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Phase II Remedial Investigation Report

Schloff Chemical and Supply Company Site St. Louis Park, MN

Prepared for
Minnesota Pollution Control Agency

April 1992

Engineering Company

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April 1992

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PHASE II REMEDIAL INVESTIGATION REPORT

SCHLOFF CHEMICAL AND SUPPLY COMPANY SITE
ST. LOUIS PARK, MINNESOTA

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PHASE II REMEDIAL INVESTIGATION REPORT

SCHLOFF CHEMICAL AND SUPPLY COMPANY SITE
ST. LOUIS PARK, MINNESOTA

1.0 INTRODUCTION

This report summarizes the results of the Phase II Remedial Investigation (Phase II RI) conducted at the Schloff Chemical and Supply Company (Schloff) site in St. Louis Park, Minnesota. The Phase II RI was conducted in accordance with the approved Phase II Remedial Investigation Work Plan (Barr, 1991). The work was authorized by the Minnesota Pollution Control Agency (MPCA) under the Multi-Site II contract, Work Order No. Barr-SLF-RI-1.

A Phase I Remedial Investigation (Phase I RI) was conducted at the site by Delta Environmental Consultants, Inc. (Delta) and the results presented in the Phase I Remedial Investigation Report, (Delta, 1990). The objective of the Phase II RI described in this report was to further define the geology, hydrogeology, and extent of contamination at the site.

This report summarizes the available background information regarding the site, summarizes the data collected during the Phase II RI, describes the geologic and hydrogeologic setting of the site, and assesses the extent and magnitude of soil and groundwater contamination at the site.

2.0 BACKGROUND INFORMATION

The information contained in this section was obtained primarily from the Phase I Remedial Investigation (Phase I RI) Report (Delta, 1990). The accuracy of the information has not been verified by Barr Engineering Co.

2.1 Site Description

The Schloff site is located in a commercial/industrial area of St. Louis Park, Hennepin County, Minnesota. The address is 3938 Meadowbrook Road. The property's legal description is the SW 1/4 of the NW 1/4 of Section 20, T117N,

R21W. Figure 1 is a topographical site location map and Figure 2 is a site map. Approximately 50 feet north of the site are Chicago Milwaukee St. Paul Railroad tracks, including a spur to the Schloff building. Further north of the site are Northwestern Railroad tracks, a residential area, and a city park. Areas to the west, south, and east are used for commercial and industrial purposes. To the south is Merit Gage, Inc. and the Musicland Group office and warehouse. East of the site lies Meadowbrook Road and a commercial/industrial business park. To the southeast is the CDC - PCO building. Minnehaha Creek flows near the site.

In general, most areas on-site are paved. Other areas are covered with grass, including the off-site areas surrounding Minnehaha Creek where the stream banks are covered with thick brush, trees, and tall grass. The areas north of the site near the railroad tracks and right-of-way are also overgrown with brush and grass.

The site is relatively flat. Surface drainage from the site is to the west and south. The roughly 29,700 square foot Schloff building occupies approximately 30 percent of the Schloff property. The Schloff building is located in the northern portion of the property.

2.2 Site History

Tetrachloroethene (PCE) was handled at the site as part of business operations, beginning in 1977 (Phase I RI Report, Delta, 1990).

2.3 Previous Site Investigations

A Phase I Remedial Investigation was conducted at the Schloff site by Delta Environmental Consultants, Inc. (Delta). The results of the investigation are presented in the Phase I RI Report (Delta, 1990).

The results of the Phase I RI are summarized below:

- Borings conducted at the site (to depths of 22 to 26 feet below the ground surface) generally encountered unconsolidated sand and gravel.

- The water table at the site is at an approximate elevation of 890 feet MSL (approximately 10 to 15 feet below the ground surface).

- Shallow groundwater at the site flows in a generally southeasterly direction.

- The area near the PCE storage tanks and fill pipes (west end of the Schloff building) was identified as the suspected source area for groundwater contamination.

- Groundwater samples from wells near the suspected source area and downgradient of the suspected source area contained tetrachloroethene (PCE) and PCE degradation products (trichloroethene, dichloroethene). PCE concentrations up to 12,000 µg/L (ppb) were detected in the groundwater at the site.

- 1,1,2-TCE was detected in Minnehaha Creek south and southeast of the site.

There is currently a groundwater pump-out system in operation at the site, as outlined in the Phase I RI Report. Groundwater is pumped from a well (Purge Well PW) in the southeastern corner of the site to a treatment system inside the Schloff building. After treatment, the water is discharged to Minnehaha Creek.

A remedial investigation has also have been conducted at the CDC site southeast of the Schloff site. Groundwater remediation (pump and treat) is currently being conducted at the CDC site.

3.0 PHASE II REMEDIAL INVESTIGATION

3.1 Data Collection Activities

Field activities for the Phase II RI were conducted between November 1991 and January 1992. Data collection activities consisted of a soil contamination investigation, a hydrogeologic investigation, and a groundwater and surface water quality investigation. The RI data collection activities consisted of:

- Placing nine hollow-stem auger and two hand-auger soil borings in and near the suspected area of release.

- Screening and analyzing representative soil samples from the borings for volatile organic compounds (VOCs).

- Installing and developing three water table monitoring wells.

- Installing and developing three deeper monitoring wells.

- Surveying elevations of new and existing monitoring wells and surface water elevation measuring points.

- Collecting and analyzing groundwater samples on two occasions from the new and existing monitoring wells at the Schloff site and five existing wells at the CDC site.

- Collecting and analyzing surface water samples on two occasions from four locations in Minnehaha Creek.

- Measuring groundwater and surface water levels on two occasions.

- Conducting "slug" tests in the six new monitoring wells and analyzing the results to obtain aquifer hydraulic conductivity estimates.

3.1.1 Soils Investigation

Nine hollow-stem auger soil borings (SB-1 through SB-5, SB-7 through SB-10), and two hand-auger soil borings (HAA, HAB) were placed at the site. The locations of the borings are shown on Figure 3. The borings were placed in the vicinity of the PCE storage and handling areas near the western end of the Schloff Chemical building. The objective of the borings was to define the extent and magnitude of soil contamination at the site and to obtain geological information.

The hollow-stem borings were advanced approximately 5 feet beyond the surface of the water table (14 to 17.5 feet below the ground surface). Two of the borings (SB-5 and SB-7) were further advanced (to 36.0 and 36.5 feet below the ground surface, respectively) to investigate the presence or absence of a confining layer beneath the spill area. The hand-auger borings were advanced to a depth of 3.0 feet below the ground surface.

Drilling was performed using hollow-stem auger methods (with the exception of hand-auger drilling). Two-foot long split-spoon samples were collected from the inside of the hollow-stem augers, ahead of the drill stem and bit at 2.5-foot intervals. Soil sampling was done in accordance with ASTM D1586-84. Hand-auger samples were grab samples from the auger barrel.

The auger flights, split-spoon samplers, and other sampling equipment was washed with a nonphosphate detergent and steam cleaned between borings.

As samples from each sampling interval were obtained in the field, a portion of the split-spoon sample was collected for lithologic description and a portion collected for headspace measurements. The samples for lithologic description were classified by an on-site geologist in accordance with ASTM D2488. The portion collected for headspace analysis was analyzed following MPCA guidelines (Jar Headspace Analytical Screening Procedure, May 1990) using a photoionization detector (PID-Thermal Environmental Model 580B). Headspace measurements of volatile organic compounds were recorded. The PID was calibrated prior to the beginning of the soil investigation.

