3800 BATCH: 70W

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-3800-1	DSO MW-2	06-04-91	06-05-91
91-3800-2	DSO MW-3	06-04-91	06-05-91
SPIKE		06-04-91	06-05-91
SPIKE DUP.		06-04-91	06-05-91
DI BLANK		06-04-91	06-05-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	SPIKE RESULTS	SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC SPIKE	%REC SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	0.25	BDL	68	70	100	68	70	60-120	3	30

NOTES: PPM = Parts Per Million, mg/l
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the reference below.
NOT ENOUGHT SAMPLE SUBMITTED TO EXTRACT MATRIX SPIKE AND MATRIX SPIKE DUPLICATE

REFERENCE: SW-846, 3rd Edition, November 1986.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

SAMPLE INSPECTION AND IDENTIFICATION SHEET

Client: G+M WI

Method of Shipment Fed. Ex (878759391)

Date Received: 6/1/91

Sample Type: water

Is there a chain of custody?	(Y)	N
Is the chain of custody signed?	(Y)	N
Were samples received cold?	(Y)	N
Were any containers broken?	Y	(●)
Were samples preserved correctly?	(Y)	N
Were samples received within holding time?	(Y)	N

PROJECT NUMBER WI 21201

PURCHASE ORDER NUMBER

Q.C. LEVEL 1 2 3 4

COMMENTS: 4°C Cooler Temp.

ATI Lab I.D.#

Sample 1	DSO mw-2
2	DSO mw-3
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

CLIENT NOTIFIED DATE/TIME: YES ( ) NO (/)

NOTES:

INSPECTED BY: Mike Moran

DATE INSPECTED: 6/1/91

& MILLER, INC.
Environmental Services

Laboratory Task Order No.______

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number WI21201

Project Location 3M - WAUSAU

Laboratory ATI

Sampler(s)/Affiliation ERIC DWYER
TED POWELL

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	2-40 ML VOC	1-1L GLASS AMBER BOTTLE Acid Extractables								TOTAL
DSOMW-2	L	5-30/1600		2	1								3
DSOMW-3	L	5-30/1610		2	1								3

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 6

Relinquished by: [signature]	Organization: G&M	Date 5/31/91 Time 6:00pm	Seal Intact? Yes No N/A
Received by:	Organization:		
Relinquished by:	Organization:	Date 6/1/91 Time 1015	Seal Intact? Yes No N/A
Received by: Mike [signature]	Organization: ATI		

Special Instructions/Remarks: Eric Chapman will call Pete Skuba on 6/3/91 to discuss methods to be used on these samples

Delivery Method: ☐ In Person ☒ Common Carrier FED-EX (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

G&M Form 09 1-90

Southprint 90 0126

GROUND-WATER SAMPLES

6/11 - 12/91

(GREYSTONE AND DOWNTOWN)

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-4060A
Order Number: P44286
Order Date: 06/13/91
Client: 07053
Sampled By: G&M
Sample Date: 06/11&12
Sample Time: VARIOUS

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
4060A-1	GPIMW-1	ALK, DISSOLVED	PPM	128	1.0
4060A-2	GMQMW-1	ALK, DISSOLVED	PPM	17	1.0
4060A-3	DFOMW-1	ALK, DISSOLVED	PPM	931	1.0
4060A-4	DSOMW-1	ALK, DISSOLVED	PPM	69	1.0
4060A-5	DSOMW-4	ALK, DISSOLVED	PPM	43	1.0
4060A-1	GPIMW-1	BIOCHEMICAL OXYGEN DEM	PPM	1	1
4060A-2	GMQMW-1	BIOCHEMICAL OXYGEN DEM	PPM	2	1
4060A-3	DFOMW-1	BIOCHEMICAL OXYGEN DEM	PPM	28	1
4060A-4	DSOMW-1	BIOCHEMICAL OXYGEN DEM	PPM	13	1
4060A-5	DSOMW-4	BIOCHEMICAL OXYGEN DEM	PPM	3	1
4060A-1	GPIMW-1	CALCIUM	PPM	48	2.0
4060A-2	GMQMW-1	CALCIUM	PPM	16	2.0
4060A-3	DFOMW-1	CALCIUM	PPM	89	2.0
4060A-4	DSOMW-1	CALCIUM	PPM	63	2.0
4060A-5	DSOMW-4	CALCIUM	PPM	95	2.0
4060A-1	GPIMW-1	CALCIUM, DISSOLVED	PPM	43	2.0
4060A-2	GMQMW-1	CALCIUM, DISSOLVED	PPM	23	2.0
4060A-3	DFOMW-1	CALCIUM, DISSOLVED	PPM	89	2.0
4060A-4	DSOMW-1	CALCIUM, DISSOLVED	PPM	58	2.0
4060A-5	DSOMW-4	CALCIUM, DISSOLVED	PPM	95	2.0
4060A-1	GPIMW-1	CHLORIDE	PPM	13	1.0
4060A-2	GMQMW-1	CHLORIDE	PPM	6	1.0
4060A-3	DFOMW-1	CHLORIDE	PPM	276	1.0
4060A-4	DSOMW-1	CHLORIDE	PPM	270	1.0
4060A-5	DSOMW-4	CHLORIDE	PPM	308	1.0
4060A-1	GPIMW-1	CHEMICAL OXYGEN DEMAND	PPM	93	7.0
4060A-2	GMQMW-1	CHEMICAL OXYGEN DEMAND	PPM	21	7.0
4060A-3	DFOMW-1	CHEMICAL OXYGEN DEMAND	PPM	172	7.0
4060A-4	DSOMW-1	CHEMICAL OXYGEN DEMAND	PPM	BDL	7.0
4060A-5	DSOMW-4	CHEMICAL OXYGEN DEMAND	PPM	BDL	7.0
4060A-1	GPIMW-1	IRON	PPM	51	0.006

Comments: PPM = Parts Per Million, mg/l. PPB = Parts Per Billion, ug/l.
Meth Refs: EPA 600/4-79-020, Rev 3/83 & SW-846, 3rd Ed, 11/86. BDL = Below Detection Limits. *Elevated detection limit due to matrix interference.

Approved By : R. Michelotti

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060B-1
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: GPIMW-3 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	110	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060B-2
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: GPIMW-2 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060B-3
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DUP-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	108	

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060B-4
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DUP-2 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE, ETHYLBENZENE, TOLUENE, XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	3	1
ETHYL BENZENE	PPB	2	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	13	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

end of report

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060B

METHOD: 8020 / SW 846, 3rd Edition, November 1986

LEVEL: II

LAB ID:	CLIENT ID:	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	QC BATCH	QC BLANK
91-4060B-1	GPIMW-3	06-11-91	06-13-91	N/A	06-15-91	BW079	A
91-4060B-2	GPIMW-2	06-11-91	06-13-91	N/A	06-15-91	BW079	A
91-4060B-3	DUP-1	06-11-91	06-13-91	N/A	06-15-91	BW079	A
91-4060B-4	DUP-2	06-12-91	06-13-91	N/A	06-15-91	BW079	A

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

BATCH NUMBER: BW079

METHOD: 8020 / SW 846, 3rd Edition, November 1986

PARAMETERS	DETECTION LIMIT		BLANK A	BLANK B	BLANK C
		ANALYSIS DATE	06-15-91	06-16-91	N/A
			RESULTS	RESULTS	RESULTS
MTBE	5		BDL	BDL	BDL
BENZENE	1		BDL	BDL	BDL
TOLUENE	5		BDL	BDL	BDL
CHLOROBENZENE	1		BDL	BDL	BDL
ETHYL BENZENE	1		BDL	BDL	BDL
XYLENES	2		BDL	BDL	BDL
1,3-DCB	2		BDL	BDL	BDL
1,2-DCB	2		BDL	BDL	BDL
1,4-DCB	2		BDL	BDL	BDL
TriF-toluene	(70-130)		110	110	N/A

NOTE: Units in ug/l = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED
N/A = NOT APPLICABLE

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

TER MATRIX SPIKE

BATCH NUMBER: BW079 SAMPLE SPIKED: 91-4060B-1

THOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
BENZENE	50	BDL	50	100	76-127
TOLUENE	50	BDL	50	100	76-125
CHLOROBENZENE	50	BDL	50	100	75-130

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
BENZENE	50	BDL	49	98	2	11	76-127
TOLUENE	50	BDL	49	98	2	13	76-125
CHLOROBENZENE	50	BDL	50	100	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
MS	06-16-91	N/A	103 %	70-130
MSD	06-16-91	N/A	103 %	70-130

= DILUTED OUT

TE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

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_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

DEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: BW080

METHOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
BENZENE	50	BDL	56	112	76-127
TOLUENE	50	BDL	48	96	76-125
CHLOROBENZENE	50	BDL	48	96	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
QC	06-17-91	N/A	93 %	70-130

NOTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

_____

_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060B BATCH: 77W

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-4060B-1	GPIMW-3	06-18-91	06-19-91
91-4060B-2	GPIMW-2	06-18-91	06-19-91
91-4060B-3	DUP-1	06-18-91	06-19-91
91-4060B-4	DUP-2	06-18-91	06-19-91
SPIKE		06-17-91	06-18-91
SPIKE DUP.		06-17-91	06-18-91
DI BLANK		06-18-91	06-19-91

PARAMETER	METHOD	DETECTION LIMIT	BLANK	SPIKE RESULTS	SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC SPIKE	%REC SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	0.25	BDL	62	81	100	62	81	60-120	27	30

NOTES: PPM = Parts Per Million, mg/l.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the reference below.
NOT ENOUGH SAMPLE SUBMITTED TO EXTRACT MATRIX SPIKE AND MATRIX SPIKE DUPLICATE.

REFERENCE: SW-846, 3rd Edition, November 1986.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT NAME: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060B

QC LEVEL: II

LAB ID	CLIENT ID
91-4060B-1	GPIMW-3
91-4060B-2	GPIMW-2
91-4060B-3	DUP-1
91-4060B-4	DUP-2

PARAMETER	PREPARATION DATE	ANALYSIS DATE	BATCH#	METHOD	METHOD DETECTION LIMIT	EPA CRDL	BLANK RESULT	SAMPLE RESULT	DUPLIC RESULT	RPD SAMPLE	MAX RPD	MATRIX SPIKE RESULT	TRUE MS RESULT	%REC MS	%REC CONTROL LIMITS	QC RESULT	TRUE QC RESULT	%REC QC	%REC CONTROL LIMITS
LEAD	06-20-91	06-20-91	PbG-210	239.2	0.002	0.003	BDL	0.004	0.004	0	20	0.020	0.020	100	75-125	0.041	0.040	102	90-110

PARAMETER	LCS RESULT	TRUE LCS RESULT	LCS %REC	LCS CONTROL LIMITS	SAMPLE DUPLIC	SAMPLE SPIKED
LEAD	0.042	0.040	105	80-120	4084-1	4084-1

Notes: PPM = Parts Per Million, mg/l.
BDL = Below Detection Limit.
Results recorded are blank corrected.
Control limits are from ATI's internal quality assurance program and the referenced method.

Reference: EPA 600/4-79-020, Revised March 1983.

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A
Order Date: 06/13/91
Sampled By: G&M

Single Tests continued Sample Date: 06/11&12 Time: VARIOUS

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
4060A-2	GMQMW-1	IRON	PPM	0.53	0.006
4060A-3	DFOMW-1	IRON	PPM	42	0.006
4060A-4	DSOMW-1	IRON	PPM	7.4	0.006
4060A-5	DSOMW-4	IRON	PPM	57	0.006
4060A-1	GPIMW-1	IRON, DISSOLVED	PPM	0.013	0.006
4060A-2	GMQMW-1	IRON, DISSOLVED	PPM	0.015	0.006
4060A-3	DFOMW-1	IRON, DISSOLVED	PPM	13	0.006
4060A-4	DSOMW-1	IRON, DISSOLVED	PPM	4.5	0.006
4060A-5	DSOMW-4	IRON, DISSOLVED	PPM	0.016	0.006
4060A-1	GPIMW-1	MAGNESIUM	PPM	21	0.05
4060A-2	GMQMW-1	MAGNESIUM	PPM	3.6	0.05
4060A-3	DFOMW-1	MAGNESIUM	PPM	17	0.05
4060A-4	DSOMW-1	MAGNESIUM	PPM	14	0.05
4060A-5	DSOMW-4	MAGNESIUM	PPM	28	0.05
4060A-1	GPIMW-1	MAGNESIUM, DISSOLVED	PPM	0.069	0.05
4060A-2	GMQMW-1	MAGNESIUM, DISSOLVED	PPM	3.6	0.05
4060A-3	DFOMW-1	MAGNESIUM, DISSOLVED	PPM	17	0.05
4060A-4	DSOMW-1	MAGNESIUM, DISSOLVED	PPM	14	0.05
4060A-5	DSOMW-4	MAGNESIUM, DISSOLVED	PPM	20	0.05
4060A-1	GPIMW-1	MANGANESE	PPM	0.91	0.002
4060A-2	GMQMW-1	MANGANESE	PPM	0.10	0.002
4060A-3	DFOMW-1	MANGANESE	PPM	16	0.002
4060A-4	DSOMW-1	MANGANESE	PPM	3.5	0.002
4060A-5	DSOMW-4	MANGANESE	PPM	3.1	0.002
4060A-1	GPIMW-1	MANGANESE, DISSOLVED	PPM	0.069	0.002
4060A-2	GMQMW-1	MANGANESE, DISSOLVED	PPM	0.10	0.002
4060A-3	DFOMW-1	MANGANESE, DISSOLVED	PPM	16	0.002
4060A-4	DSOMW-1	MANGANESE, DISSOLVED	PPM	3.5	0.002
4060A-5	DSOMW-4	MANGANESE, DISSOLVED	PPM	0.61	0.002
4060A-1	GPIMW-1	SODIUM	PPM	12	0.10
4060A-2	GMQMW-1	SODIUM	PPM	5.3	0.10
4060A-3	DFOMW-1	SODIUM	PPM	490	0.10
4060A-4	DSOMW-1	SODIUM	PPM	130	0.10
4060A-5	DSOMW-4	SODIUM	PPM	130	0.10
4060A-1	GPIMW-1	LEAD	PPM	0.012	0.002
4060A-2	GMQMW-1	LEAD	PPM	BDL	0.002
4060A-3	DFOMW-1	LEAD	PPM	0.010	0.010*
4060A-4	DSOMW-1	LEAD	PPM	0.004	0.002

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A
Order Date: 06/13/91
Sampled By: G&M

Single Tests continued Sample Date: 06/11&12 Time: VARIOUS

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
4060A-5	DSOMW-4	LEAD	PPM	0.020	0.010*
4060A-1	GPIMW-1	LEAD, DISSOLVED	PPM	BDL	0.004
4060A-2	GMQMW-1	LEAD, DISSOLVED	PPM	BDL	0.004
4060A-3	DFOMW-1	LEAD, DISSOLVED	PPM	BDL	0.04*
4060A-4	DSOMW-1	LEAD, DISSOLVED	PPM	BDL	0.004
4060A-5	DSOMW-4	LEAD, DISSOLVED	PPM	BDL	0.004
4060A-1	GPIMW-1	SULFATE	PPM	25	1.0
4060A-2	GMQMW-1	SULFATE	PPM	25	1.0
4060A-3	DFOMW-1	SULFATE	PPM	19	1.0
4060A-4	DSOMW-1	SULFATE	PPM	52	1.0
4060A-5	DSOMW-4	SULFATE	PPM	60	1.0
4060A-1	GPIMW-1	TOTAL DISSOLVED SOLIDS	PPM	189	1
4060A-2	GMQMW-1	TOTAL DISSOLVED SOLIDS	PPM	74	1
4060A-3	DFOMW-1	TOTAL DISSOLVED SOLIDS	PPM	2124	1
4060A-4	DSOMW-1	TOTAL DISSOLVED SOLIDS	PPM	924	1
4060A-5	DSOMW-4	TOTAL DISSOLVED SOLIDS	PPM	1126	1
4060A-1	GPIMW-1	TPH/GC/FID	PPM	BDL	0.25
4060A-2	GMQMW-1	TPH/GC/FID	PPM	BDL	0.25
4060A-3	DFOMW-1	GASOLINE	PPM	3	0.25
4060A-4	DSOMW-1	DIESEL	PPM	0.30	0.25
4060A-5	DSOMW-4	TPH/GC/FID	PPM	BDL	0.25
4060A-6	GFOMW-1	TPH/GC/FID	PPM	BDL	0.25
4060A-7	FB-1	TPH/GC/FID	PPM	BDL	0.25
4060A-8	DFOMW-4	TPH/GC/FID	PPM	BDL	0.25
4060A-9	DFOMW-2	TPH/GC/FID	PPM	BDL	0.25
4060A-10	DFOMW-5	GASOLINE/DIESEL	PPM	9/26	0.25
4060A-11	DSOMW-2	TPH/GC/FID	PPM	BDL	0.25
4060A-12	DSOMW-3	DIESEL	PPM	1.6	0.25
4060A-13	FB-2	TPH/GC/FID	PPM	BDL	0.25
4060A-14	DCONT-1	DIESEL	PPM	0.67	0.25
4060A-15	TRIP BLANK	TPH/GC/FID	PPM	NO SAMP	0.25

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-4060B
Order Number: P44287
Order Date: 06/13/91
Client: 07053
Sampled By: G&M
Sample Date: 06/11&12
Sample Time: VARIOUS

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

N/S = Not Submitted

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
4060B-1	GPIMW-3	LEAD, DISSOLVED	PPM	BDL	0.002
4060B-2	GPIMW-2	LEAD, DISSOLVED	PPM	BDL	0.002
4060B-3	DUP-1	LEAD, DISSOLVED	PPM	BDL	0.002
4060B-4	DUP-2	LEAD, DISSOLVED	PPM	BDL	0.002
4060B-1	GPIMW-3	TPH/GC/FID	PPM	BDL	0.25
4060B-2	GPIMW-2	TPH/GC/FID	PPM	BDL	0.25
4060B-3	DUP-1	TPH/GC/FID	PPM	BDL	0.25
4060B-4	DUP-2	TPH/GC/FID	PPM	BDL	0.25

Comments: PPM = Parts Per Million, mg/l. PPB = Parts Per Billion, ug/l.
Method References: EPA 600/4-79-020, Revised March 1983 and SW-846, 3rd Edition, November 1986. BDL = Below Detection Limits.

Approved By : C. Nicholetti

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-1
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: GPIMW-1 Sample Date: 06/11&12 Time: VARIOUS

ALK,TOTAL TOTAL ALKALINITY

Parameter	Units	Result	Detection Limit
ALKALINITY, TOTAL	PPM	130	1.0
PH	UNITS	6.74	
BICARBONATE	PPM	130	1.0
CARBONATE	PPM	BDL	1.0
CARBON DIOXIDE, FREE	PPM	47	1.0
HYDROXIDE	PPM	BDL	1.0

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-2
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: GMQMW-1 Sample Date: 06/11&12 Time: VARIOUS

ALK,TOTAL TOTAL ALKALINITY

Parameter	Units	Result	Detection Limit
ALKALINITY, TOTAL	PPM	18	1.0
PH	UNITS	6.30	
BICARBONATE	PPM	18	1.0
CARBONATE	PPM	BDL	1.0
CARBON DIOXIDE, FREE	PPM	18	1.0
HYDROXIDE	PPM	BDL	1.0

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-3
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DFOMW-1 Sample Date: 06/11&12 Time: VARIOUS

ALK,TOTAL TOTAL ALKALINITY

Parameter	Units	Result	Detection Limit
ALKALINITY, TOTAL	PPM	962	1.0
PH	UNITS	6.83	
BICARBONATE	PPM	961	1.0
CARBONATE	PPM	BDL	1.0
CARBON DIOXIDE, FREE	PPM	284	1.0
HYDROXIDE	PPM	BDL	1.0

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-4
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DSOMW-1 Sample Date: 06/11&12 Time: VARIOUS

ALK,TOTAL TOTAL ALKALINITY

Parameter	Units	Result	Detection Limit
ALKALINITY, TOTAL	PPM	69	1.0
PH	UNITS	6.24	
BICARBONATE	PPM	69	1.0
CARBONATE	PPM	BDL	1.0
CARBON DIOXIDE, FREE	PPM	70	1.0
HYDROXIDE	PPM	BDL	1.0

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-5
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DSOMW-4 Sample Date: 06/11&12 Time: VARIOUS

ALK,TOTAL TOTAL ALKALINITY

Parameter	Units	Result	Detection Limit
ALKALINITY, TOTAL	PPM	44	1.0
PH	UNITS	6.52	
BICARBONATE	PPM	44	1.0
CARBONATE	PPM	BDL	1.0
CARBON DIOXIDE, FREE	PPM	27	1.0
HYDROXIDE	PPM	BDL	1.0

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-1
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: GPIMW-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	111	

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PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-2
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: GMQMW-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE, ETHYLBENZENE, TOLUENE, XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	5
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-3
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DFOMW-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	48	10
ETHYL BENZENE	PPB	120	10
TOLUENE	PPB	84	50
XYLENE	PPB	620	20
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	106	

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-4
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DSOMW-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	4	1
ETHYL BENZENE	PPB	3	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	13	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	108	

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-5
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DSOMW-4 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	110	

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-6
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: GFOMW-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	18	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-7
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: FB-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-8
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DFOMW-4 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	110	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-9
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DFOMW-2 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	112	

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-10
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DFOMW-5 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	10
ETHYL BENZENE	PPB	110	10
TOLUENE	PPB	69	50
XYLENE	PPB	61	20
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	114	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-11
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DSOMW-2 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	109	

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-12
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DSOMW-3 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	10	1
ETHYL BENZENE	PPB	10	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	14	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	120	

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-13
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: FB-2 Sample Date: 06/11&12 Time: VARIOUS

3ETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	110	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-14
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: DCONT-1 Sample Date: 06/11&12 Time: VARIOUS

BETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	4	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	110	

Analytical**Technologies,** Inc.
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PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4060A-15
Order Date: 06/13/91
Sampled By: G&M

Sample ID.: TRIP BLANK Sample Date: 06/11&12 Time: VARIOUS

3ETX BENZENE,ETHYLBENZENE,TOLUENE,XYLENE

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
TOLUENE	PPB	BDL	5
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	110	

end of report

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060A

METHOD: 8020 / SW 846, 3rd Edition, November 1986

LEVEL: II

LAB ID:	CLIENT ID:	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	QC BATCH	QC BLANK
91-4060A-1	GPIMW-1	06-11-91	06-13-91	N/A	06-14-91	BW078	A
91-4060A-2	GMQMW-1	06-11-91	06-13-91	N/A	06-14-91	BW078	A
91-4060A-3	DFOMW-1	06-11-91	06-13-91	N/A	06-14-91	BW078	A
91-4060A-4	DSOMW-1	06-12-91	06-13-91	N/A	06-14-91	BW078	A
91-4060A-5	DSOMW-4	06-12-91	06-13-91	N/A	06-14-91	BW078	A
91-4060A-6	GFOMW-1	06-11-91	06-13-91	N/A	06-14-91	BW078	A
91-4060A-7	FB-1	06-11-91	06-13-91	N/A	06-14-91	BW078	B
91-4060A-8	DFOMW-4	06-11-91	06-13-91	N/A	06-14-91	BW078	B
91-4060A-9	DFOMW-2	06-11-91	06-13-91	N/A	06-14-91	BW078	B
91-4060A-10	DFOMW-5	06-11-91	06-13-91	N/A	06-14-91	BW078	B
91-4060A-11	DSOMW-2	06-12-91	06-13-91	N/A	06-14-91	BW078	B
91-4060A-12	DSOMW-3	06-12-91	06-13-91	N/A	06-15-91	BW079	A
91-4060A-13	FB-2	06-12-91	06-13-91	N/A	06-14-91	BW078	B
91-4060A-14	DCONT-1	06-12-91	06-13-91	N/A	06-14-91	BW078	B
91-4060A-15	TRIP BLANK	06-12-91	06-13-91	N/A	06-14-91	BW078	B

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

TCH NUMBER: BW078

METHOD: 8020 / SW 846, 3rd Edition, November 1986

PARAMETERS	DETECTION LIMIT		BLANK A	BLANK B	BLANK C
		ANALYSIS DATE	06-13-91	06-14-91	N/A
			RESULTS	RESULTS	RESULTS
TBE	5		BDL	BDL	BDL
BENZENE	1		BDL	BDL	BDL
LUENE	5		BDL	BDL	BDL
LOROBENZENE	1		BDL	BDL	BDL
THYL BENZENE	1		BDL	BDL	BDL
YLENES	2		BDL	BDL	BDL
3-DCB	2		BDL	BDL	BDL
2-DCB	2		BDL	BDL	BDL
4-DCB	2		BDL	BDL	BDL
iF-toluene	(70-130)		109	110	N/A

NOTE: Units in ug/l = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED
N/A = NOT APPLICABLE

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

BATCH NUMBER: BW079

METHOD: 8020 / SW 846, 3rd Edition, November 1986

PARAMETERS	DETECTION LIMIT	BLANK A	BLANK B	BLANK C
ANALYSIS DATE		06-15-91	06-16-91	N/A
		RESULTS	RESULTS	RESULTS
MTBE	5	BDL	BDL	BDL
BENZENE	1	BDL	BDL	BDL
TOLUENE	5	BDL	BDL	BDL
CHLOROBENZENE	1	BDL	BDL	BDL
ETHYL BENZENE	1	BDL	BDL	BDL
XYLENES	2	BDL	BDL	BDL
1,3-DCB	2	BDL	BDL	BDL
1,2-DCB	2	BDL	BDL	BDL
1,4-DCB	2	BDL	BDL	BDL
TriF-toluene	(70-130)	110	110	N/A

NOTE: Units in ug/l = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED
N/A = NOT APPLICABLE

Analytical Technologies, Inc.
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PENSACOLA, FLORIDA 32514

TER MATRIX SPIKE

BATCH NUMBER: BW078 SAMPLE SPIKED: 91-4060A-5

THOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
BENZENE	50	BDL	54	108	76-127
TOLUENE	50	BDL	54	108	76-125
CHLOROBENZENE	50	BDL	54	108	75-130

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
BENZENE	50	BDL	54	108	0	11	76-127
TOLUENE	50	BDL	54	108	0	13	76-125
CHLOROBENZENE	50	BDL	55	110	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
MS	06-14-91	N/A	100 %	70-130
MSD	06-14-91	N/A	100 %	70-130

D = DILUTED OUT

TE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

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Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

DEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: BW078

THOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
BENZENE	50	BDL	55	110	76-127
TOLUENE	50	BDL	53	106	76-125
CHLOROBENZENE	50	BDL	54	108	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
IQC	06-13-91		104 %	70-130

OTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

TER MATRIX SPIKE

BATCH NUMBER: BW079 SAMPLE SPIKED: 91-4060B-1

THOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
BENZENE	50	BDL	50	100	76-127
TOLUENE	50	BDL	50	100	76-125
CHLOROBENZENE	50	BDL	50	100	75-130

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
BENZENE	50	BDL	49	98	2	11	76-127
TOLUENE	50	BDL	49	98	2	13	76-125
CHLOROBENZENE	50	BDL	50	100	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
MS	06-16-91	N/A	103 %	70-130
MSD	06-16-91	N/A	103 %	70-130

) = DILUTED OUT

TE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

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Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

] DEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: BW079

METHOD: 8020 / SW 846, 3rd Edition, November 1986

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
BENZENE	50	BDL	50	100	76-127
TOLUENE	50	BDL	51	102	76-125
CHLOROBENZENE	50	BDL	50	100	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

ITEM ID:	ANALYSIS DATE	EXTRACTION DATE	SURROGATE RECOVERY TriF-toluene	QC LIMITS
IQC	06-15-91	N/A	101 %	70-130

NOTE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

COMMENTS: _____

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Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060A BATCH: 79W

LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE	LAB ID	CLIENT ID	EXTRACTION DATE	ANALYSIS DATE
91-4060A-1	GPIMW-1	06-18-91	06-19-91	91-4060A-8	DFOMW-4	06-19-91	06-19-91
91-4060A-2	GMQMW-1	06-18-91	06-19-91	91-4060A-9	DFOMW-2	06-19-91	06-19-91
91-4060A-3	DFOMW-1	06-18-91	06-20-91	91-4060A-10	DFOMW-5	06-19-91	06-20-91
91-4060A-4	DSOMW-1	06-18-91	06-19-91	91-4060A-11	DSOMW-2	06-19-91	06-19-91
91-4060A-5	DSOMW-4	06-18-91	06-19-91	91-4060A-12	DSOMW-3	06-19-91	06-20-91
91-4060A-6	GFOMW-1	06-18-91	06-19-91	91-4060A-13	FB-2	06-19-91	06-20-91
91-4060A-7	FB-1	06-19-91	06-19-91	91-4060A-14	DCONT-1	06-19-91	06-20-91
MATRIX SPIKE		06-19-91	06-20-91				
MATRIX SPIKE DUP.		06-19-91	06-20-91				
BLANK		06-18-91	06-19-91				
BLANK		06-19-91	06-19-91				

PARAMETER	METHOD	DETECTION LIMIT	BLANK	MATRIX SPIKE RESULTS	MATRIX SPIKE DUPLICATE RESULTS	EXPECTED SPIKE	%REC MATRIX SPIKE	%REC MATRIX SPIKE DUP.	% REC. CONTROL LIMITS	RPD	MAX RPD
PETROLEUM FINGERPRINT	8015	0.25	BDL	77	83	100	77	83	54-138	8	30

NOTES: PPM = Parts Per Million, mg/l.
BDL = Below Detection Limit
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and reference below.
SAMPLE SPIKED AND DUPLICATED - 91-4060A-11.