Two soil samples for laboratory analysis were obtained from each boring, with the exception of the hand-auger borings, with one sample each. The upper sample was generally obtained from directly beneath the ground surface (0 to 2 feet depth), with the exception of Boring SB-10 (4.5 feet), which was not sampled at the surface because of the concrete floor. The lower sample from each boring was generally collected from above the water table (8.5 to 9.5 feet depth), with the exception of Boring SB-4 (15.5 feet) which had insufficient sample return at the water table for laboratory analysis. These samples were collected using a California sampler method to reduce volatilization of organic compounds during sample handling. The California method consists of collecting

the soil samples in a 6-inch long brass liner inside the split-spoon sampler. After removal from the split spoon, the soil-filled brass liners were covered on each end with aluminum foil and plastic caps, labeled, wrapped tightly in bubble wrap, and cooled for transport. The soil samples were sent to CH^{2}M Hill Laboratory for analysis. The soil samples were analyzed for purgeable volatile organic compounds (VOCs) under U.S. EPA Method 8010. GC/Hall detector

Boring logs showing field observations are included in Appendix 1.

3.1.2 Hydrogeologic Investigation

3.1.2.1 Well Installation

Three water table monitoring wells (MW-8S, MW-9S, MW-10S) and three deeper monitoring wells (MW-2SL, MW-7SL, MW-10SL) were installed at the site during the Phase II RI. The locations of the new wells are shown on Figure 4. The wells were installed using hollow-stem auger drilling methods. Split-spoon samples were collected at 2.5-foot intervals (with the exception of Borings MW-2SL and MW-7SL, which were sampled at 5-foot intervals to a depth of 20 feet and at 2.5-foot intervals below a depth of 20 feet) and field screened and classified as described in Section 3.1.1. Boring logs showing field observations are included in Appendix 1.

After the well screen and riser were installed in each borehole or auger, a sandpack was placed around the screen to a depth of approximately 2 feet above the top of the screen. Neat cement grout was then placed in the annular space through a tremie line from the top of the sandpack to approximately 2 feet below the ground surface. Concrete grout was used to seal the annular space from the top of the cement grout to the ground surface. Locking protective casings and protective posts were used to protect each well. After well completion, each well was developed to restore the hydraulic properties of the formation adjacent to the borehole. Development consisted of surging and overpumping the wells with a submersible pump. Development water was discharged to the on-site treatment system.

The three shallow water table monitoring wells (MW-8S, MW-9S, MW-10S) were installed with 10-foot long, 2-inch diameter stainless steel screens intersecting the water table. These wells were placed to further define the contaminant plume at the Schloff site. The three deeper monitoring wells (MW-25L, MW-75L, MW-10SL) were installed with 5-foot long, 2-inch diameter stainless steel screens. The tops of the screens in the deep wells were placed approximately 24 to 27 feet below the water table. The deeper wells were placed to: determine whether the lower portion of the glacial aquifer has been impacted by contamination; define any vertical hydraulic gradients between the upper and lower portions of the glacial aquifer; and provide information regarding the presence or absence of a confining layer between the upper and lower portions of the aquifer.

Well construction diagrams are included as Appendix 2. Minnesota Water Well Records for the wells are included in the Driller's Report (Appendix 3).

3.1.2.2 Surveying, Water Level Measurement

The ground surface elevation at each boring location, the ground surface and top-of-casing elevations at the monitoring wells and surface water elevation measuring points were surveyed relative to the U.S.G.S. benchmark at Meadowbrook Bridge. All new and existing monitoring wells at the Schloff site and the five CDC wells chosen for sampling (PW-1, MW-B, MW-BL, MW-D, MW-DBR) were surveyed.

Water levels were measured in all of the Schloff wells on November 25, 1991 and January 13, 1992. The water levels were measured in the five CDC wells (PW-1, MW-B, MW-BL, MW-D, MW-DBR) on November 26, 1991 and January 14, 1992.

3.1.2.3 Slug Testing

Single well aquifer tests ("slug" tests) were performed at each new well. A "slug" (PVC plug) was placed in the well to displace well water. Water level measurements were recorded as the well stabilized. After the well stabilized, the "slug" was removed and the water level measurements recorded as the well restabilized. Water level measurements were recorded with an In Situ Hermit Model 1000B data logger and PTX 161D transducer. The slug test data was

analyzed with the Aqtesolv software package developed by Geraghty and Miller, Inc., using the Bouwer and Rice method (Bouwer and Rice, 1976). "Slug-in" data for the water table wells (MW-8S, MW-9S, MW-10S) was not included in the analysis because of possible inaccurate results associated with introducing water to the unsaturated zone. The results of the slug test analysis provide information regarding hydraulic conductivity of the aquifer in the vicinity of each of the new wells.

3.1.3 Groundwater and Surface Water Quality Investigation

During the Phase II RI, groundwater samples were collected from the new and existing monitoring wells at the Schloff site and from monitoring wells PW-1, MW-B, MW-BL, MW-D, and MW-DBR at the CDC site. Surface water samples were collected from four locations along Minnehaha Creek. Sample locations are shown on Figures 4 and 5. Two rounds of sampling were conducted (November 25-27, 1991 and January 13 and 14, 1992).

Sampling was conducted according to the protocol outlined in the Quality Assurance Project Plan (Barr, 1991). Water samples were submitted to CH_2M Hill Laboratory for analysis for purgeable VOCs (U.S. EPA Method 8010). All liquids removed from the wells during well stabilization and sampling were discharged to the on-site treatment system. Trip blanks (5), field blanks (2), method blanks (12), and blind duplicate samples (6) were analyzed to assess sample handling and analytical procedures.

3.2 Results of Investigation

3.2.1 Site Geology

Boring logs for the soil investigation borings (Borings SB-1 through SB-5 and SB-7 through SB-10) and the well installation borings (Borings MW-2SL, MW-7SL, MW-8S, MW-9S, and MW-10SL) are included as Appendix 1. Boring logs and Minnesota Water Well Records prepared by the drilling contractor are included in the Driller's Report (Appendix 3). The boring logs include the soil types encountered and contamination observations. Cross sections were prepared using data from these borings and from borings placed during the Phase I RI.

Cross-section locations are shown on Figure 6. Figures 7 and 8 present the site cross sections.

gs = 900-905' msl.

The surficial geology at the site generally consists of unconsolidated glacial deposits, with 20 to 30 feet of poorly graded sand and gravel overlying silty sand with some clay lenses. These findings are consistent with the surficial geology shown at the site (outwash consisting of sand, loamy sand, and gravel) by the Hennepin County Geologic Atlas (MGS, 1989). Near-surface materials consist of blacktop, fill, and top soil. The contact between the coarser sand and gravel materials and the finer grained silty sand was encountered at an elevation of 870 to 874 feet MSL in all of the deep borings (SB-5, SB-7, MW-2SL, MW-7SL, MW-10SL). This is consistent with the CDC site, where the same contact was encountered at an average elevation of approximately 870 feet MSL (Delta Phase II RI Work Plan).

Available information indicates that the uppermost bedrock units beneath the site are the Platteville Formation (limestone) and the Glenwood Formation (shale). Based on information from the Geologic Atlas and from Delta's Phase II RI Work Plan (Delta, 1991), the upper surface of the Platteville Formation at the site is at approximately 820 feet MSL. The contact between the Platteville and the underlying Glenwood Formation is at approximately 808 feet MSL. Beneath the Glenwood is the St. Peter sandstone, extending from its contact with the Glenwood (at approximately 800 feet MSL) to its contact with the underlying Prairie du Chien group at approximately 650 feet MSL. A generalized stratigraphic column for the site is shown on Figure 9.

3.2.2 Site Hydrogeology

Table 1 presents well construction details and elevations of ground surface and well casing at each of the new Schloff wells. Table 2 presents the groundwater and surface water elevations measured during the Phase II RI.

Figures 10 and 11 show the groundwater elevation contours for the water table aquifer on November 25 and 26, 1991 and January 13 and 14, 1992, respectively.

As can be seen on Figures 10 and 11, groundwater flow in the water table aquifer (sand and gravel) at the site is toward the east-southeast (approximately S50°E to S60°E) at a gradient of approximately 0.0035 feet/foot. These findings are comparable to the flow directions and gradients published in the Phase I RI Report (Delta, 1990) and the Hennepin County Geologic Atlas (MGS, 1989), both of which reported flow to the east-southeast at a gradient of approximately 0.002 feet/foot.

Triangulation was used to estimate the groundwater flow direction and the hydraulic gradient in the underlying silty sand. Water elevations at four wells (MW-2SL, MW-7SL, MW-10SL, MW-BL) were used for the analysis. Three values of flow direction and gradient were estimated for each measurement date (one for each triangle used - MW-2SL, MW-7SL, MW-10SL; MW-2SL, MW-BL, MW-10SL; or MW-7SL, MW-10SL, MW-BL). Flow directions ranged from S53°E to S71°E. However, it is likely that the flow directions estimated with water elevations from well MW-7SL were influenced by the proximity of purge well PW-1. This pumping well most likely causes a lowering of the water level in MW-7SL. This causes an apparent flow direction that is more easterly than the actual flow across the site (when MW-7SL is used in the analysis). The estimated flow directions using wells other than MW-7SL (the MW-2SL, MW-10SL, MW-BL triangle) were S53°E and S54°E for the November 1991 and January 1992 measuring events, respectively. Generalized groundwater elevations in the deep wells (other than MW-7SL) for November 1991 and January 1992 are shown on Figures 12 and 13, respectively. These flow directions are comparable to those estimated for the water table wells. The more southerly "deep aquifer" flow direction noted at the CDC site (Phase I RI Report, Delta, 1990) was not encountered at the Schloff site. The estimated hydraulic gradient in the silty sand ranged from 0.0041 to 0.0054 feet/foot, with the mean of the six values (three well triangles, two dates) equaling 0.0048 feet/foot. This is comparable to the water table hydraulic gradient (0.0035 feet/foot).

There is a downward vertical gradient in the glacial aquifer. This downward gradient is observed on both the Schloff and CDC sites and on the Schloff site ranges in magnitude from 0.021 feet/foot to 0.037 feet/foot, with a mean downward vertical hydraulic gradient of approximately 0.03 feet/foot.

Table 3 lists the downward vertical hydraulic gradients measured in the Schloff wells.

Analysis of the relationship between groundwater and surface water (creek) elevations at the site indicate that Minnehaha Creek was not strongly connected hydraulically to the water table aquifer during the sampling events in November 1991 and January 1992. The elevation of the creek appeared to be above the water table, indicating a losing stream. These findings are similar to the results reported in the Phase I RI Report (Delta, 1990) and may be due to low permeability materials lining the creek bed.

Aquifer tests ("slug" tests) were performed on the six new Schloff wells (MW-2SL, MW-7SL, MW-8S, MW-9S, MW-10S, and MW-10SL) during December 1991. The raw data and curve matching plots are included as Appendix 4. The results of the "slug" testing analysis are shown in Table 4.

Estimated values of hydraulic conductivity (K) for the sand and gravel (Monitoring Wells MW-8S, MW-9S, and MW-10S) ranged from 6.6 to 110 feet/day, with a mean of 47 feet/day (1.7×10^{-2} cm/sec). These values are comparable to other reported values for the sand and gravel at the Schloff and CDC sites (Phase I RI, Delta), including slug test results at Monitoring Well MW-1S (86 feet/day) and slug test results summarized from the CDC site (130 feet/day). In addition, the pumping test results from the Schloff Purge Well PW (transmissivity of 2,000 to 4,000 ft^2/day, Delta's Phase I RI Report) indicate a hydraulic conductivity range of 67 to 133 feet/day, assuming an effective aquifer thickness of 30 feet, which roughly corresponds with the contact between the sand and gravel and the underlying silty sand.

Estimated values of hydraulic conductivity for the silty sand (Monitoring Wells MW-2SL, MW-7SL, and MW-10SL) ranged from 0.18 to 0.82 feet/day, with a mean of 0.49 feet/day (1.7×10^{-4} cm/sec). This estimate is within the range of published values of hydraulic conductivity for silty sand (Freeze and Cherry, 1979).

Groundwater flow velocities at the site were calculated using Darcy's law and calculated and assumed values for site hydrogeologic parameters. The form of Darcy's law used was:

$$\bar{v} = \frac{Ki}{n}$$

where: $\bar{v}$ = average linear velocity (feet/day)

K = hydraulic conductivity (feet/day)

i = hydraulic gradient (feet/foot)

n = porosity (decimal fraction)

Groundwater flow velocity in the sand and gravel using the mean hydraulic conductivity (47 feet/day), mean hydraulic gradient (0.0035 feet/foot), and an assumed porosity of 0.30 (within the normal porosity range for glacial aquifers [Freeze and Cherry, 1979]) is calculated to be approximately 200 feet/year (0.55 feet/day). A minimum flow velocity (using the minimum calculated hydraulic conductivity [6.6 feet/day] and gradient [0.0025 feet/foot]) is estimated to be approximately 20 feet/year. The maximum calculated flow velocity (using the maximum calculated hydraulic conductivity [110 feet/day] and gradient [0.0044 feet/foot]) was calculated to be approximately 590 feet/year. These values compare to Delta's estimated range of 217 to 730 feet/year.

Groundwater flow velocity calculations for the silty sand were based on the measured hydraulic conductivities and hydraulic gradients for the silty sand. A flow velocity in the silty sand of 2.9 feet/year was calculated using mean values for hydraulic conductivity (0.49 feet/day) and hydraulic gradient (0.0048 feet/foot). The maximum flow velocity was calculated to be 5.4 feet/year, using the maximum calculated hydraulic conductivity (0.82 feet/day) and gradient (0.0054 feet/foot). The minimum flow velocity was calculated to be 0.9 feet/year, using the minimum calculated hydraulic conductivity (0.18 feet/day) and gradient (0.0041 feet/foot).

3.2.3 Site Contamination

3.2.3.1 Soil Contamination

Results of field screening of soil samples from the borings are included in Table 5 and on the boring logs in Appendix 1. Results of the laboratory analysis of soil samples are included in Table 6. The laboratory results are shown graphically on Figures 14 and 15, which represent isoconcentration contours of the tetrachloroethene (PCE) concentration from each boring. Copies of the laboratory reports are included as Appendix 5.