REFERENCE: SW-846, 3rd Edition, November 1986.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514 PHONE (904) 474-1001

CLIENT NAME: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060A

QC LEVEL: II

LAB ID	CLIENT ID
91-4060A-1	GPIMW-1
91-4060A-2	GMQMW-1
91-4060A-3	DFOMW-1
91-4060A-4	DSOMW-1
91-4060A-5	DSOMW-4

PARAMETER	PREPARATION DATE	ANALYSIS DATE	BATCH#	METHOD	DETECTION LIMIT	BLANK RESULT	SAMPLE RESULT	DUPLIC RESULT	RPD SAMPLE	MAX RPD	MATRIX SPIKE RESULT	TRUE MS RESULT	%REC MS	%REC CONTROL LIMITS	QC RESULT	TRUE QC RESULT	%REC QC	%REC CONTROL LIMITS
ALK, T & D	06-14-91	06-14-91	ALK-29	310.1	1.0	BDL	BDL	BDL	N/C	8	25	25	100	89-115	249	250	100	96-102
BOD	06-13-91	06-18-91	BOD-23-4	405.1	1	BDL	6	7	15	22	N/A	N/A	N/A	N/A	206	200	103	67-145
Ca, T & D	06-18-91	06-22-91	CaW-129	200.7	2.0	BDL	5.1	4.6	10	20	5.1	5.0	102	75-125	5.5	5.0	110	90-110
CHLORIDE	06-14-91	06-14-91	Cl^--47	325.3	1.0	BDL	13	13	0	11	60	55	109	75-125	105	110	95	87-113
COD	06-18-91	06-18-91	COD-48	410.4	7.0	BDL	13.1	13.5	3	14	36.9	37.5	98	75-130	74	75	99	75-130
Fe, T & D	06-18-91	06-22-91	FeW-129	200.7	0.006	BDL	1.62	1.62	0	20	0.94	1.0	94	75-125	4.97	5.00	99	90-110
Mg, T & D	06-18-91	06-22-91	MgW-129	200.7	0.05	BDL	3.6	3.6	0	20	4.6	5.0	92	75-125	4.8	5.0	96	90-110
Mn, T & D	06-18-91	06-22-91	MnW-129	200.7	0.002	BDL	0.077	0.079	3	20	0.465	0.500	93	75-125	4.76	5.0	95	90-110
Na, T & D	06-18-91	06-22-91	NaW-129	200.7	0.1	BDL	281	284	1	20	12	5	240*	75-125	4.9	5.0	98	90-110
Pb, T & D	06-18-91	06-19-91	PbG-208	239.2	0.002	BDL	BDL	BDL	N/C	20	0.021	0.020	105	75-125	0.039	0.040	98	90-110

PARAMETER	LCS RESULT	TRUE LCS RESULT	LCS %REC	LCS CONTROL LIMITS	SAMPLE DUPLIC	SAMPLE SPIKED
ALKALINITY	N/A	N/A	N/A	N/A	4069A-1	4069A-1
BOD	N/A	N/A	N/A	N/A	4073A-1	N/A
Ca, T & D	11	10	110	80-120	4063-1	4063-1
CHLORIDE	N/A	N/A	N/A	N/A	4060A-1	4060A-1
COD	N/A	N/A	N/A	N/A	4070A-1	407AA-1
Fe, T & D	9.69	10.0	97	80-120	4063-1	4063-1
Mg, T & D	9.5	10.0	95	80-120	4063-1	4063-1
Mn, T & D	9.69	10.0	97	80-120	4063-1	4063-1
Na, T & D	10.2	10.0	102	80-120	4063-1	4063-1
Pb, T & D	0.039	0.040	98	80-120	4083A-1	4083A-1

Notes: PPM = Parts Per Million, mg/l.
BDL = Below Detection Limit.
Results recorded are blank corrected.
Control limits are from ATI's internal quality assurance program and the referenced method.
N/C = Not Calculable due to at least one result = BDL.
* = Sample spiked > 4 x spike concentration.
N/A = Not Applicable.
T & D = Total and Dissolved.

Reference: EPA 600/4-79-020, Revised March 1983.

Analytical**Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

CLIENT NAME: GERAGHTY & MILLER

PROJECT: WI21202

LAB ID: 91-4060A

QC LEVEL: II

LAB ID	CLIENT ID
91-4060A-1	GPIMW-1
91-4060A-2	GMQMW-1
91-4060A-3	DFOMW-1
91-4060A-4	DSOMW-1
91-4060A-5	DSOMW-4

PARAMETER	PREPARATION DATE	ANALYSIS DATE	BATCH#	METHOD	DETECTION LIMIT	BLANK RESULT	SAMPLE RESULT	DUPLIC RESULT	RPD SAMPLE	MAX RPD	MATRIX SPIKE RESULT	TRUE MS RESULT	%REC MS	%REC CONTROL LIMITS	QC RESULT	TRUE QC RESULT	%REC QC	%REC CONTROL LIMITS
SULFATE	06-18-91	06-18-91	SO_4-38	375.4	1.0	BDL	32	29.2	9	23	9.7	10	97	54-154	9.9	10.0	99	73-116
TDS	06-14-91	06-17-91	TDS-23-5	160.1	1	BDL	93	94	1	16	N/A	N/A	N/A	N/A	454	373	122	52-142
pH	06-13-91	06-13-91	pH-23-4	150.1	N/A	N/A	7.63	7.65	0	2	N/A	N/A	N/A	N/A	6.99	6.87	102	93-105

PARAMETER	LCS RESULT	TRUE LCS RESULT	LCS %REC	LCS CONTROL LIMITS	SAMPLE DUPLIC	SAMPLE SPIKED
SULFATE	N/A	N/A	N/A	N/A	4025-7	4025-4
TDS	N/A	N/A	N/A	N/A	4073A-1	N/A
pH	N/A	N/A	N/A	N/A	4072A-1	N/A

Notes: PPM = Parts Per Million, mg/l.
BDL = Below Detection Limit.
Results recorded are blank corrected.
Control limits are from ATI's internal quality assurance program and the referenced method.
N/A = Not Applicable.

Reference: EPA 600/4-79-020, Revised March 1983.

GROUND-WATER SAMPLES

6/11/91

(DOWNTOWN)

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-4
Lab ID: 015383-0001-SA
Matrix: AQUEOUS Sampled: 11 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 22 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	70	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-2
Lab ID: 015383-0002-SA
Matrix: AQUEOUS Sampled: 11 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	83	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-5
Lab ID: 015383-0003-SA
Matrix: AQUEOUS Sampled: 11 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	10
2-Nitrophenol	580	ug/L	10
Phenol	ND	ug/L	10
2,4-Dimethylphenol	ND	ug/L	10
2,4-Dichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	30
4-Chloro-3-methylphenol	280	ug/L	50
2,4-Dinitrophenol	460	ug/L	30
4,6-Dinitro-2-methylphenol	490	ug/L	50
Pentachlorophenol	780	ug/L	50
4-Nitrophenol	850	ug/L	50

Surrogate	Recovery	
2,4,6-Tribromophenol	30	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-1
Lab ID: 015383-0004-SA
Matrix: AQUEOUS Sampled: 11 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
Phenol	ND	ug/L	10
2,4-Dimethylphenol	ND	ug/L	10
2,4-Dichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	30
4-Chloro-3-methylphenol	81	ug/L	50
2,4-Dinitrophenol	ND	ug/L	30
4,6-Dinitro-2-methylphenol	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
4-Nitrophenol	ND	ug/L	50

Surrogate	Recovery	
2,4,6-Tribromophenol	34	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DSOMW-2
Lab ID: 015383-0005-SA
Matrix: AQUEOUS Sampled: 12 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	89	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DSOMW-3
Lab ID: 015383-0006-SA
Matrix: AQUEOUS Sampled: 12 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	13	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	11	ug/L	3.0
4,6-Dinitro-2-methylphenol	8.0	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	59	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DSOMW-1
Lab ID: 015383-0007-SA
Matrix: AQUEOUS Sampled: 12 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	4.5	ug/L	1.0
2-Nitrophenol	2.0	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	11	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	8.8	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	105	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DUP-2
Lab ID: 015383-0008-SA
Matrix: AQUEOUS Sampled: 12 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	4.8	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	13	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	15	ug/L	5.0
2,4-Dinitrophenol	17	ug/L	3.0
4,6-Dinitro-2-methylphenol	14	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	125	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DSOMW-4
Lab ID: 015383-0009-SA
Matrix: AQUEOUS Sampled: 12 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	110	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

Enseco
A Corning Company

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DCONT-1
Lab ID: 015383-0010-SA
Matrix: AQUEOUS Sampled: 12 JUN 91 Received: 13 JUN 91
Authorized: 13 JUN 91 Prepared: 16 JUN 91 Analyzed: 26 JUN 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	13	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	5.5	ug/L	5.0
Pentachlorophenol	5.0	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	104	%

ND = Not detected
NA = Not applicable

Reported By: Janet Binns Approved By: Mike Hoffman

GROUND-WATER SAMPLES

6/12/91

(DOWNTOWN)

Enseco
A Corning Company

TCL Acid Organics

Method 8270

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-3
Lab ID: 015785-0002-SA
Matrix: AQUEOUS Sampled: 12 JUL 91 Received: 13 JUL 91
Authorized: 13 JUL 91 Prepared: 16 JUL 91 Analyzed: 19 JUL 91

Parameter	Result	Units	Reporting Limit
Phenol	ND	ug/L	100
2-Chlorophenol	ND	ug/L	100
2-Methylphenol	ND	ug/L	100
4-Methylphenol	ND	ug/L	100
2-Nitrophenol	ND	ug/L	100
2,4-Dimethylphenol	ND	ug/L	100
Benzoic acid	ND	ug/L	500
2,4-Dichlorophenol	ND	ug/L	100
4-Chloro-3-methylphenol	ND	ug/L	100
2,4,6-Trichlorophenol	ND	ug/L	100
2,4,5-Trichlorophenol	ND	ug/L	500
2,4-Dinitrophenol	ND	ug/L	500
4-Nitrophenol	ND	ug/L	500
4,6-Dinitro-2-methylphenol	ND	ug/L	500
Pentachlorophenol	ND	ug/L	500

Surrogate	Recovery	
Phenol-d5	68	%
2-Fluorophenol	68	%
2,4,6-Tribromophenol	50	%

ND = Not detected
NA = Not applicable

Reported By: Jeff Pettit Approved By: Mark Dymerski

Enseco
A Corning Company

TCL Acid Organics

Method 8270

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-5
Lab ID: 015785-0004-SA
Matrix: AQUEOUS Sampled: 12 JUL 91 Received: 13 JUL 91
Authorized: 13 JUL 91 Prepared: 16 JUL 91 Analyzed: 19 JUL 91

Parameter	Result	Units	Reporting Limit
Phenol	ND	ug/L	1000
2-Chlorophenol	ND	ug/L	1000
2-Methylphenol	ND	ug/L	1000
4-Methylphenol	ND	ug/L	1000
2-Nitrophenol	ND	ug/L	1000
2,4-Dimethylphenol	ND	ug/L	1000
Benzoic acid	ND	ug/L	5000
2,4-Dichlorophenol	ND	ug/L	1000
4-Chloro-3-methylphenol	ND	ug/L	1000
2,4,6-Trichlorophenol	ND	ug/L	1000
2,4,5-Trichlorophenol	ND	ug/L	5000
2,4-Dinitrophenol	ND	ug/L	5000
4-Nitrophenol	ND	ug/L	5000
4,6-Dinitro-2-methylphenol	ND	ug/L	5000
Pentachlorophenol	ND	ug/L	5000

Surrogate	Recovery	
Phenol-d5	ND	%
2-Fluorophenol	ND	%
2,4,6-Tribromophenol	ND	%

ND = Not detected
NA = Not applicable

Reported By: Jeff Pettit Approved By: Mark Dymerski

GROUND-WATER SAMPLES

7/10 - 11/91

(DOWNTOWN AND GREYSTONE)

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-16
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: TRIP BLANK Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE. *SURR* LIMITS (70-130)	% REC	92	

Sample ID.: TRIP BLANK Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-16
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: TRIP BLANK Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	114	

end of report

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-15
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DFOMW-2 Sample Date: 07/10&11 Time: N/S

770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE.	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	95	

Sample ID.: DFOMW-2 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-15
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DFOMW-2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	114	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Lab I.D.#: 91-4881-14
Order Date: 07/12/91
Project Number: WI21202
Sampled By: T.P./E.D.
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Sample ID.: DFOMW-4 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	97	

Sample ID.: DFOMW-4 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-14
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DFOMW-4 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter	Units	Result	Detection Limit
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	122	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-12
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DFOMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	23	10
BROMODICHLOROMETHANE	PPB	BDL	10
BROMOFORM	PPB	BDL	20
BROMOMETHANE	PPB	BDL	20
CARBON TETRACHLORIDE	PPB	BDL	10
CHLOROBENZENE	PPB	BDL	10
CHLOROETHANE	PPB	BDL	50
2-CHLOROETHYLVINYL ETHER	PPB	BDL	50
CHLOROFORM	PPB	BDL	20
CHLOROMETHANE	PPB	BDL	50
DIBROMOCHLOROMETHANE	PPB	BDL	50
1,2-DICHLOROBENZENE	PPB	BDL	20
1,3-DICHLOROBENZENE	PPB	BDL	20
1,4-DICHLOROBENZENE	PPB	BDL	20
DICHLORODIFLUOROMETHANE	PPB	BDL	50
1,1-DICHLOROETHANE	PPB	BDL	10
1,2-DICHLOROETHANE	PPB	BDL	10
1,1-DICHLOROETHENE	PPB	BDL	10
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	10
1,2-DICHLOROPROPANE	PPB	BDL	10
CIS-1,3-DICHLOROPROPENE	PPB	BDL	10
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	10
ETHYL BENZENE	PPB	99	10
METHYLENE CHLORIDE	PPB	BDL	30
METHYL TERT-BUTYL ETHER	PPB	BDL	50
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	10
TETRACHLOROETHENE	PPB	BDL	30
TOLUENE	PPB	BDL	50
1,1,1-TRICHLOROETHANE	PPB	BDL	10
1,1,2-TRICHLOROETHANE	PPB	BDL	20
TRICHLOROETHENE	PPB	BDL	10
TRICHLOROFLUOROMETHANE	PPB	BDL	10
VINYL CHLORIDE	PPB	BDL	10
XYLENE	PPB	340	20
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	96	

Sample ID.: DFOMW-1 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-12
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DFOMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	124	

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-11
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: F.B.-2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	96	

Sample ID.: F.B.-2 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-11
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: F.B.-2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	113	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-9
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DSOMW-3 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	6	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	3	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	6	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	96	

Sample ID.: DSOMW-3 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-9
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DSOMW-3 Sample Date: 07/10&11 Time: N/S

770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter	Units	Result	Detection Limit
2BR,CL-PROP .*SURR* LIMITS (70-130)	% REC	108	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-8
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DSOMW-2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	95	

Sample ID.: DSOMW-2 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-8
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DSOMW-2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	107	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-7
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DSOMW-4 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	97	

Sample ID.: DSOMW-4 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-7
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DSOMW-4 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	119	

Analytical**Technologies,**Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-6
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: F.B.-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE.	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	102	