As the field and laboratory evidence indicates, much of the unsaturated soil in the vicinity of the western end of the Schloff building has been impacted, showing evidence of tetrachloroethene (PCE) contamination (see Tables 5 and 6, Figures 14 and 15). The highest observed concentrations of PCE in the soils (at the surface and at depth) were in the area immediately west of the aboveground storage tanks (Soil Boring SB-1). Concentrations generally decrease radially from this area. In addition, evidence of PCE contamination was found in soils in the vicinity of the loading bay floor drain (Soil Boring SB-10), although at significantly lower concentrations than those found west of the building.

3.2.3.2 Groundwater and Surface Water Contamination

The results of the groundwater and surface water quality analyses are presented in Tables 7 and 8, respectively. Table 9 shows the results of the quality control analysis. Copies of laboratory reports are included as Appendix 6. The results of the laboratory analyses are shown graphically on Figures 16 through 21. Figures 16 and 17 show isoconcentration contours for tetrachloroethene in the shallow sand and gravel materials at the site for the November 1991 and the January 1992 sampling events, respectively. Figures 18 through 21 show isoconcentration contours for tetrachloroethene on cross sections A-A′ and B-B′ for the November 1991 and January 1992 sampling events.

The results of the groundwater quality analyses indicate that the groundwater at the site has been impacted by the tetrachloroethene release near

the western end of the Schloff building, and that a contaminant plume has passed the boundary of the Schloff property and is moving towards the east-southeast. Concentrations of tetrachloroethene in the groundwater at the site range up to 7,800 μg/L (Monitoring Well MW-7SL). The Recommended Allowable Limit (RAL) for tetrachloroethene is 7.0 μg/L. Lower concentrations of tetrachloroethene degradation products were also detected in groundwater at the site (trichloroethene up to 240 μg/L, dichloroethene up to 3.5 μg/L, vinyl chloride up to 1.7 μg/L). Trichloroethane was also detected at the site at a maximum concentration of 1.0 μg/L.

Figures 16 and 17 (tetrachloroethene plume at the water table) indicate that the plume is moving towards the east-southeast and that tetrachloroethene concentrations above the RAL exist in groundwater beyond the Schloff property boundary. The downgradient extent of the plume (east of Monitoring Well MW-9S) has not been defined.

The tetrachloroethene plume was not encountered in the five monitoring wells sampled during this investigation at the CDC site, with the exception of a single (November 1991) sample from CDC Well PW-1, with a concentration of 1.1 μg/L. Vinyl chloride (1.7 μg/L) and 1,1,1-trichloroethane (1.0 μg/L) were detected in the November 1991 sample from CDC Well MW-B. These compounds were not detected in samples from any of the Schloff wells.

Tetrachloroethene concentrations in samples from the deep wells indicate that the higher concentration portion of the plume is moving into the deeper silty sand portion of the aquifer in the area between Wells MW-2/MW-2SL and Wells MW-7/MW-7SL. This can also be seen graphically on Figures 18 through 21, which show tetrachloroethene concentration distribution with depth. The plume in the deeper (silty sand) portion of the aquifer is also apparently moving towards the east-southeast. The extent of the plume in the deeper portion of the aquifer (Figures 22 and 23) is also not defined, although significant concentrations of tetrachloroethene were not detected in deep wells at the CDC site south of the Schloff plume (MW-BL and MW-DBR).

The general position and direction of movement of the plume correlates well with hydrogeological data indicating groundwater flow direction and rates and

vertical and horizontal hydraulic gradients. The strong downward vertical gradient at the site is apparently causing the high concentration portion of the plume down into the silty sand in the area between MW-2SL and MW-7SL. The lower concentrations observed in the water table monitoring wells (MW-7S, MW-3S) may be, at least in part, the result of dilution of the plume by clean groundwater being drawn from north and south of the plume by the Purge Well (PW). This dilution is likely not occurring in the silty sand portion of the aquifer (MW-7S) at the same magnitude, due to the silty sand's lower hydraulic conductivity.

The results of the surface water sampling indicate that the water quality of Minnehaha Creek was not impacted during the time of the investigation. This correlates with the hydrogeological data that indicated a losing stream during the investigation. Contaminated groundwater that reaches the creek apparently passes beneath the stream. It is also possible that low concentrations of contaminants in any groundwater that does discharge to the creek are diluted to nondetectable concentrations by the higher flow volume in Minnehaha Creek.

3.2.3.3 Quality Control

A review of quality control data (trip blanks, field blanks, method blanks, and field duplicates) was conducted to assess the integrity of the sampling procedures and analytical results from water samples collected during the period of November 1991 through January 1992. The quality control data is shown in Table 9.

Trip blank samples are used to indicate potential contamination due to migration of volatile organic chemicals from the sample shipping containers during sample transport, from the sample containers themselves, or the analyte-free water provided by the laboratory.

Field blank samples are collected to identify contamination from improper decontamination, sampling procedures, bottle transport, and laboratory procedures.

Method blanks are clean sample equivalents composed of distilled, deionized water that are processed and analyzed as a sample to determine the existence and magnitude of potential contamination introduced during sample preparation and analysis.

Field duplicate samples are analyzed to determine data precision, a measure of the reproducibility of field sampling and laboratory analysis. The results are reported as Relative Percent Difference (RPD) and calculated by:

$$RPD = \frac{S - D}{(S + D)/2} \times 100$$

where:

S = concentration of sample
D = concentration of duplicate sample

Fifty samples (includes six field duplicate samples) and 19 blanks were collected and analyzed during the period of November 1991 through January 1992. The data is presented in Tables 7 through 9 and is qualified as follows:

- Blanks -- Volatile organic compounds were not detected in any of the trip blanks, field blanks, or method blanks.

- Field Duplicates -- Duplicate sample precision was good, with the exception of trichloroethene in the January 1992 sample from Monitoring Well MW-7SL (sample - 240 µg/L, duplicate - 120 µg/L). It is difficult to determine the accuracy and precision of these two analyses due to the high concentrations of tetrachloroethene in these samples and the dilutions at which the analyses are done.

The dilution factor for the MW-7SL sample was 10 with the tetrachloroethene concentration at 7,800 µg/L. The dilution factor of the duplicate sample was 100, while the tetrachloroethene concentration was 8,800 µg/L. Duplicate precision results were good for trichloroethene in the January 1992 sample from

Monitoring Well MW-9S (sample - 4.6 μg/L, duplicate - 4.4 μg/L), as well as for all other compounds where the relative percent difference was calculated.

Based on this review, concentrations for trichloroethene in the January 1992 sample and duplicate from Monitoring Well MW-7SL are considered indeterminate and flagged as "i."

All water quality data are considered acceptable with the recommended qualification.

The Phase II RI Quality Assurance Project Plan (QAPP, Barr, 1991) specified daily calibration of the photoionization detector (PID). The PID was calibrated prior to the beginning of the investigation, but not daily during the field work. Although the instrument was not calibrated daily, headspace data were generally in agreement with other indicators of soil contamination, such as field observations (odor) and laboratory results. Elevated headspace readings generally correspond to the soil samples with the highest (laboratory-measured) VOC concentrations.

4.0 DISCUSSION, RECOMMENDATIONS

4.1 Discussion

The results of the Phase II Remedial Investigation indicate the following:

- Groundwater flow at the site is toward the east-southeast at rates of approximately 3 feet/year (silty sand) to 200 feet/year (sand and gravel).