Sample ID.: F.B.-1 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-6
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: F.B.-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	111	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-5
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GMQMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	102	

Sample ID.: GMQMW-1 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-5
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GMQMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	129	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-4
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GPIMW-3 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	101	

Sample ID.: GPIMW-3 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-4
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GPIMW-3 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter	Units	Result	Detection Limit
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	117	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-3
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GPIMW-2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	102	

Sample ID.: GPIMW-2 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type:. WATER

Lab I.D.#: 91-4881-3
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GPIMW-2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter	Units	Result	Detection Limit
2BR,CL-PROP *SURR* LIMITS (70-130)	% REC	120	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-2
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GPIMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	102	

Sample ID.: GPIMW-1 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-2
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GPIMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	113	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-1
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GMFOMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	104	

Sample ID.: GMFOMW-1 Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-1
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: GMFOMW-1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	119	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-10
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DUP #1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	BDL	1
BROMODICHLOROMETHANE	PPB	BDL	1
BROMOFORM	PPB	BDL	2
BROMOMETHANE	PPB	BDL	2
CARBON TETRACHLORIDE	PPB	BDL	1
CHLOROBENZENE	PPB	BDL	1
CHLOROETHANE	PPB	BDL	5
2-CHLOROETHYLVINYL ETHER	PPB	BDL	5
CHLOROFORM	PPB	BDL	2
CHLOROMETHANE	PPB	BDL	5
DIBROMOCHLOROMETHANE	PPB	BDL	5
1,2-DICHLOROBENZENE	PPB	BDL	2
1,3-DICHLOROBENZENE	PPB	BDL	2
1,4-DICHLOROBENZENE	PPB	BDL	2
DICHLORODIFLUOROMETHANE	PPB	BDL	5
1,1-DICHLOROETHANE	PPB	BDL	1
1,2-DICHLOROETHANE	PPB	BDL	1
1,1-DICHLOROETHENE	PPB	BDL	1
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	1
1,2-DICHLOROPROPANE	PPB	BDL	1
CIS-1,3-DICHLOROPROPENE	PPB	BDL	1
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	1
ETHYL BENZENE	PPB	BDL	1
METHYLENE CHLORIDE	PPB	BDL	3
METHYL TERT-BUTYL ETHER	PPB	BDL	5
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	1
TETRACHLOROETHENE	PPB	BDL	3
TOLUENE	PPB	BDL	5
1,1,1-TRICHLOROETHANE	PPB	BDL	1
1,1,2-TRICHLOROETHANE	PPB	BDL	2
TRICHLOROETHENE	PPB	BDL	1
TRICHLOROFLUOROMETHANE	PPB	BDL	1
VINYL CHLORIDE	PPB	BDL	1
XYLENE	PPB	BDL	2
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	95	

Sample ID.: DUP #1

Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER
Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-10
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DUP #1 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	110	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-13
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DUP #2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602

Parameter	Units	Result	Detection Limit
BENZENE	PPB	23	10
BROMODICHLOROMETHANE	PPB	BDL	10
BROMOFORM	PPB	BDL	20
BROMOMETHANE	PPB	BDL	20
CARBON TETRACHLORIDE	PPB	BDL	10
CHLOROBENZENE	PPB	BDL	10
CHLOROETHANE	PPB	BDL	50
2-CHLOROETHYLVINYL ETHER	PPB	BDL	50
CHLOROFORM	PPB	BDL	20
CHLOROMETHANE	PPB	BDL	50
DIBROMOCHLOROMETHANE	PPB	BDL	50
1,2-DICHLOROBENZENE	PPB	BDL	20
1,3-DICHLOROBENZENE	PPB	BDL	20
1,4-DICHLOROBENZENE	PPB	BDL	20
DICHLORODIFLUOROMETHANE	PPB	BDL	50
1,1-DICHLOROETHANE	PPB	BDL	10
1,2-DICHLOROETHANE	PPB	BDL	10
1,1-DICHLOROETHENE	PPB	BDL	10
TOTAL 1,2-DICHLOROETHYLENE	PPB	BDL	10
1,2-DICHLOROPROPANE	PPB	BDL	10
CIS-1,3-DICHLOROPROPENE	PPB	BDL	10
TRANS-1,3-DICHLOROPROPENE	PPB	BDL	10
ETHYL BENZENE	PPB	91	10
METHYLENE CHLORIDE	PPB	BDL	30
METHYL TERT-BUTYL ETHER	PPB	BDL	50
1,1,2,2-TETRACHLOROETHANE	PPB	BDL	10
TETRACHLOROETHENE	PPB	BDL	30
TOLUENE	PPB	BDL	50
1,1,1-TRICHLOROETHANE	PPB	BDL	10
1,1,2-TRICHLOROETHANE	PPB	BDL	20
TRICHLOROETHENE	PPB	BDL	10
TRICHLOROFLUOROMETHANE	PPB	BDL	10
VINYL CHLORIDE	PPB	BDL	10
XYLENE	PPB	350	20
TRIF-TOLUENE *SURR* LIMITS (70-130)	% REC	95	

Sample ID.: DUP #2

Test Parameters continued on next page

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Client: GERAGHTY & MILLER

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

Lab I.D.#: 91-4881-13
Order Date: 07/12/91
Sampled By: T.P./E.D.

Sample ID.: DUP #2 Sample Date: 07/10&11 Time: N/S

1770/VOL/601/602+ 1770 VOLATILE 601 & 602 continued

Parameter		Units	Result	Detection Limit
2BR,CL-PROP	*SURR* LIMITS (70-130)	% REC	111	

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

GERAGHTY & MILLER
126 NORTH JEFFERSON ST.
SUITE 400
MILWAUKEE WI 53202-0000

Lab I.D.#: 91-4881
Order Number: P45620
Order Date: 07/12/91
Client: 07053
Sampled By: T.P./E.D.
Sample Date: 07/10&11
Sample Time: N/S

Project Number: WI21202
Project Name: 3M-DOWNTOWN & GREYSTONE
Sample Site: WAUSAU, WI
Sample Type: WATER

N/S = Not Submitted

R E S U L T S

reported on the following page(s)

nments: PPB = Parts Per Billion, ug/l; BDL = Below Detection Limit.
Method Reference: Federal Register 40 CFR Part 136, July 1, 1988.

Approved By : Peter Shuba

Analytical **Technologies,** Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

QUALITY CONTROL DATA

1.99

24.95

18.95

21.0

Analytical Technologies, Inc.
11 EAST OLIVE ROAD
PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

IENT: GERAGHTY & MILLER

ROJECT: WI21202

B ID: 91-4881

ETHOD: 601/602 / Federal Register, 40 CFR, Part 136, July 1, 1988

EVEL: II

LAB ID:	CLIENT ID:	DATE SAMPLED	DATE RECEIVED	DATE EXTRACTED	DATE ANALYZED	QC BATCH	QC BLANK
1-4881-1	GMFOMW-1	07-10-91	07-12-91	N/A	07-12-91	RW047	B
-4881-2	GPIMW-1	07-10-91	07-12-91	N/A	07-13-91	RW047	B
-4881-3	GPIMW-2	07-10-91	07-12-91	N/A	07-13-91	RW047	B
1-4881-4	GPIMW-3	07-10-91	07-12-91	N/A	07-13-91	RW047	B
-4881-5	GMQMW-1	07-10-91	07-12-91	N/A	07-13-91	RW047	B
1-4881-6	F.B.-1	07-10-91	07-12-91	N/A	07-13-91	RW047	B
-4881-7	DSOMW-4	07-11-91	07-12-91	N/A	07-13-91	RW047	C
1-4881-8	DSOMW-2	07-11-91	07-12-91	N/A	07-13-91	RW047	C
-4881-9	DSOMW-3	07-11-91	07-12-91	N/A	07-16-91	JW068	A
1-4881-10	DUP #1	07-11-91	07-12-91	N/A	07-13-91	RW047	C
-4881-11	F.B.-2	07-11-91	07-12-91	N/A	07-13-91	RW047	C
1-4881-12	DFOMW-1	07-11-91	07-12-91	N/A	07-13-91	RW047	C
-4881-13	DUP #2	07-11-91	07-12-91	N/A	07-13-91	RW047	C
1-4881-14	DFOMW-4	07-11-91	07-12-91	N/A	07-13-91	RW047	C
-4881-15	DFOMW-2	07-11-91	07-12-91	N/A	07-13-91	RW047	C
-4881-16	TRIP BLANK	07-11-91	07-12-91	N/A	07-13-91	RW047	C

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

METHOD INSTRUMENT BLANK

TCH NUMBER: RW047

METHOD: 601/602 / Federal Register, 40 CFR, Part 136, July 1, 1988

PARAMETERS	DETECTION LIMIT	BLANK A RESULTS	BLANK B RESULTS	BLANK C RESULTS
	ANALYSIS DATE	07-11-91	07-12-91	07-13-91
BROMODICHLOROMETHANE	1	BDL	BDL	BDL
BROMOFORM	2	BDL	BDL	BDL
OMOMETHANE	2	BDL	BDL	BDL
RBON TETRACHLORIDE	1	BDL	BDL	BDL
HLOROETHANE	5	BDL	BDL	BDL
-CHLOROETHYLVINYL ETHER	5	BDL	BDL	BDL
LOROFORM	2	BDL	BDL	BDL
LOROMETHANE	5	BDL	BDL	BDL
IBROMOCHLOROMETHANE	5	BDL	BDL	BDL
CHLORODIFLUOROMETHANE	5	BDL	BDL	BDL
1-DICHLOROETHANE	1	BDL	BDL	BDL
,2-DICHLOROETHANE	1	BDL	BDL	BDL
,1-DICHLOROETHENE	1	BDL	BDL	BDL
ANS-1,2-DICHLOROETHYLENE	1	BDL	BDL	BDL
2-DICHLOROPROPANE	1	BDL	BDL	BDL
IS-1,3-DICHLOROPROPENE	1	BDL	BDL	BDL
RANS-1,3-DICHLOROPROPENE	1	BDL	BDL	BDL
THYLENE CHLORIDE	3	BDL	BDL	BDL
1,2,2-TETRACHLOROETHANE	1	BDL	BDL	BDL
ETRACHLOROETHENE	3	BDL	BDL	BDL
1,1-TRICHLOROETHANE	1	BDL	BDL	BDL
1,2-TRICHLOROETHANE	2	BDL	BDL	BDL
ICHLOROETHENE	1	BDL	BDL	BDL
RICHLOROFLUOROMETHANE	1	BDL	BDL	BDL
NYL CHLORIDE	1	BDL	BDL	BDL
THYL TERT-BUTYL ETHER	5	BDL	BDL	BDL
ENZENE	1	BDL	BDL	BDL
OLUENE	5	BDL	BDL	BDL
LOROBENZENE	1	BDL	BDL	BDL
IYL BENZENE	1	BDL	BDL	BDL
YLENES	2	BDL	BDL	BDL
,3-DICHLOROBENZENE	2	BDL	BDL	BDL
-DICHLOROBENZENE	2	BDL	BDL	BDL
-DICHLOROBENZENE	2	BDL	BDL	BDL
rif-toluene (70-130)		100	101	96
-Br,Cl-propane (70-130)		117	105	116

TE: Units in ug/l = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED N/A = NOT APPLICABLE

Analytical Technologies, Inc.
11 EAST OLIVE ROAD
PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

THOD INSTRUMENT BLANK

ATCH NUMBER: JW068

THOD: 601/602 / Federal Register, 40 CFR, Part 136, July 1, 1988

RAMETERS	DETECTION LIMIT	BLANK A RESULTS	BLANK B RESULTS	BLANK C RESULTS
	ANALYSIS DATE	07-15-91	07-16-91	07-17-91
ROMODICHLOROMETHANE	1	BDL	BDL	BDL
OMOFORM	2	BDL	BDL	BDL
OMOMETHANE	2	BDL	BDL	BDL
ARBON TETRACHLORIDE	1	BDL	BDL	BDL
LOROETHANE	5	BDL	BDL	BDL
CHLOROETHYLVINYL ETHER	5	BDL	BDL	BDL
LOROFORM	2	BDL	BDL	BDL
HLOROMETHANE	5	BDL	BDL	BDL
BROMOCHLOROMETHANE	5	BDL	BDL	BDL
CHLORODIFLUOROMETHANE	5	BDL	BDL	BDL
,1-DICHLOROETHANE	1	BDL	BDL	BDL
,2-DICHLOROETHANE	1	BDL	BDL	BDL
1-DICHLOROETHENE	1	BDL	BDL	BDL
ANS-1,2-DICHLOROETHYLENE	1	BDL	BDL	BDL
,2-DICHLOROPROPANE	1	BDL	BDL	BDL
IS-1,3-DICHLOROPROPENE	1	BDL	BDL	BDL
ANS-1,3-DICHLOROPROPENE	1	BDL	BDL	BDL
THYLENE CHLORIDE	3	BDL	BDL	BDL
,1,2,2-TETRACHLOROETHANE	1	BDL	BDL	BDL
TRACHLOROETHENE	3	BDL	BDL	BDL
1,1-TRICHLOROETHANE	1	BDL	BDL	BDL
,1,2-TRICHLOROETHANE	2	BDL	BDL	BDL
RICHLOROETHENE	1	BDL	BDL	BDL
ICHLOROFLUOROMETHANE	1	BDL	BDL	BDL
NYL CHLORIDE	1	BDL	BDL	BDL
ETHYL TERT-BUTYL ETHER	5	BDL	BDL	BDL
ENZENE	1	BDL	BDL	BDL
LUENE	5	BDL	BDL	BDL
LOROBENZENE	1	BDL	BDL	BDL
THYL BENZENE	1	BDL	BDL	BDL
YLENES	2	BDL	BDL	BDL
-DICHLOROBENZENE	2	BDL	BDL	BDL
,2-DICHLOROBENZENE	2	BDL	BDL	BDL
,4-DICHLOROBENZENE	2	BDL	BDL	BDL
if-toluene (70-130)		93	96	103
Br,Cl-propane (70-130)		105	121	101

OTE: Units in ug/l = Part Per Billion.
BDL = Below Detection limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and the method reference.
N/S = NOT SUBMITTED N/A = NOT APPLICABLE

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

ATER MATRIX SPIKE

BATCH NUMBER: RW047 SAMPLE SPIKED: 91-4744-2

CTHOD: 601/602 / Federal Register, 40 CFR, Part 136, July 1, 1988

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	47	94	61-145
TRICHLOROETHENE	50	BDL	43	86	71-120
BENZENE	50	BDL	58	116	76-127
TOLUENE	50	BDL	58	116	76-125
CHLOROBENZENE	50	BDL	59	118	75-130

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
1,1-DICHLOROETHENE	50	BDL	51	102	8	14	61-145
TRICHLOROETHENE	50	BDL	48	96	11	14	71-120
BENZENE	50	BDL	53	106	9	11	76-127
TOLUENE	50	BDL	53	106	9	13	76-125
CHLOROBENZENE	50	BDL	53	106	11	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
MS	07-12-91	124	99	70-130
MSD	07-12-91	101	95	70-130

= DILUTED OUT

TE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

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Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

TER MATRIX SPIKE

ATCH NUMBER: JW068 SAMPLE SPIKED: 91-4915D-1

THOD: 601/602 / Federal Register, 40 CFR, Part 136, July 1, 1988

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MS CONC	MS REC%#	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	48	96	61-145
TRICHLOROETHENE	50	BDL	47	94	71-120
BENZENE	50	BDL	51	102	76-127
TOLUENE	50	BDL	54	108	76-125
CHLOROBENZENE	50	BDL	46	92	75-130

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	MSD CONC	MSD REC%#	% RPD#	QC LIMITS RPD	QC LIMITS REC
1,1-DICHLOROETHENE	50	BDL	47	94	2	14	61-145
TRICHLOROETHENE	50	BDL	44	88	7	14	71-120
BENZENE	50	BDL	47	94	8	11	76-127
TOLUENE	50	BDL	49	98	10	13	76-125
CHLOROBENZENE	50	BDL	42	84	9	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

TEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
MS	07-16-91	93	88	70-130
MSD	07-16-91	94	94	70-130

= DILUTED OUT

E: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

OMMENTS: _____

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_____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

DEPENDENT QUALITY CONTROL CHECK

ORM NUMBER: RW047

THOD: 601/602 / Federal Register, 40 CFR, Part 136, July 1, 1988

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	56	112	61-145
TRICHLOROETHENE	50	BDL	59	118	71-120
BENZENE	50	BDL	42	84	76-127
TOLUENE	50	BDL	52	104	76-125
CHLOROBENZENE	50	BDL	52	104	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
QC	07-11-91	99	121	70-130

TE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

MENTS: _____

Analytical Technologies, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

DEPENDENT QUALITY CONTROL CHECK

FORM NUMBER: JW065

THOD: 601/602 / Federal Register, 40 CFR, Part 136, July 1, 1988

COMPOUNDS	SPIKE ADDED	SAMPLE CONC	SPK CONC	SPK REC%#	REC LIMITS
1,1-DICHLOROETHENE	50	BDL	62	124	61-145
TRICHLOROETHENE	50	BDL	56	112	71-120
BENZENE	50	BDL	49	98	76-127
TOLUENE	50	BDL	61	122	76-125
CHLOROBENZENE	50	BDL	62	124	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

ITEM ID:	ANALYSIS DATE	SURROGATE RECOVERY TriF-toluene	2Br,1Cl-prop	QC LIMITS
IQC	07-07-91	99	91	70-130

TE: Units in ug/l = Parts Per Billion.
BDL = Below Detection Limit.
Results reported are blank corrected.
Source for control limits is internal laboratory quality assurance program and method reference.

MMENTS: _____

_____

_____

GROUND-WATER SAMPLES

7/12/91

(DOWNTOWN)

Enseco
A Corning Company

TCL Acid Organics

Method 8270

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-3
Lab ID: 015785-0002-SA
Matrix: AQUEOUS Sampled: 12 JUL 91 Received: 13 JUL 91
Authorized: 13 JUL 91 Prepared: 16 JUL 91 Analyzed: 19 JUL 91

Parameter	Result	Units	Reporting Limit
Phenol	ND	ug/L	100
2-Chlorophenol	ND	ug/L	100
2-Methylphenol	ND	ug/L	100
4-Methylphenol	ND	ug/L	100
2-Nitrophenol	ND	ug/L	100
2,4-Dimethylphenol	ND	ug/L	100
Benzoic acid	ND	ug/L	500
2,4-Dichlorophenol	ND	ug/L	100
4-Chloro-3-methylphenol	ND	ug/L	100
2,4,6-Trichlorophenol	ND	ug/L	100
2,4,5-Trichlorophenol	ND	ug/L	500
2,4-Dinitrophenol	ND	ug/L	500
4-Nitrophenol	ND	ug/L	500
4,6-Dinitro-2-methylphenol	ND	ug/L	500
Pentachlorophenol	ND	ug/L	500

Surrogate	Recovery	
Phenol-d5	68	%
2-Fluorophenol	68	%
2,4,6-Tribromophenol	50	%

ND = Not detected
NA = Not applicable

Reported By: Jeff Pettit Approved By: Mark Dymerski

Enseco
A Corning Company

TCL Acid Organics

Method 8270

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-5
Lab ID: 015785-0004-SA
Matrix: AQUEOUS Sampled: 12 JUL 91 Received: 13 JUL 91
Authorized: 13 JUL 91 Prepared: 16 JUL 91 Analyzed: 19 JUL 91

Parameter	Result	Units	Reporting Limit
Phenol	ND	ug/L	1000
2-Chlorophenol	ND	ug/L	1000
2-Methylphenol	ND	ug/L	1000
4-Methylphenol	ND	ug/L	1000
2-Nitrophenol	ND	ug/L	1000
2,4-Dimethylphenol	ND	ug/L	1000
Benzoic acid	ND	ug/L	5000
2,4-Dichlorophenol	ND	ug/L	1000
4-Chloro-3-methylphenol	ND	ug/L	1000
2,4,6-Trichlorophenol	ND	ug/L	1000
2,4,5-Trichlorophenol	ND	ug/L	5000
2,4-Dinitrophenol	ND	ug/L	5000
4-Nitrophenol	ND	ug/L	5000
4,6-Dinitro-2-methylphenol	ND	ug/L	5000
Pentachlorophenol	ND	ug/L	5000

Surrogate	Recovery	
Phenol-d5	ND	%
2-Fluorophenol	ND	%
2,4,6-Tribromophenol	ND	%

ND = Not detected
NA = Not applicable

Reported By: Jeff Pettit Approved By: Mark Dymerski

GROUND-WATER SAMPLES

8/8/91

(DOWNTOWN)

Halogenated Volatile Organics

Method 8010

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-6
Lab ID: 016280-0004-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	230	%

ND = Not detected
NA = Not applicable

Reported By: Garth Atkins Approved By: Mark Dymerski

Aromatic Volatile Organics

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-6
Lab ID: 016280-0004-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 15 AUG 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	12
Toluene	ND	ug/L	12
Chlorobenzene	ND	ug/L	12
Ethylbenzene	66	ug/L	12
Xylenes (total)	39	ug/L	12
1,3-Dichlorobenzene	ND	ug/L	12
1,4-Dichlorobenzene	ND	ug/L	12
1,2-Dichlorobenzene	ND	ug/L	12

Surrogate	Recovery	
a,a,a-Trifluorotoluene	98	%

ND = Not detected
NA = Not applicable

Reported By: Bret Collins Approved By: Mike Hoffman

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-6
Lab ID: 016280-0004-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 17 AUG 91

Parameter	Result	Units	Reporting Limit	
Total Chromatographable Organics	69	mg/L	1.0	1
Surrogate	Recovery			
o-Terphenyl	ND	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C8-C23.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-6
Lab ID: 016280-0004-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 28 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	10
2-Nitrophenol	37	ug/L	10
Phenol	ND	ug/L	10
2,4-Dimethylphenol	35	ug/L	10
2,4-Dichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	30
4-Chloro-3-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	30
4,6-Dinitro-2-methylphenol	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
4-Nitrophenol	ND	ug/L	50

Surrogate	Recovery	
2,4,6-Tribromophenol	ND	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Halogenated Volatile Organics

Method 8010

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-8
Lab ID: 016280-0006-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 15 AUG 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	131	%

ND = Not detected
NA = Not applicable

Reported By: Garth Atkins Approved By: Mike Hoffman

Aromatic Volatile Organics

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-8
Lab ID: 016280-0006-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 15 AUG 91

Parameter	Result	Units	Reporting Limit
Benzene	4.7	ug/L	2.5
Toluene	ND	ug/L	2.5
Chlorobenzene	ND	ug/L	2.5
Ethylbenzene	61	ug/L	2.5
Xylenes (total)	3.5	ug/L	2.5
1,3-Dichlorobenzene	ND	ug/L	2.5
1,4-Dichlorobenzene	ND	ug/L	2.5
1,2-Dichlorobenzene	ND	ug/L	2.5

Surrogate	Recovery	
a,a,a-Trifluorotoluene	92	%

ND = Not detected
NA = Not applicable

Reported By: Bret Collins Approved By: Mike Hoffman

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-8
Lab ID: 016280-0006-SA
Matrix: AQUEOUS
Authorized: 11 AUG 91

Sampled: 08 AUG 91
Prepared: 14 AUG 91

Received: 09 AUG 91
Analyzed: 17 AUG 91

Parameter	Result	Units	Reporting Limit	
Total Chromatographable Organics	16	mg/L	0.10	1
Surrogate	Recovery			
o-Terphenyl	112	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C8-C26.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley

Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-8
Lab ID: 016280-0006-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 28 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	10
2-Nitrophenol	23	ug/L	10
Phenol	ND	ug/L	10
2,4-Dimethylphenol	19	ug/L	10
2,4-Dichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	30
4-Chloro-3-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	30
4,6-Dinitro-2-methylphenol	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
4-Nitrophenol	ND	ug/L	50

Surrogate	Recovery	
2,4,6-Tribromophenol	ND	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Halogenated Volatile Organics

Method 8010

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-9
Lab ID: 016280-0007-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	1.3	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	2.0	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	80	%

ND = Not detected
NA = Not applicable

Reported By: Garth Atkins

Approved By: Mike Hoffman

Aromatic Volatile Organics

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-9
Lab ID: 016280-0007-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	2.5
Toluene	ND	ug/L	2.5
Chlorobenzene	ND	ug/L	2.5
Ethylbenzene	ND	ug/L	2.5
Xylenes (total)	3.4	ug/L	2.5
1,3-Dichlorobenzene	ND	ug/L	2.5
1,4-Dichlorobenzene	ND	ug/L	2.5
1,2-Dichlorobenzene	ND	ug/L	2.5

Surrogate	Recovery	
a,a,a-Trifluorotoluene	102	%

ND = Not detected
NA = Not applicable

Reported By: Bret Collins Approved By: Mike Hoffman

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-9
Lab ID: 016280-0007-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 18 AUG 91

Parameter	Result	Units	Reporting Limit	
Total Chromatographable Organics	0.82	mg/L	0.10	1
Surrogate	Recovery			
o-Terphenyl	100	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C8-C22.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-9
Lab ID: 016280-0007-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 28 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	99	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Halogenated Volatile Organics

Method 8010

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-10
Lab ID: 016280-0008-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	73	%

ND = Not detected
NA = Not applicable

Reported By: Garth Atkins

Approved By: Mike Hoffman

Aromatic Volatile Organics

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-10
Lab ID: 016280-0008-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	12
Toluene	ND	ug/L	12
Chlorobenzene	ND	ug/L	12
Ethylbenzene	66	ug/L	12
Xylenes (total)	ND	ug/L	12
1,3-Dichlorobenzene	ND	ug/L	12
1,4-Dichlorobenzene	ND	ug/L	12
1,2-Dichlorobenzene	ND	ug/L	12

Surrogate	Recovery	
a,a,a-Trifluorotoluene	114	%

ND = Not detected
NA = Not applicable

Reported By: Bret Collins Approved By: Mike Hoffman

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-10
Lab ID: 016280-0008-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 18 AUG 91

Parameter	Result	Units	Reporting Limit	
Total Chromatographable Organics	1.5	mg/L	0.20	1
Surrogate	Recovery			
o-Terphenyl	109	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C8-C16.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-10
Lab ID: 016280-0008-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 28 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	2.8	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	7.9	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	127	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy

Approved By: Mike Hoffman

Halogenated Volatile Organics

Method 8010

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-11~~ DFOMW-9 (Duplicate)
Lab ID: 016280-0009-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	1.2	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	1.9	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	79	%

ND = Not detected
NA = Not applicable

Reported By: Garth Atkins Approved By: Mike Hoffman

Aromatic Volatile Organics

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-11~~ DFOMW-9 (Duplicate)
Lab ID: 016280-0009-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	1.2
Toluene	ND	ug/L	1.2
Chlorobenzene	ND	ug/L	1.2
Ethylbenzene	ND	ug/L	1.2
Xylenes (total)	3.7	ug/L	1.2
1,3-Dichlorobenzene	ND	ug/L	1.2
1,4-Dichlorobenzene	ND	ug/L	1.2
1,2-Dichlorobenzene	ND	ug/L	1.2

Surrogate	Recovery	
a,a,a-Trifluorotoluene	101	%

ND = Not detected
NA = Not applicable

Reported By: Bret Collins

Approved By: Mike Hoffman

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-11~~ DFOMW-9 (Duplicate)
Lab ID: 016280-0009-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 19 AUG 91

Parameter	Result	Units	Reporting Limit	
Total Chromatographable Organics	0.80	mg/L	0.10	1
Surrogate	Recovery			
o-Terphenyl	90	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics for which reliable identification of a product could not be achieved. Sample resembles a hydrocarbon product occurring within the n-alkane range of C8-C28.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-11~~ DFOMW-9 (Duplicate)
Lab ID: 016280-0009-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 28 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	500
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	ND	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Halogenated Volatile Organics

Method 8010

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-12~~ Field Blank
Lab ID: 016280-0010-SA
Matrix: AQUEOUS
Authorized: 11 AUG 91

Sampled: 08 AUG 91
Prepared: NA

Received: 09 AUG 91
Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	97	%

ND = Not detected
NA = Not applicable

Reported By: Garth Atkins

Approved By: Mike Hoffman

Aromatic Volatile Organics

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-12~~ Field Blank
Lab ID: 016280-0010-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	0.50
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

Surrogate	Recovery	
a,a,a-Trifluorotoluene	100	%

ND = Not detected
NA = Not applicable

Reported By: Bret Collins Approved By: Mike Hoffman

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-12~~ Field Blank
Lab ID: 016280-0010-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 19 AUG 91

Parameter	Result	Units	Reporting Limit
Total Chromatographable Organics	ND	mg/L	0.10
Surrogate	Recovery		
o-Terphenyl	101	%	

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: ~~DFOMW-12~~ Field Blank
Lab ID: 016280-0010-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 28 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	ND	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	ND	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	ND	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	97	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DSOMW-1
Lab ID: 016280-0001-SA
Matrix: WASTE Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 19 AUG 91 Analyzed: 21 AUG 91

Parameter	Result	Units	Reporting Limit
Total Chromatographable Organics	230000	mg/kg	2000
Surrogate	Recovery		
o-Terphenyl	ND	%	

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-3
Lab ID: 016280-0002-SA
Matrix: AQUEOUS
Authorized: 11 AUG 91

Sampled: 08 AUG 91
Prepared: 14 AUG 91

Received: 09 AUG 91
Analyzed: 27 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	1.0
2-Nitrophenol	400	ug/L	1.0
Phenol	ND	ug/L	1.0
2,4-Dimethylphenol	1200	ug/L	1.0
2,4-Dichlorophenol	ND	ug/L	1.0
2,4,6-Trichlorophenol	400	ug/L	3.0
4-Chloro-3-methylphenol	ND	ug/L	5.0
2,4-Dinitrophenol	ND	ug/L	3.0
4,6-Dinitro-2-methylphenol	ND	ug/L	5.0
Pentachlorophenol	ND	ug/L	5.0
4-Nitrophenol	ND	ug/L	5.0