- No significant difference was identified in groundwater flow directions in the sand and gravel (water table) and silty sand (deep) portions of the glacial aquifer.

- A significant volume of tetrachloroethene-contaminated soil exists in the release area west of the Schloff building. This contamination is likely acting as a source for groundwater contamination.

- A plume of tetrachloroethene (and lesser amounts of tetrachloroethene degradation products and 1,1,1-trichloroethane) contaminated groundwater is migrating from the source area toward the east-southeast.

- A downward hydraulic gradient exists at the site.

- No distinct "confining layer" was identified at the site.

- The plume has extended downward into the silty sand portion of the aquifer, at least in the vicinity of Monitoring Well MW-7SL.

- Groundwater with tetrachloroethene concentrations above the RAL has moved beyond the Schloff property boundary.

- Tetrachloroethene was not detected in the CDC wells sampled, with the exception of a single sample from PW-1 at a concentration of 1.1 μg/L.

- The extent of the plume in the upper (sand and gravel) portion of the aquifer east of Monitoring Well MW-9S is unknown.

- The extent of the plume in the lower (silty sand) portion of the aquifer east of Monitoring Well MW-7SL is unknown.

- The effectiveness of the currently operating pump-out system at remediating the aquifer is unknown.

4.2 Recommendations

The following preliminary recommendations are based on the results of the Phase II RI and are intended to advance the remediation of the site and further define the hydrogeological system and extent of groundwater contamination:

1. Remediation of the contaminated soils in the source area west of the Schloff building should be initiated. This will eliminate the source

of ongoing groundwater contamination. Based on preliminary evaluation, soil venting may be the most effective method of corrective action for the contaminated soils, based on the following site factors:

- The sand and gravel is highly permeable.
- Soil excavation would be difficult to impossible without risking damage to the Schloff building or tank structure.
- The area is already partially capped by the Schloff building and the asphalt parking lot.

2. A new pump test should be conducted at Purge Well PW, adding Monitoring Well MW-7SL as an observation well. This will help evaluate the effectiveness of the existing purge well at extracting contaminated groundwater from the silty sand material and would aid in evaluating the need for an additional purge well at the site.

3. An additional (deep) monitoring well should be placed into the silty sand downgradient of Monitoring Well MW-7SL. Water quality data from this well would aid in the definition of the plume that exists in the silty sand.

4. An additional water table monitoring well should be placed east of MW-9S. Water quality data from this well would provide information regarding the extent of the plume in the sand and gravel.

5. Quarterly water quality sampling and water level measurements should be conducted at the site, using the same monitoring points and protocol used for the Phase II RI.

5.0 REFERENCES

Barr Engineering Co., 1991, Phase II Remedial Investigation Work Plan, Schloff Chemical and Supply Company Site, prepared for Minnesota Pollution Control Agency.

Barr Engineering Co., 1991, Quality Assurance Project Plan, Schloff Chemical and Supply Company Site, prepared for Minnesota Pollution Control Agency.

Bouwer, H., and R.C. Rice, 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells, Water Resources Research, v. 12, p. 423-428.

Delta Environmental Consultants, Inc., 1990, Phase I Remedial Investigation Report, Schloff Chemical Company.

Delta Environmental Consultants, Inc., 1991, Phase II Remedial Investigation Work Plan, Schloff Chemical Company.

Freeze, R.A., and J.A. Cherry, 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 pp.

Minnesota Geological Survey, 1989, Geologic Atlas - Hennepin County, Minnesota, University of Minnesota, St. Paul, Minnesota.

TABLE 1
MONITORING WELL CONSTRUCTION

	Monitoring Well					
	MW-8S	MW-9S	MW-10S	MW-2SL	MW-7SL	MW-10SL
Minnesota Unique Well No.	497641	497642	497643	497644	497645	497646
Ground Elevation (ft. MSL)	901.1	897.3	897.0	903.2	902.7	896.8
Top of Riser Elevation (ft. MSL)	903.54	899.14	898.68	905.32	904.25	898.49
Top of Screen Elevation (ft. MSL)	891.1	887.3	892.0	863.7	865.2	863.8
Bottom of Screen Elevation (ft. MSL)	881.1	877.3	887.0 882.0	861.2 858.7	862.7 860.2	861.3 858.8
Top of Filter Pack Elevation (ft. MSL)	893.1	889.3	894.0	865.7	867.2	865.8
Screen Length (ft.)	10	10	10	5	5	5
Well Depth (Feet below ground surface)	20.0	20.0	15.0	44.5	42.5	38.0

TABLE 2

GROUNDWATER AND SURFACE WATER ELEVATION DATA

(Elevations in feet MSL)

Location	Elevations			Depth to GW From ground	
	Measuring Point	November 25-27, 1991	January 13, 14, 1992		
Groundwater					
MW-1S	907.18	889.89	889.48	14.37	14.78
MW-2S	905.35	890.19	889.87	12.49	12.81
MW-2SL	905.32	889.36	889.13	13.84	14.07
MW-3S	904.42	888.65	888.48	13.31	13.48
MW-4S	904.71	890.50	890.13	12.05	12.42
MW-5S	898.63	888.03	887.72	8.7	9.01
MW-6S	901.98	890.84	890.47	8.87	9.24
MW-7S	904.15	888.90	888.64	12.99	13.25
MW-7SL	904.25	887.93	887.67	14.77	15.03
MW-8S	903.54	889.63	889.48	11.47	11.62
MW-9S	899.14	887.67	887.45	9.03	9.85
MW-10S	898.68	888.83	888.73	8.17	8.27
MW-10SL	898.49	888.25	888.03	8.55	8.77
MW-B	898.38	888.27	887.80		
MW-BL	898.87	886.86	886.59		
MW-D	899.27	887.62	886.90		
MW-DBR	898.54	885.11	884.81		
PW-1	901.98	888.47	888.03		
Surface Water					
MC-1	910.86	893.07	892.76		
MC-2	903.07	888.66	888.56		

TABLE 3

VERTICAL HYDRAULIC GRADIENTS

Well Pair	Downward Hydraulic Gradient (feet/foot)	
	November 1991	January 1992
MW-2S, MW-2SL	0.029	0.026
MW-7S, MW-7SL	0.037	0.037
MW-10S, MW-10SL	0.021	0.025

$\bar{x}$ = 0.029 feet/foot

TABLE 4

"SLUG" TEST ANALYSIS RESULTS

AQUIFER HYDRAULIC CONDUCTIVITY

Monitoring Well	Plug Placed in Well		Plug Removed from Well	
Water Table Wells				
			Feet/day	cm/sec
MW-8S	Not applicable		25.3	8.9×10^{-3}
MW-9S	Not applicable		110	3.9×10^{-2}
MW-10S	Not applicable		6.62	2.3×10^{-3}
$\bar{x} \equiv$ 47 feet/day (1.7×10^{-2} cm/sec)				
Deep Wells				
	Feet/day	cm/sec	Feet/day	cm/sec
MW-2SL	0.22	7.8×10^{-5}	0.18	6.4×10^{-5}
MW-7SL	0.81	2.9×10^{-4}	0.82	2.9×10^{-4}
MW-10SL	0.45	1.6×10^{-4}	0.46	1.6×10^{-4}
$\bar{x} \equiv$ 0.49 feet/day (1.7×10^{-4} cm/sec)				

TABLE 5

HEADSPACE ORGANIC VAPOR MEASUREMENTS
(ppm)