Surrogate	Recovery	
2,4,6-Tribromophenol	ND	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy

Approved By: Mike Hoffman

Phenols

Method 8040

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-5
Lab ID: 016280-0003-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 14 AUG 91 Analyzed: 28 AUG 91

Parameter	Result	Units	Reporting Limit
2-Chlorophenol	ND	ug/L	10
2-Nitrophenol	36	ug/L	10
Phenol	ND	ug/L	10
2,4-Dimethylphenol	17	ug/L	10
2,4-Dichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	30
4-Chloro-3-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	30
4,6-Dinitro-2-methylphenol	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
4-Nitrophenol	ND	ug/L	50

Surrogate	Recovery	
2,4,6-Tribromophenol	ND	%

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy Approved By: Mike Hoffman

Halogenated Volatile Organics

Method 8010

Client Name: Geraghty & Miller, Inc.
Client ID: TRIP BLANK
Lab ID: 016280-0011-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2 Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
EDB (1,2-Dibromoethane)	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	81	%

ND = Not detected
NA = Not applicable

Reported By: Garth Atkins

Approved By: Mike Hoffman

Aromatic Volatile Organics

Method 8020

Client Name: Geraghty & Miller, Inc.
Client ID: TRIP BLANK
Lab ID: 016280-0011-SA
Matrix: AQUEOUS Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: NA Analyzed: 16 AUG 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	0.50
1,3-Dichlorobenzene	ND	ug/L	0.50
1,4-Dichlorobenzene	ND	ug/L	0.50
1,2-Dichlorobenzene	ND	ug/L	0.50

Surrogate	Recovery	
a,a,a-Trifluorotoluene	100	%

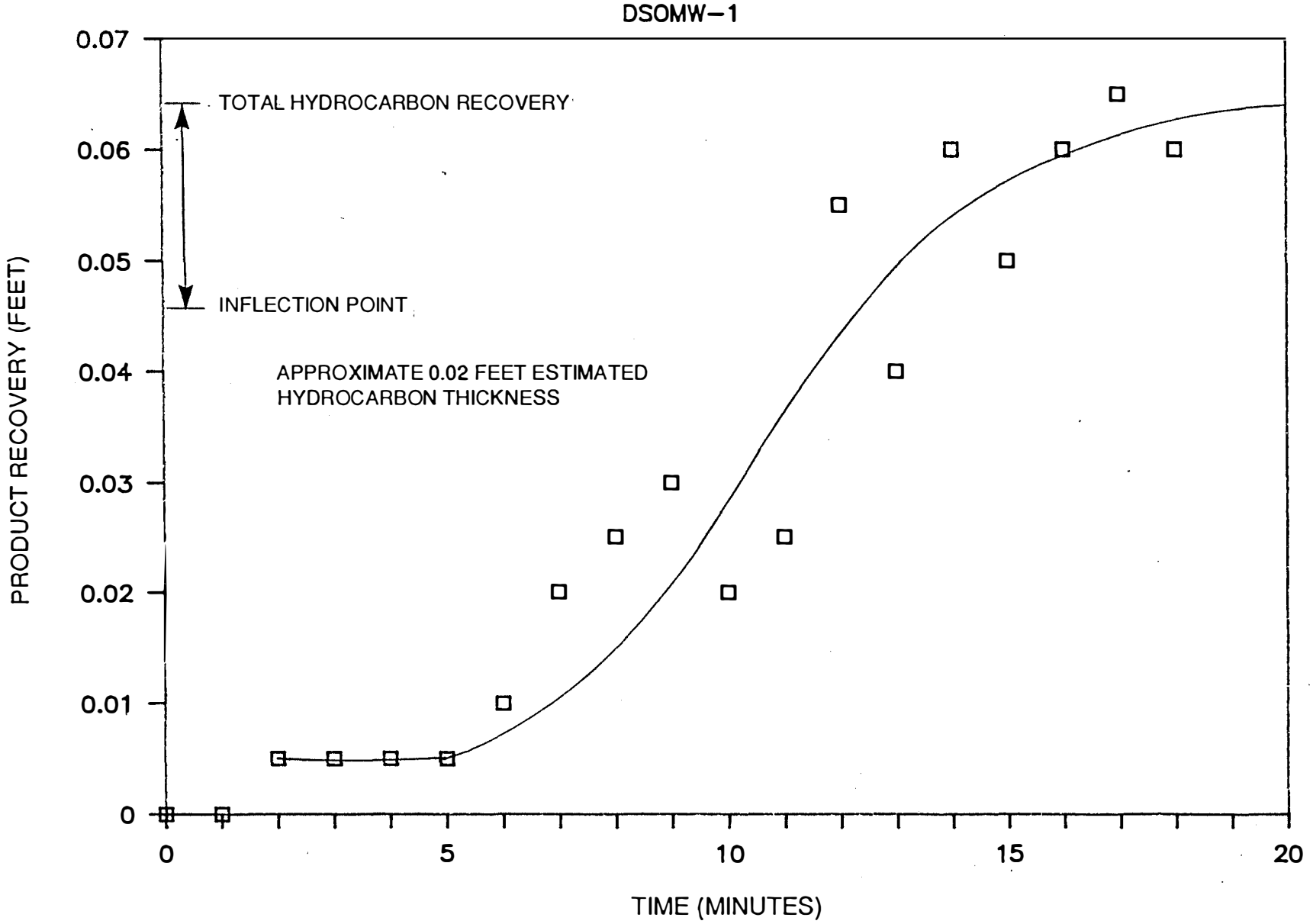
ND = Not detected
NA = Not applicable

Reported By: Bret Collins Approved By: Mike Hoffman

APPENDIX F

PRODUCT RECOVERY ANALYSES

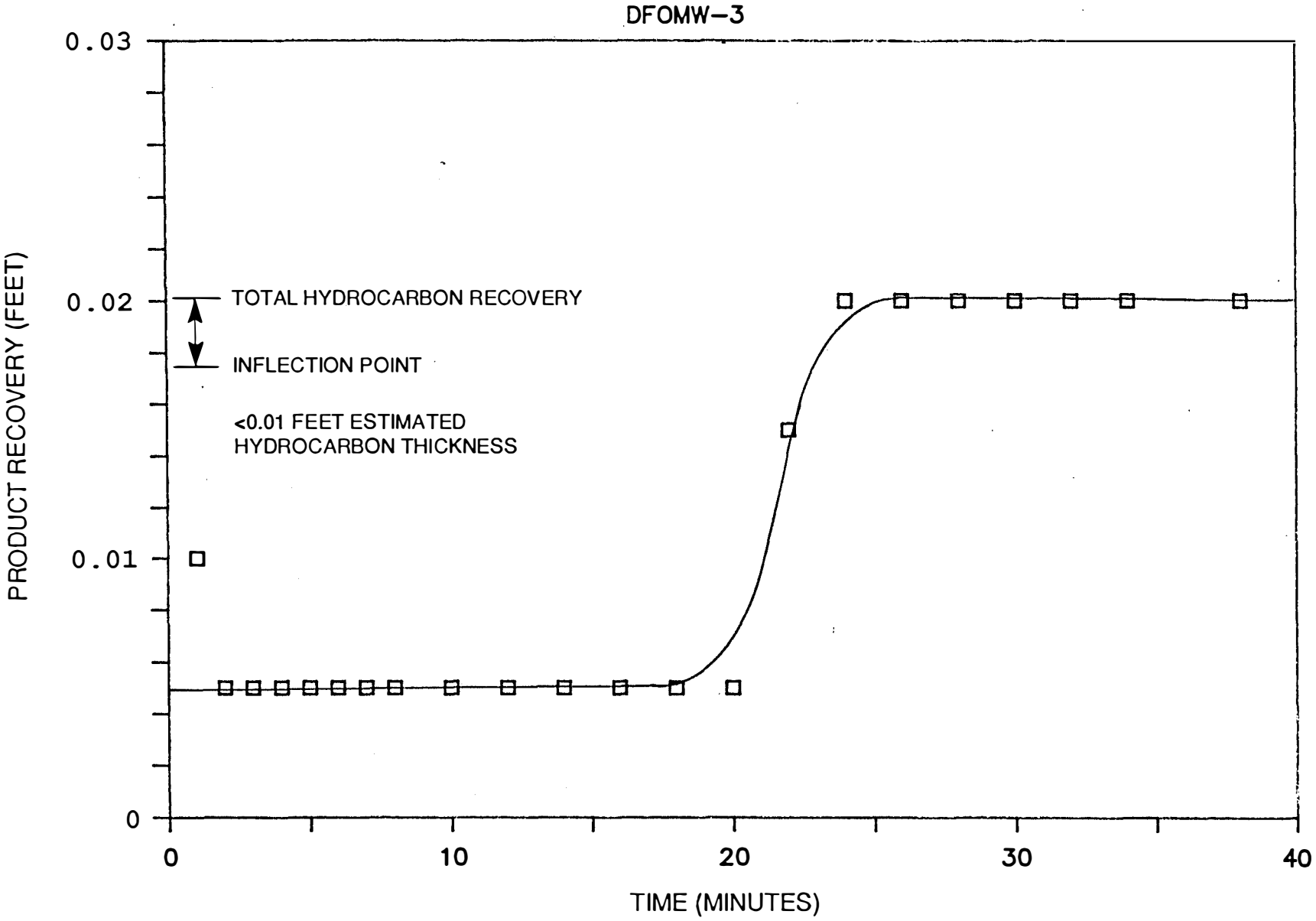
Hydrocarbon Recovery Test



GERAGHTY & MILLER, INC.
Environmental Services

HYDROCARBON RECOVERY TEST
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.11

Hydrocarbon Recovery Test

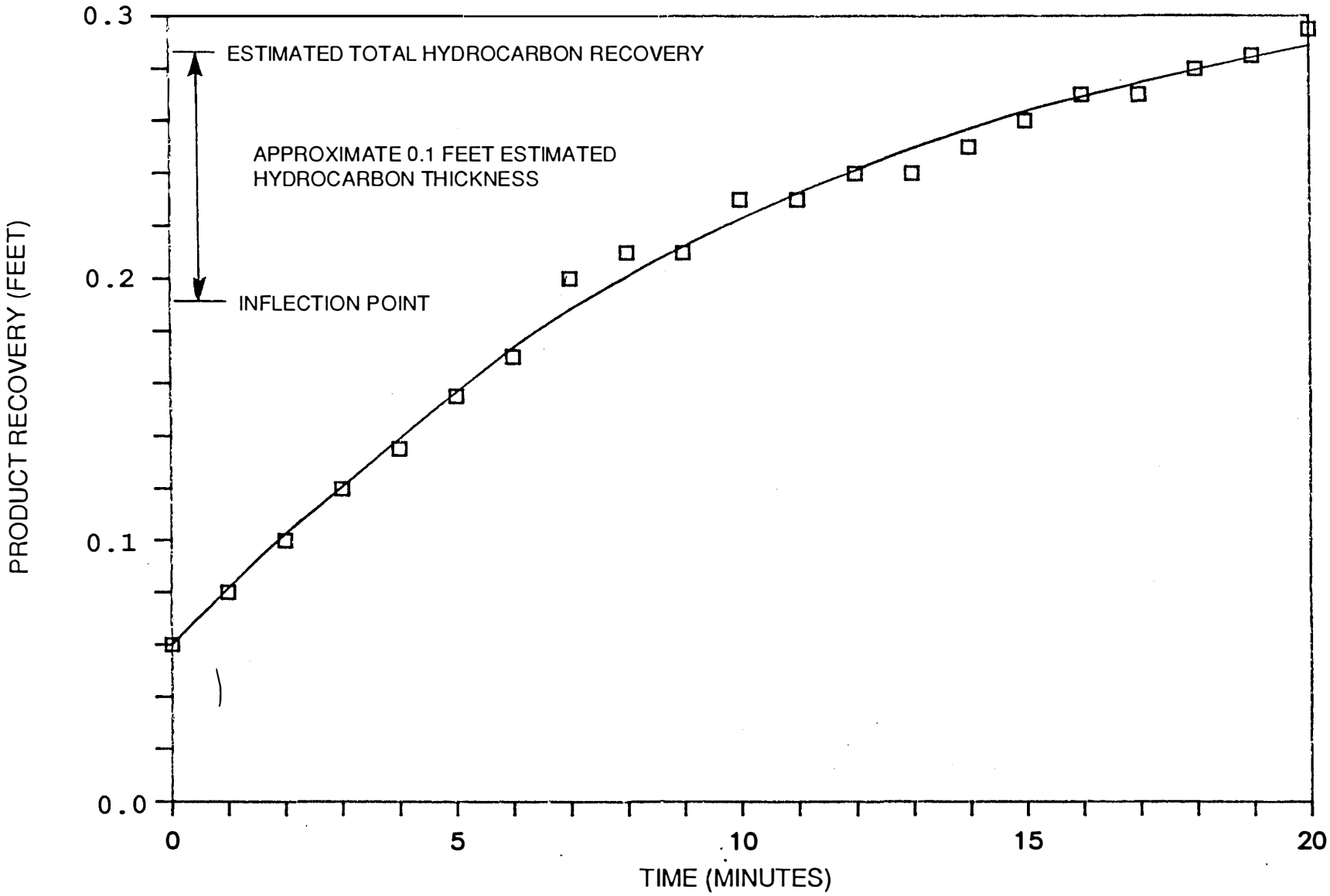


GERAGHTY & MILLER, INC.
Environmental Services

HYDROCARBON RECOVERY TEST
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.11

Hydrocarbon Recovery Test

DFOMW-5



GERAGHTY & MILLER, INC.
Environmental Services

HYDROCARBON RECOVERY TEST
DOWNTOWN FACILITY
3M - WAUSAU
WAUSAU, WISCONSIN
WI21202 - 0294.11

APPENDIX G

LABORATORY RESULTS FROM SEPARATE-PHASE PRODUCT IDENTIFICATION

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DSOMW-1
Lab ID: 016280-0001-SA
Matrix: WASTE Sampled: 08 AUG 91 Received: 09 AUG 91
Authorized: 11 AUG 91 Prepared: 19 AUG 91 Analyzed: 21 AUG 91

Parameter	Result	Units	Reporting Limit
Total Chromatographable Organics	230000	mg/kg	2000
Surrogate	Recovery		
o-Terphenyl	ND	%	

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-3
Lab ID: 015785-0003-SA
Matrix: WASTE Sampled: 12 JUL 91 Received: 13 JUL 91
Authorized: 13 JUL 91 Prepared: 16 JUL 91 Analyzed: 16 JUL 91

Parameter	Result	Units	Reporting Limit	
Total Chromatographable Organics	20000	mg/kg	10000	1
Surrogate	Recovery			
o-Terphenyl	NA	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics that are similar to Fuel oil #4.
Sample resembles a hydrocarbon product occurring within the n-alkane range of C9-C32.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

Enseco
A Corning Company

Extractable Petroleum Hydrocarbons

Method GC/FID

Client Name: Geraghty & Miller, Inc.
Client ID: DFOMW-5
Lab ID: 015785-0005-SA
Matrix: WASTE Sampled: 12 JUL 91 Received: 13 JUL 91
Authorized: 13 JUL 91 Prepared: 16 JUL 91 Analyzed: 17 JUL 91

Parameter	Result	Units	Reporting Limit	
Total Chromatographable Organics	19000	mg/kg	10000	1
Surrogate	Recovery			
o-Terphenyl	NA	%		

Note 1 : Qualitative ID : This sample has GC/FID characteristics that are similar to Fuel oil #4.
Sample resembles a hydrocarbon product occurring within the n-alkane range of C8-C27.