Approx. Sample Depth (feet)	Boring No.															
	HAA	HAB	SB-1	SB-2	SB-3	SB-4	SB-5	SB-7	SB-8	SB-9	SB-10	MW-2SL	MW-7SL	MW-8S	MW-9S	MW-10SL
1			666	314	27.3	48.0	0.0	0.0	0.0	0.0	NS	85.0	0.0	0.0	0.0	0.0
3	0.0	0.9	385	39.0	51.4	29.0	0.0	0.0	0.0	0.0	457			0.0	0.0	0.0
5			282	76.0	58.0	13.1	0.5	0.0	0.0	0.0	28.2	35.0	0.0	0.0	0.0	0.0
8			520	185	101	16.5	0.3	0.0	0.0	0.0	89.5			0.0	0.0	0.0
10			502	52.0	73.0	39.0	0.0	0.0	0.0	0.0	78.0	42.7	0.0	0.0	0.0	0.0
13			75.0	1.4	255	46.0	0.0	0.0	0.0	0.0	272			0.0	0.0	0.0
15						202	0.0	0.0				0.0	0.0	0.0	0.0	0.0
18						1.4*	0.0	0.0						0.0	NS	0.0
20							0.0	0.0				0.0	0.0	0.0	0:0	0.0
23							0.0	0.0				0.5	0.0			0.0
25							0.0	0.0				0.0	0.0			0.0
28							0.0	0.0				0.0	NS			0.0
30							0.0	0.0				0.0	0.0			0.0
33							0.0	0.0				NS	0.0			0.0
35							0.0	0.0				0.0	0.0			0.0
38												0.0	0.0			0.0
40												0.0	0.0			
43												0.0	0.0			

*15.5' - 17.5'
NS = No Sample
PID instrument calibrated prior to first day of field work.

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TABLE 6

SOIL QUALITY DATA

(Concentrations in µg/Kg)

Boring	Depth (feet)	Tetrachloro-ethene	Trichloro-ethene	Dichloro-methane	Corresponding Headspace Measurement (ppm)
SB-1	0.0	54,000	6.0	<5.9	666
	9.5	180	<1.0	<5.2	502
SB-2	0.0	150	<1.1	<5.4	314
	9.5	32	<1.0	8.9	52.0
SB-3	0.0	11	<1.1	<5.5	27.3
	9.5	20	<1.2	<5.8	73.0
SB-4	2.0	15	<1.1	<5.6	29.0
	Below W.T. 15.5	12	<1.1	<5.3	202
SB-5	0.0	7.1	<1.1	5.7	0.0
	9.5	1.8	<1.1	5.5	0.0
SB-7	2.0	<2.3	<2.3	<11	0.0
	9.5	<1.1	<1.1	<5.6	0.0
SB-8	2.0	<1.1	<1.1	<5.4	0.0
	9.5	<2.1	<2.1	<11	0.0
SB-9	2.0	<1.1	<1.1	<5.6	0.0
	9.5	<1.1	<1.1	<5.4	0.0
SB-10	4.5	9.2	<1.0	<5.1	28.2
	8.5	8.3	<1.0	<5.1	89.5
HAA	2.5	11	<1.1	<5.7	0.0
HAB	2.5	19	<1.2	<6.2	0.9
Field Blank*		<1.0	<1.0	<5.0	--

*Water sample -- concentrations reported in µg/L.

TABLE 7

GROUNDWATER QUALITY DATA

(concentrations in ug/L)

	MW-1S		MW-2S		MW-2SL		MW-3S	
	11/25/91	01/13/92	11/26/91	01/14/92	11/27/91	01/14/92	11/26/91	01/14/92
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
VC Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
11DCE 1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
TCE Trichloroethene	<1.0	<1.0	<1.0	13	<1.0	<1.0	<1.0	10
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
PCE Tetrachloroethene	<1.0	<1.0	3300	2300	<1.0	3.1	9.5	600
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0

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TABLE 7 (cont.)

GROUNDWATER QUALITY DATA

(concentrations in ug/L)

	MW-4S		MW-5S		MW-6S		MW-7S	
	11/26/91	01/14/92	11/25/91	01/13/92	11/25/91	01/14/92	11/25/91	01/14/92
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	3.7	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	780	190	1.2	70	<1.0	<1.0	9.7	9.3
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

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TABLE 7 (cont.)

GROUNDWATER QUALITY DATA

(concentrations in ug/L)

	MW-7SL		MW-8S		MW-9S		MW-10S	
	11/27/91	01/14/92	11/26/91	01/13/92	11/26/91	01/13/92	11/27/91	01/13/92
Chloromethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	3.5	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	1.1	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	54	240 i	<1.0	<1.0	<1.0	4.6	<1.0	<1.0
Dibromochloromethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	3100	7800	<1.0	<1.0	6.6	44	<1.0	<1.0
Chlorobenzene	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

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i Indeterminate value based on failure of blind duplicate data to meet QA criteria.

SCH1.PRN

TABLE 7 (cont.)

GROUNDWATER QUALITY DATA

(concentrations in ug/L)

	MW-10SL		PW-1	
	11/27/91	01/13/92	11/26/91	01/14/92
Chloromethane	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<1.0	<1.0	1.1	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0

SCH1.PRN

TABLE 7 (cont.)

GROUNDWATER QUALITY DATA

(concentrations in ug/L)

	MW-B		MW-BL		MW-D		MW-DBR	
	11/26/91	01/14/92	11/26/91	01/14/92	11/26/91	01/14/92	11/26/91	01/14/92
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

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TABLE 8

SURFACE WATER QUALITY DATA

(concentrations in ug/L)

	SW-1D		SW-2D		SW-3D		SW-4D	
	11/25/91	01/13/92	11/25/91	01/13/92	11/25/91	01/13/92	11/25/91	01/13/92
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

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TABLE 9

QUALITY CONTROL DATA
BLANKS

(concentrations in ug/L)

	TRIP BLANKS					FIELD BLANKS	
	11/25/91	11/26/91	11/27/91	01/13/92	01/14/92	11/27/91	01/14/92
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

SCHBL1.PRN

TABLE 9 (cont.)

QUALITY CONTROL DATA
BLANKS

(concentrations in ug/L)

	METHOD BLANKS					
	11/25/91	11/26/91	11/26/91	11/26/91	11/27/91	11/27/91
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

SCHBL1.PRN

TABLE 9 (cont.)

QUALITY CONTROL DATA
BLANKS

(concentrations in ug/L)

	METHOD BLANKS					
	01/13/92	01/13/92	01/14/92	01/14/92	01/14/92	01/14/92
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

SCHBL1.PRN

TABLE 9 (cont.)