ND = Not detected
NA = Not applicable

Reported By: Kathy Ridley Approved By: Mike Hoffman

APPENDIX H

RESULTS FROM MICROBIOLOGICAL PLATING STUDY SAMPLES

GERAGHTY
& MILLER, INC.
Environmental Services

Ground Water *Engineering* *Hydrocarbon* *Remediation* *Education*

August 22, 1991

Mr. Eric Carman
Geraghty & Miller, Inc.
126 North Jefferson Street
Suite 400
Milwaukee, WI 53202

Dear Eric:

Our report for the 3M, Wausau, WI site is enclosed. This project is Geraghty & Miller Project No. WI21202.

All the samples had a measurable indigenous microbial population except samples DSOMW2/28-30 and DSOMW3/16-18, which were below the detection limit. Both samples evaluated for the presence of microbes capable of degrading mineral spirits contained a small percentage of microbes which had adapted to degrade mineral spirits. A significant percentage of the total microbes have adapted to degrade diesel fuel for approximately half of the samples. The pH of the soils are generally within the optimal range for microbial growth. The soil moisture in six samples is less than the typical range of 10 to 25 percent. Nutrients are present and available to the microbes, but should be amended for bioremediation.

It appears that the 3M Wausau site is a candidate for bioremediation if other site specific factors such as soil permeability are favorable.

Please call if I can be of any assistance or if you have any questions.

Sincerely,

GERAGHTY & MILLER, INC.

Victor L. Kowalski

Victor L. Kowalski, Ph.D.
Director
Treatability Laboratory

VLK/jld

14497 North Dale Mabry, Suite 115 • Tampa, Florida 33618 • P.O. Box 273630 • Tampa, Florida 33688-3630
(813) 961-1921 • FAX (813) 961-2599

GERAGHTY & MILLER TREATABILITY LABORATORY
Microbiological Evaluation
3M Wausau Site
Wausau, WI

Introduction

A treatability study was conducted to evaluate soil samples collected from the 3M Wausau site. The evaluation was conducted to determine if the soils harbor a microbial population capable of using diesel and mineral spirits, at specific sites, as a carbon source with the possibility of enhancing the population to remediate the source material.

The objectives of the study were as follows: (1) determine if aerobic microbes are present in representative soils, (2) determine if the microbes have adapted to degrade selected organic compounds, (3) determine if the environmental conditions (pH and moisture content) are conducive to support a microbial population, and (4) determine if soluble inorganic nutrients (ammonia and ortho-phosphate) are present in sufficient quantities for bioremediation of the contaminants.

The evaluation indicates that for samples designated GMQMW1/10'-16', GPIMW1/8'-12, DFOMW3/30'-32', GPIMW2/34'-36', DFOMW5/22'-26', and GPIMW1/18'-20' there is an indigenous microbial population capable of using diesel as a carbon source with samples DFOMW5/22'-26' and GPIMW1/18'-20' harboring a microbial population capable of using mineral spirits also. The remaining samples do not harbor an appreciable population capable of using diesel at this time.

Methodology

Total heterotrophic aerobic microbes were determined using Standard Methods Procedures 9215 C (1989) spread plate procedure. The samples were serially diluted in a mineral nutrient buffer solution and 0.1 ml of the diluted sample plated in duplicate on Standard Plate Count (SPC) agar plates. The plates were incubated in the dark at ambient temperature. The number of Colony Forming Units (CFU) were determined after five days of incubation.

Heterotrophic aerobic microbes capable of degrading diesel and mineral spirits were determined using a modification of the above procedure. The samples were serially diluted in a mineral nutrient buffer solution and 0.1 ml of the diluted sample was plated in duplicate onto carbon-free Noble agar. The plates were incubated in the dark at ambient temperature in a desiccator containing diesel vapors and the colonies were counted after fourteen days of incubation. Aerobic microbes capable of degrading mineral spirits were plated on separate plates and incubated in the dark at ambient temperature in a desiccator containing mineral spirit vapors.

The soil pH was determined using U.S. Environmental Protection Agency (USEPA) SW846 Method 9045 (1986). The soil moisture was determined by using Standard Methods procedure 2540 G (1989). The Total Petroleum Hydrocarbon was determined using a modified USEPA Method 418.1.

The soluble ammonia and ortho-phosphate concentrations were determined using an aliquot from the sample extract used to determine the pH. Ammonia was analyzed using Hach Inc. Method 380 which is based on USEPA Method 350.2 colorimetric procedure, nitrogen-ammonia nesslerization. The ortho-phosphate was analyzed using Hach Inc. method 490 which is based on USEPA Method 365.2 colorimetric ascorbic acid, single reagent.

Results & Discussion

Table 1 presents the results of the total heterotrophic, diesel, and mineral spirits degrading aerobic microbial population plating studies. Total heterotrophic aerobic microbial population values ranged from below detection limit to 9.9 X 10^6 CFU/g. Diesel degrading aerobic microbial population values ranged from below detection limit to 5.8 X 10^6 CFU/g. Mineral spirits degrading aerobic microbial population values ranged from 1.6 X 10^3 CFU/g to 3.1 X 10^4 CFU/g. The results indicate that samples GMQMWI/10'-16', GPIMW1/8'-12', DFOMW3/30'-32', GPIMW2/34'-36', DFOMW5/22'-26', and GPIMW1/18'-20' harbor a heterotrophic aerobic microbial population that has adapted to utilize diesel as a carbon source. Samples DFOMW5/22'-26' and GPIMW1/18'-20' also harbor an aerobic microbial population that has adapted to utilize mineral spirits as a carbon source. The remaining samples do not harbor an appreciable population at this time.

Microbial population in environmental samples are variable and can range from less than 1 x 10^2 to greater than 1 x 10^9 CFU/gm. Typical soil populations range from 1 x 10^4 to 1 x 10^6 CFU/gm. These values are interpreted broadly as they are numbers associated with viable microbes that have been extracted from the soil and are capable of growing on a general nutrient medium. There is no medium capable of supporting microbial growth of all potential microorganisms indigenous to soil. Microbial spores, if present, require a period of acclimation before growth will commence. Therefore, these numbers should be interpreted as a population minimum with true microbial numbers potentially one to two orders of magnitude greater.

Table 2 presents the results of the environmental conditions analyses including TPH, pH, percent moisture, soluble ammonia and o-phosphate. The TPH values ranged from below detection limit to 8700 mg/kg (DFOMW5/22'-26'). Free product was observed in samples DSOMW1/18'-20' and DSOMW2/28'-30', therefore TPH was not run on these samples. The soil pH ranged from 7.2 to 8.1. The soil pH for the samples collected is within the optimal range of 6.0 to 8.0 for microbial growth. The moisture content ranged from 2.8 to 15.3 percent. Typical moisture content for optimal microbial growth is between 10 to 25 percent. This range is important to maintain cellular turgidity, transport nutrients, and maintain biological processes. The soluble ammonia values ranged from 0.1 mg/kg to 0.3

mg/kg. The soluble ortho-phosphate values ranged from 0.1 mg/kg to 9.3 mg/kg. Results of the soluble ammonia and ortho-phosphate analyses show that these ions are present and are available to the microbial population, but should be amended to optimize bioremediation.

The results of the soil respirometry study, Figures 1 thru 6, show greater oxygen consumption and carbon dioxide production for samples GPI MW1/8-12, DFOMW51/26-32, DFOMW/16-20 and DFOMW5/24-26 and GMQMW1/10-16. The respirometer measures the rate of change of oxygen and carbon dioxide in an enclosed chamber. These changes could be from a number of sources with respiration being one of the sources. During respiration oxygen is consumed and carbon dioxide is produced.

Table 1. Microbial Enumeration Results, 3M Wausau Site, Wausau, WI, Project No. WI21202.

Sample Identification	Total Heterotrophic Microbes	Specific Degrading Microbes	Specific Degrading Microbes Percent(%)
	Microbes X 10^5 CFU/gm (Dry Weight)		
		Diesel	Diesel
GPIMW1/8-12	8.6	58	NA
GPIMW1/18-20	46	13	28
GPIMW2/10-14	37	BDL**	NA
GPIMW2/34-36	.34	.04	12
DFOMW1/16-20	45	BDL**	NA
DFOMW1/26-32	7.4	BDL**	NA
DFOMW3/30-32	2.4	.06	2.5
DFOMW5/22-26	41	27	66
DSOMW2/28-30	BDL*	BDL**	NA
DSOMW3/16-18	BDL*	BDL**	NA
GMQMW1/10-16	99	38	38
		Mineral Spirits	Mineral Spirits
GPIMW1/18-20	46	.31	.67
DFOMW5/22-26	41	.02	.05

BDL* = Below Detection Limit, <3.0 X 10^3.
BDL** = Below Detection Limit, <3.0 X 10^2.
NA= Not Applicable.

Table 2. Environmental Conditions Analyses, 3M Wausau Site, Wausau, WI Project No. WI21202.

Sample Identification	T.P.H. (mg/kg)	Ammonia (mg/kg)	o-Phosphate (mg/kg)	Percent Moisture (%)	pH (s.u)
GPIMW1/8-12	71.0	0.3	0.1	4.9	7.3
GPIMW1/18-20	7.0	0.3	9.25	15.0	7.2
GPIMW2/10-14	5.0	0.1	0.3	2.9	7.3
GPIMW2/34-36	BDL*	0.1	1.0	14.7	7.4
DFOMW1/16-20	2900	0.1	1.6	4.6	8.1
DFOMW1/26-32	1200	0.3	0.3	7.6	7.4
DFOMW3/30-32	160	0.1	0.9	13.4	6.9
DFOMW5/22-26	8700	0.1	0.8	6.5	7.4
DSOMW2/28-30	FP	0.1	0.4	13.2	7.3
DSOMW3/16-18	13	0.1	0.1	2.8	8.0
GMQMW1/10-16	350	0.1	0.1	15.3	7.3

T.P.H. = Total Petroleum Hydrocarbons
BDL* = Below Detection Limit, <5.0 mg/kg
FP = Free Product

Figure 1. Respirometer Study. 3M Wausau Site. Project No. WI21202.

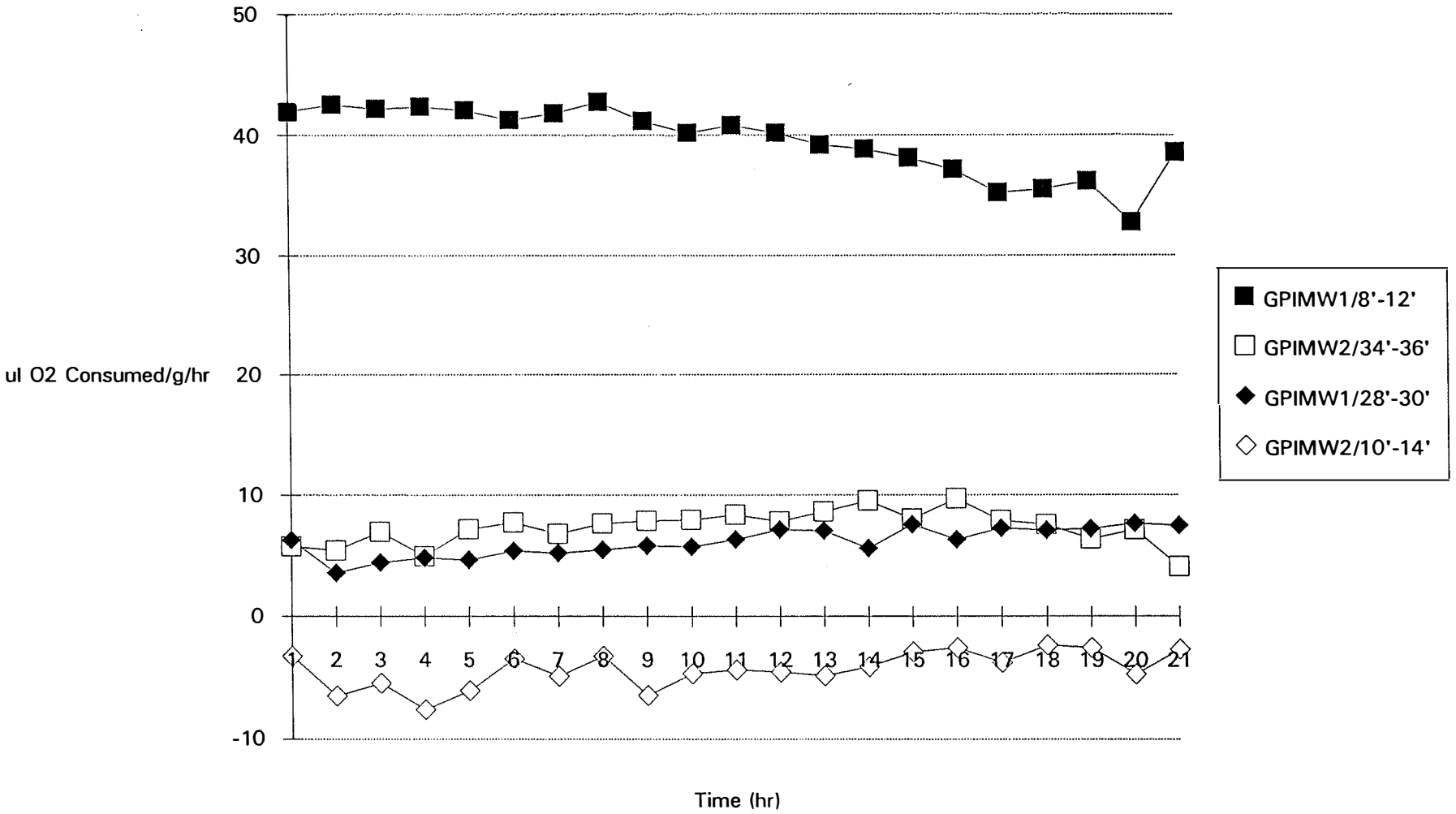


Figure 2. Respirometer Study. 3M Wausau Site. Project No. WI21202.