QUALITY CONTROL DATA
DUPLICATES

(concentrations in ug/L)

	MW-1S		RPD	MW-10SL		RPD
	11/25/91 SAMPLE	11/25/91 DUPLICATE		11/27/91 SAMPLE	11/27/91 DUPLICATE	
Chloromethane	<1.0	<1.0		<1.0	<1.0	
Bromomethane	<1.0	<1.0		<1.0	<1.0	
Vinyl Chloride	<1.0	<1.0		<1.0	<1.0	
Chloroethane	<1.0	<1.0		<1.0	<1.0	
Dichloromethane	<5.0	<5.0		<5.0	<5.0	
Trichlorofluoromethane	<1.0	<1.0		<1.0	<1.0	
1,1-Dichloroethene	<1.0	<1.0		<1.0	<1.0	
1,1-Dichloroethane	<1.0	<1.0		<1.0	<1.0	
trans-1,2-Dichloroethene	<1.0	<1.0		<1.0	<1.0	
Chloroform	<1.0	<1.0		<1.0	<1.0	
1,2-Dichloroethane	<1.0	<1.0		<1.0	<1.0	
1,1,1-Trichloroethane	<1.0	<1.0		<1.0	<1.0	
Carbon Tetrachloride	<1.0	<1.0		<1.0	<1.0	
Bromodichloromethane	<1.0	<1.0		<1.0	<1.0	
1,2-Dichloropropane	<1.0	<1.0		<1.0	<1.0	
cis-1,3-Dichloropropene	<1.0	<1.0		<1.0	<1.0	
Trichloroethene	<1.0	<1.0		<1.0	<1.0	
Dibromochloromethane	<1.0	<1.0		<1.0	<1.0	
1,1,2-Trichloroethane	<1.0	<1.0		<1.0	<1.0	
trans-1,3-Dichloropropene	<1.0	<1.0		<1.0	<1.0	
Bromoform	<1.0	<1.0		<1.0	<1.0	
1,1,2,2-Tetrachloroethane	<1.0	<1.0		<1.0	<1.0	
Tetrachloroethene	<1.0	<1.0		<1.0	<1.0	
Chlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,3-Dichlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,2-Dichlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,4-Dichlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,2-Dibromoethane	<1.0	<1.0		<1.0	<1.0	

SCHD1.PRN

TABLE 9 (cont.)

QUALITY CONTROL DATA
DUPLICATES

(concentrations in ug/L)

	MW-B		RPD	MW-7SL		RPD
	11/26/91 SAMPLE	11/26/91 DUPLICATE		01/14/92 SAMPLE	01/14/92 DUPLICATE	
Chloromethane	<1.0	<1.0		<10	<100	
Bromomethane	<1.0	<1.0		<10	<100	
Vinyl Chloride	1.7	1.6	6	<10	<100	
Chloroethane	<1.0	<1.0		<10	<100	
Dichloromethane	<5.0	<5.0		<50	<500	
Trichlorofluoromethane	<1.0	<1.0		<10	<100	
1,1-Dichloroethene	<1.0	<1.0		<10	<100	
1,1-Dichloroethane	<1.0	<1.0		<10	<100	
trans-1,2-Dichloroethene	<1.0	<1.0		<10	<100	
Chloroform	<1.0	<1.0		<10	<100	
1,2-Dichloroethane	<1.0	<1.0		<10	<100	
1,1,1-Trichloroethane	1.0	1.0	0	<10	<100	
Carbon Tetrachloride	<1.0	<1.0		<10	<100	
Bromodichloromethane	<1.0	<1.0		<10	<100	
1,2-Dichloropropane	<1.0	<1.0		<10	<100	
cis-1,3-Dichloropropene	<1.0	<1.0		<10	<100	
Trichloroethene	<1.0	<1.0		240 i	120 i	66
Dibromochloromethane	<1.0	<1.0		<10	<100	
1,1,2-Trichloroethane	<1.0	<1.0		<10	<100	
trans-1,3-Dichloropropene	<1.0	<1.0		<10	<100	
Bromoform	<1.0	<1.0		<10	<100	
1,1,2,2-Tetrachloroethane	<1.0	<1.0		<10	<100	
Tetrachloroethene	<1.0	<1.0		7800	8800	13
Chlorobenzene	<1.0	<1.0		<10	<100	
1,3-Dichlorobenzene	<1.0	<1.0		<10	<100	
1,2-Dichlorobenzene	<1.0	<1.0		<10	<100	
1,4-Dichlorobenzene	<1.0	<1.0		<10	<100	
1,2-Dibromoethane	<1.0	<1.0		<10	<100	

i Indeterminate value based on failure of blind duplicate data to meet QA criteria.
SCHD1.PRN

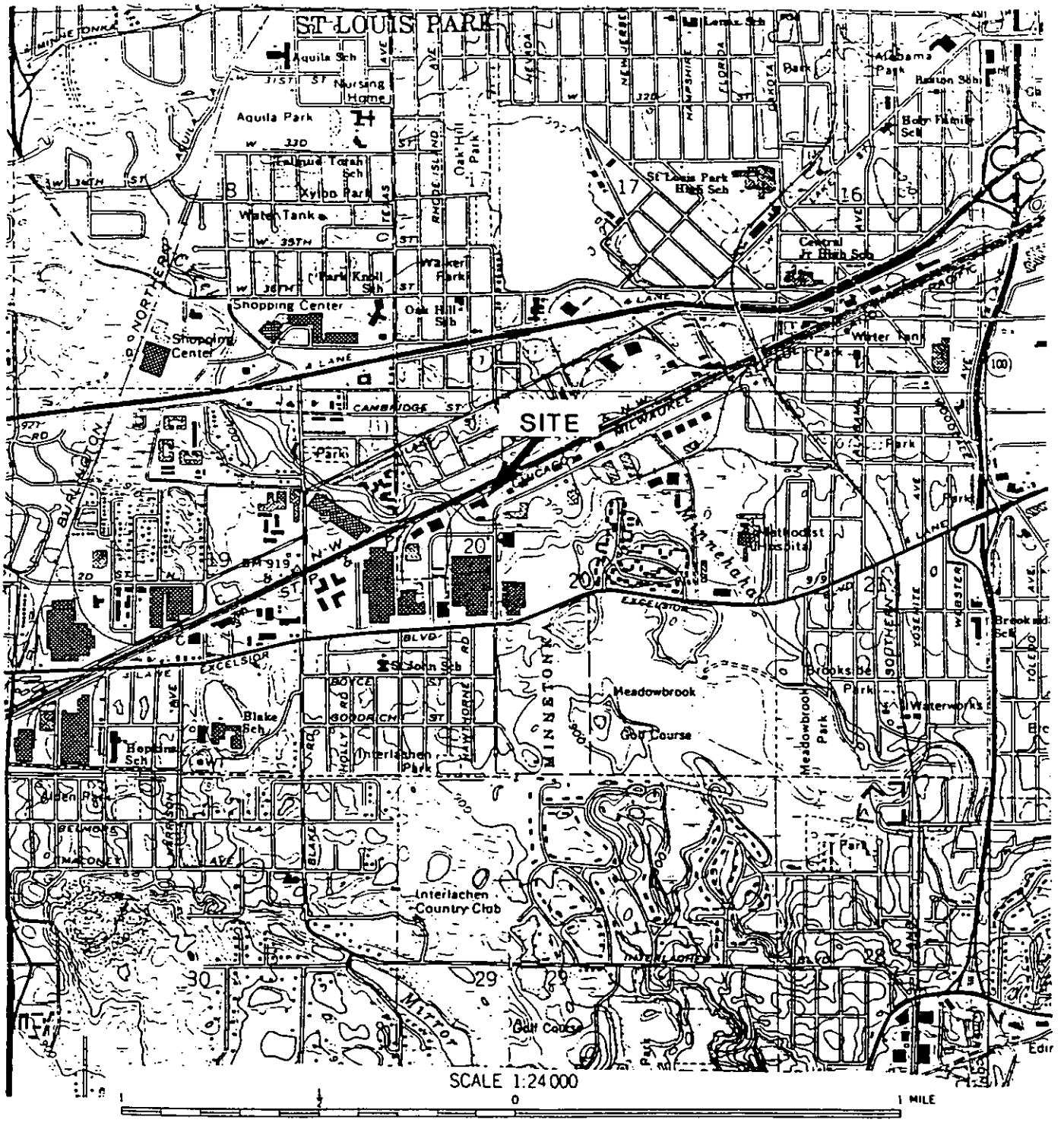
TABLE 9 (cont.)