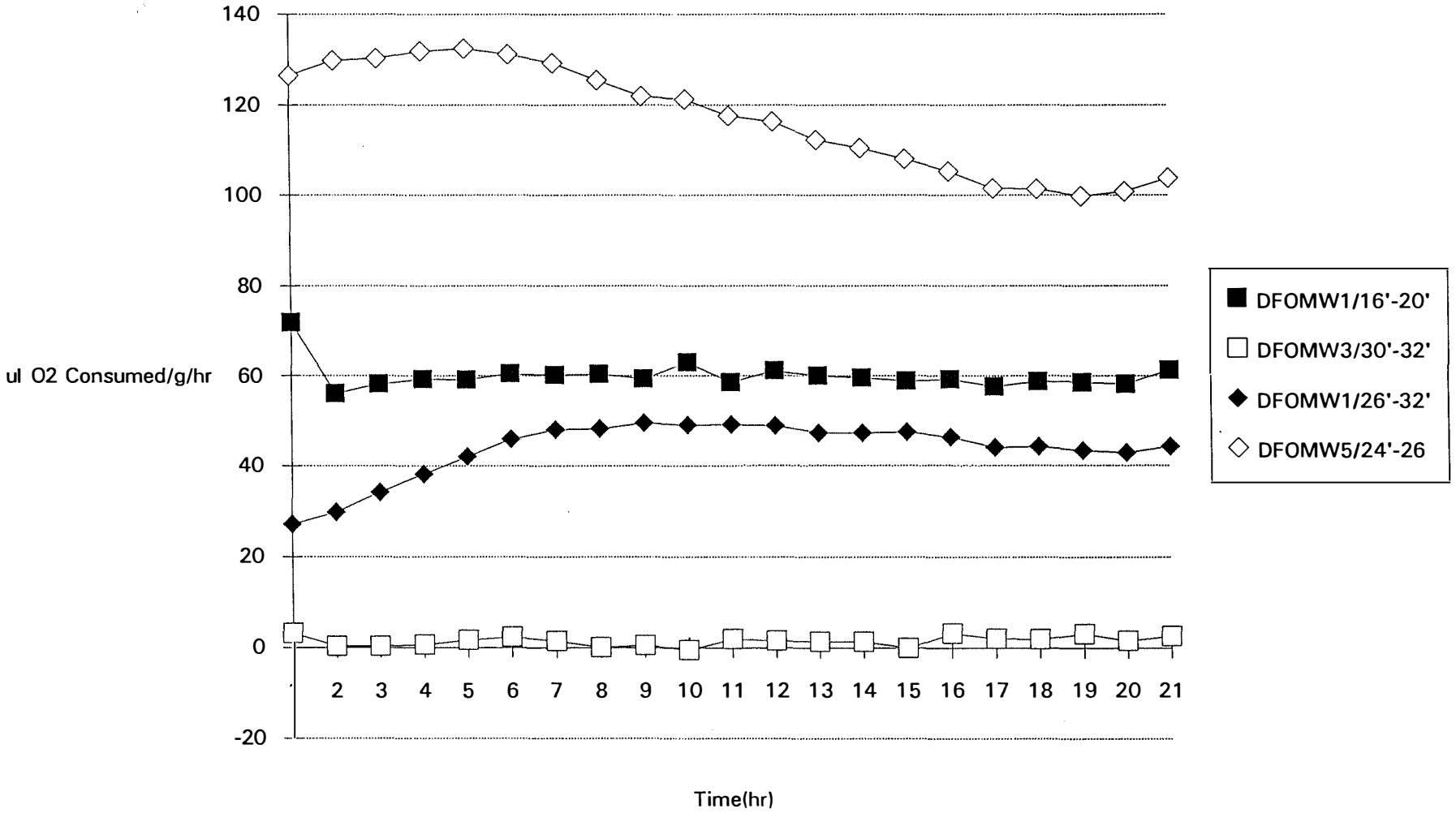


Figure 3. Respirometer Study. 3M Wausau Site. Project No. WI21202.

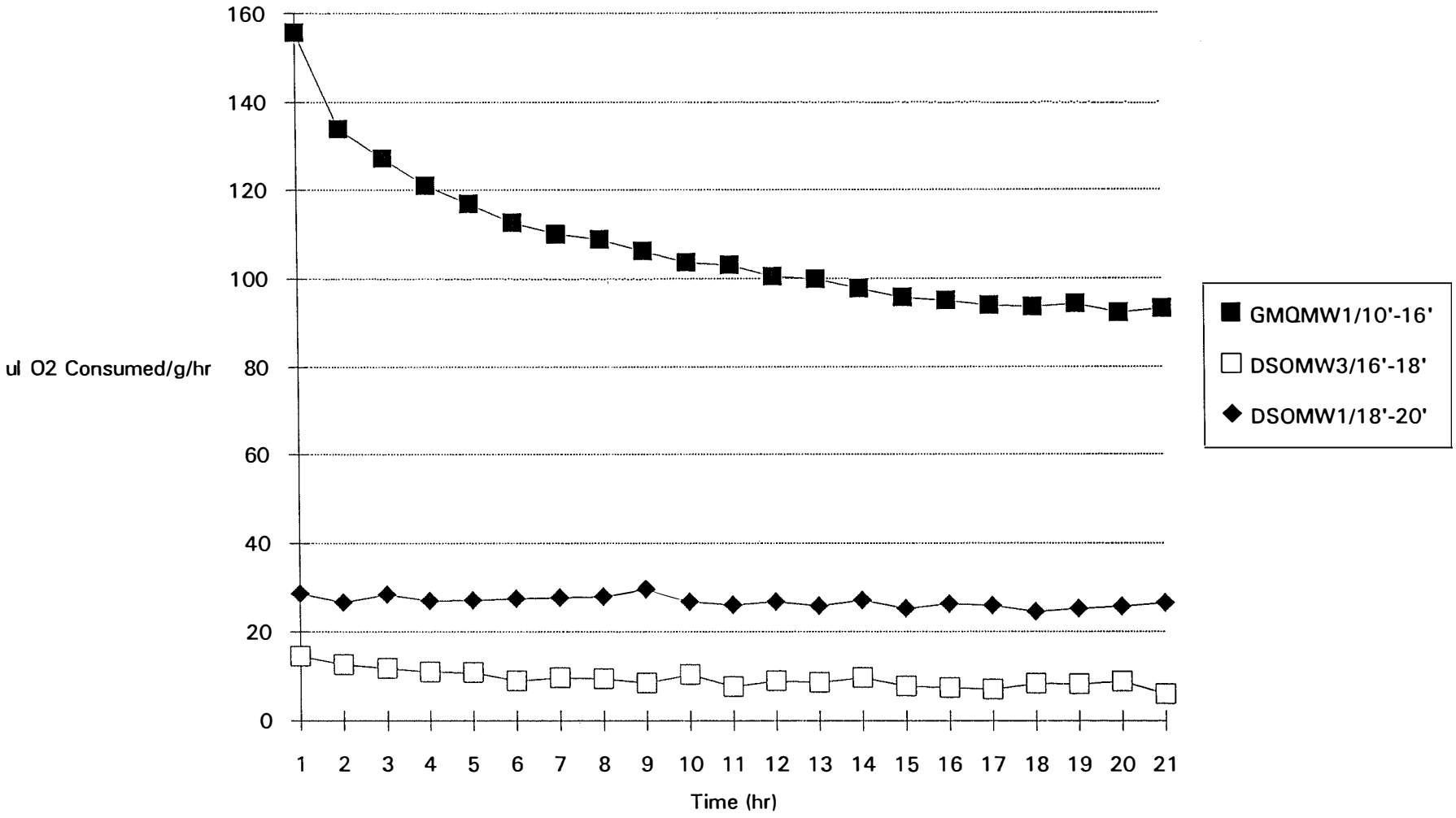


Figure 4. Respirometer Study. 3M Wausau Site. Project No. WI21202.

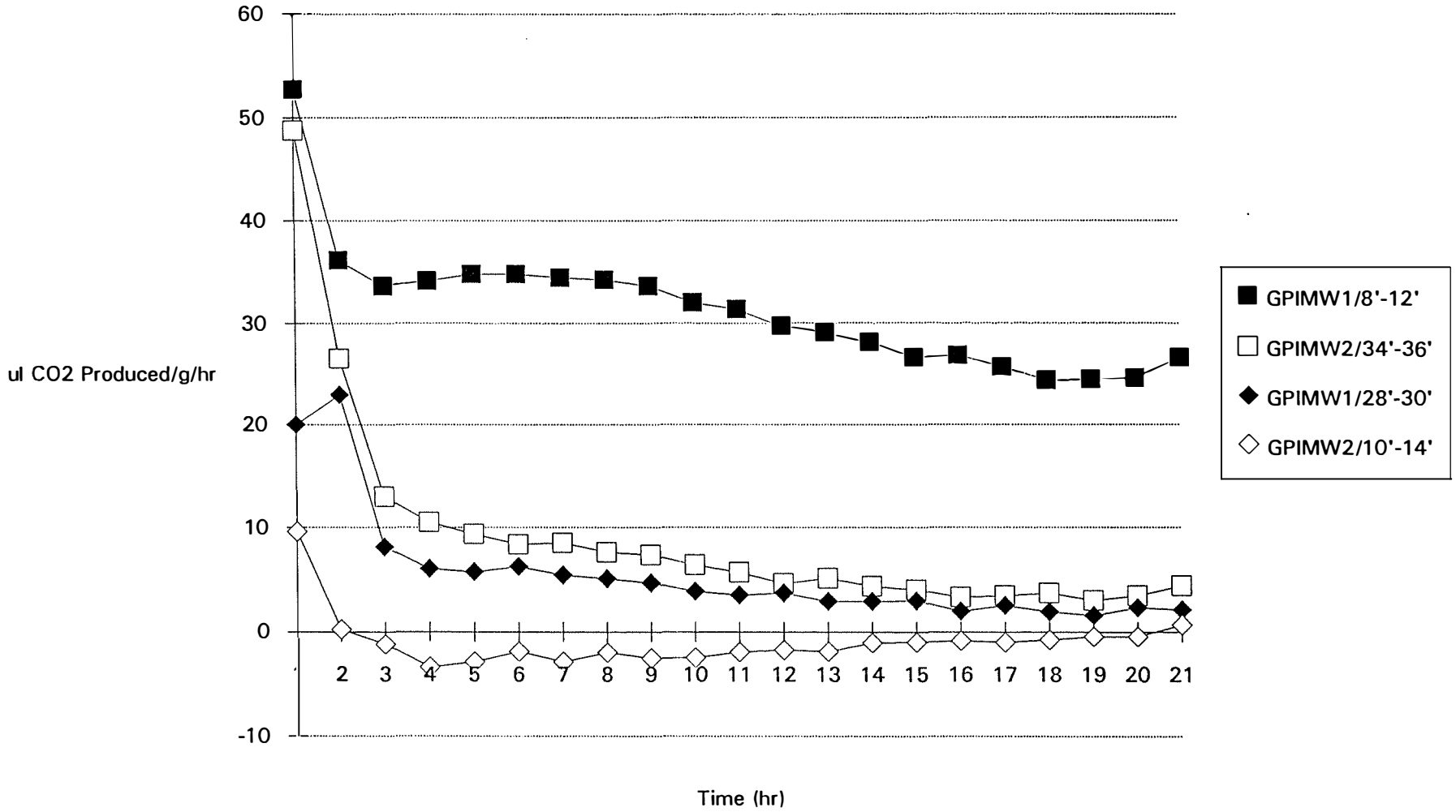


Figure 5. Respirometer Study. 3M Wausau Site. Project No. WI21202.

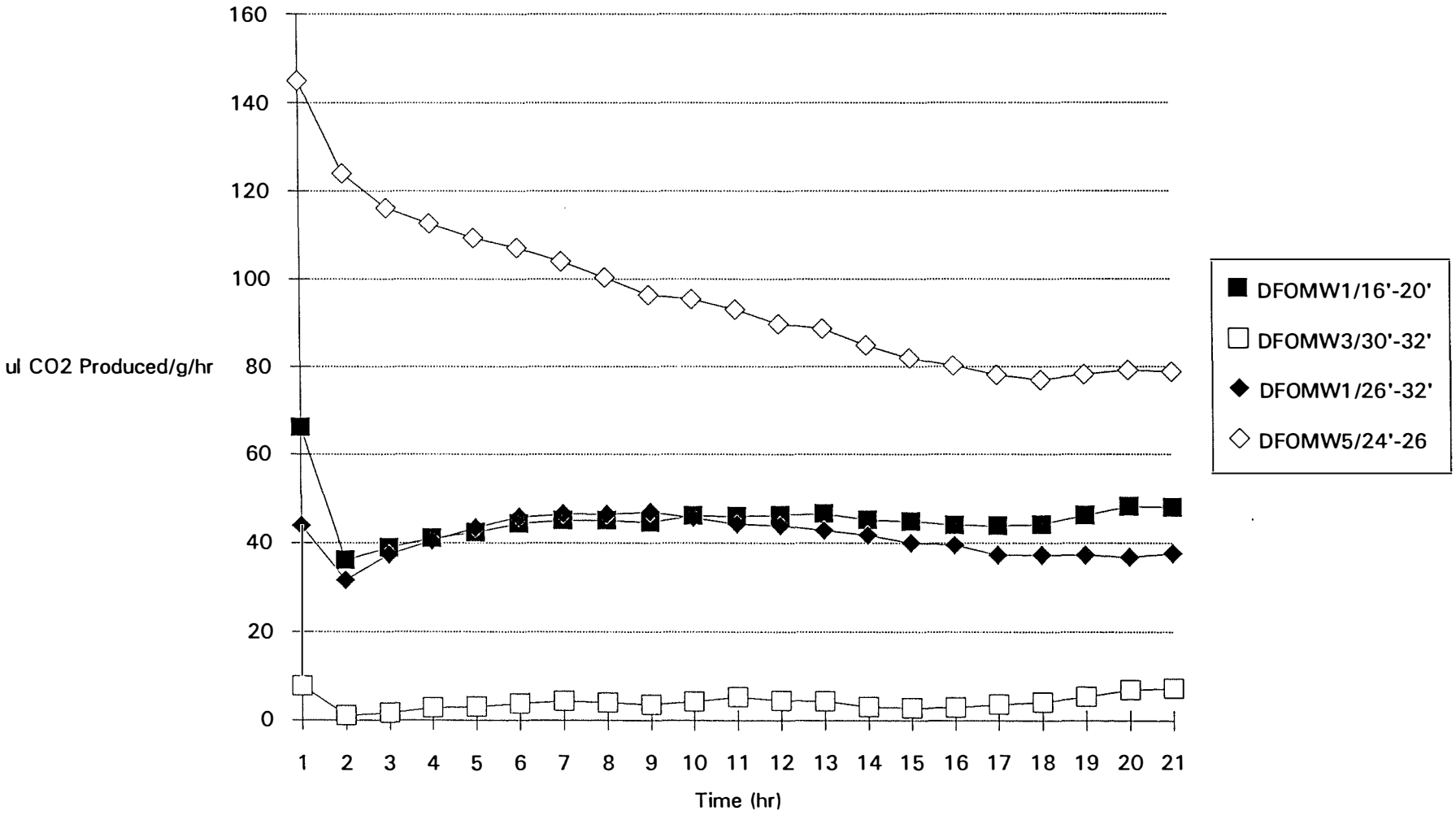


Figure 6. Respirometer Study. 3M Wausau Site. Project No. WI21202.