QUALITY CONTROL DATA
DUPLICATES

(concentrations in ug/L)

	MW-9S		RPD	PW-1		RPD
	01/13/92 SAMPLE	01/13/92 DUPLICATE		01/14/92 SAMPLE	01/14/92 DUPLICATE	
Chloromethane	<1.0	<1.0		<1.0	<1.0	
Bromomethane	<1.0	<1.0		<1.0	<1.0	
Vinyl Chloride	<1.0	<1.0		<1.0	<1.0	
Chloroethane	<1.0	<1.0		<1.0	<1.0	
Dichloromethane	<5.0	<5.0		<5.0	<5.0	
Trichlorofluoromethane	<1.0	<1.0		<1.0	<1.0	
1,1-Dichloroethene	<1.0	<1.0		<1.0	<1.0	
1,1-Dichloroethane	<1.0	<1.0		<1.0	<1.0	
trans-1,2-Dichloroethene	<1.0	<1.0		<1.0	<1.0	
Chloroform	<1.0	<1.0		<1.0	<1.0	
1,2-Dichloroethane	<1.0	<1.0		<1.0	<1.0	
1,1,1-Trichloroethane	<1.0	<1.0		<1.0	<1.0	
Carbon Tetrachloride	<1.0	<1.0		<1.0	<1.0	
Bromodichloromethane	<1.0	<1.0		<1.0	<1.0	
1,2-Dichloropropane	<1.0	<1.0		<1.0	<1.0	
cis-1,3-Dichloropropene	<1.0	<1.0		<1.0	<1.0	
Trichloroethene	4.6	4.4	4	<1.0	<1.0	
Dibromochloromethane	<1.0	<1.0		<1.0	<1.0	
1,1,2-Trichloroethane	<1.0	<1.0		<1.0	<1.0	
trans-1,3-Dichloropropene	<1.0	<1.0		<1.0	<1.0	
Bromoform	<1.0	<1.0		<1.0	<1.0	
1,1,2,2-Tetrachloroethane	<1.0	<1.0		<1.0	<1.0	
Tetrachloroethene	44	40	9	<1.0	<1.0	
Chlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,3-Dichlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,2-Dichlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,4-Dichlorobenzene	<1.0	<1.0		<1.0	<1.0	
1,2-Dibromoethane	<1.0	<1.0		<1.0	<1.0	

SCHD1.PRN



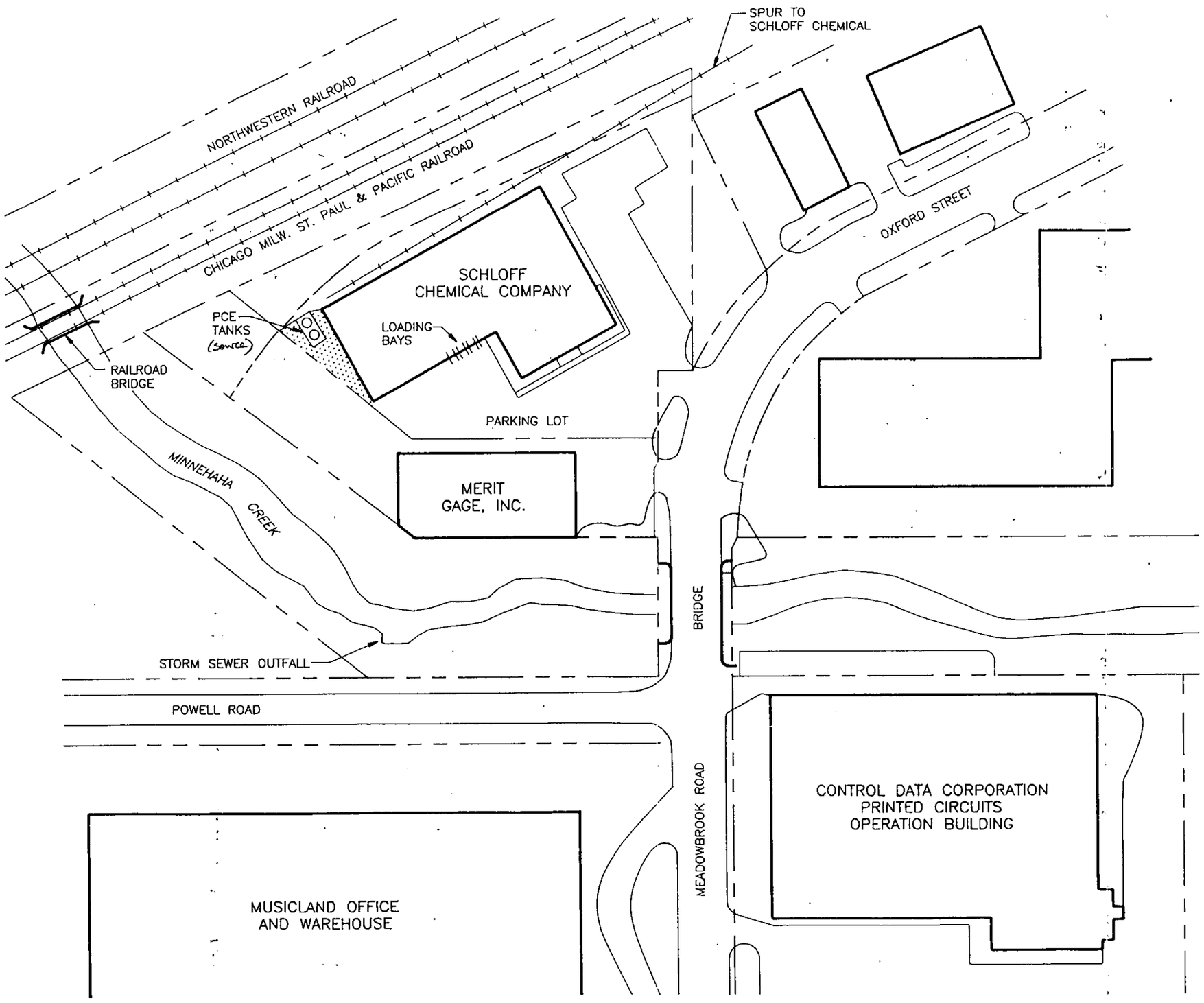
HOPKINS QUADRANGLE
MINNESOTA–HENNEPIN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

HOPKINS, MINN.

44093–H4-TF-024

1967
PHOTOREVISED 1972 AND 1980
DMA 7373 IV NW–SERIES V872

Figure 1
SITE LOCATION MAP
Schloff Chemical Company
St. Louis Park, Minnesota



0 100 200
SCALE IN FEET

PROPERTY LINE
RAILROAD TRACKS
GRAVEL COVERED ASPHALT

Figure 2

SITE MAP
PHASE II REMEDIAL INVESTIGATION

Schloff Chemical Company
St. Louis Park, Minnesota

JGH SITEMAP 100.0000 02/19/1992 13:13:47

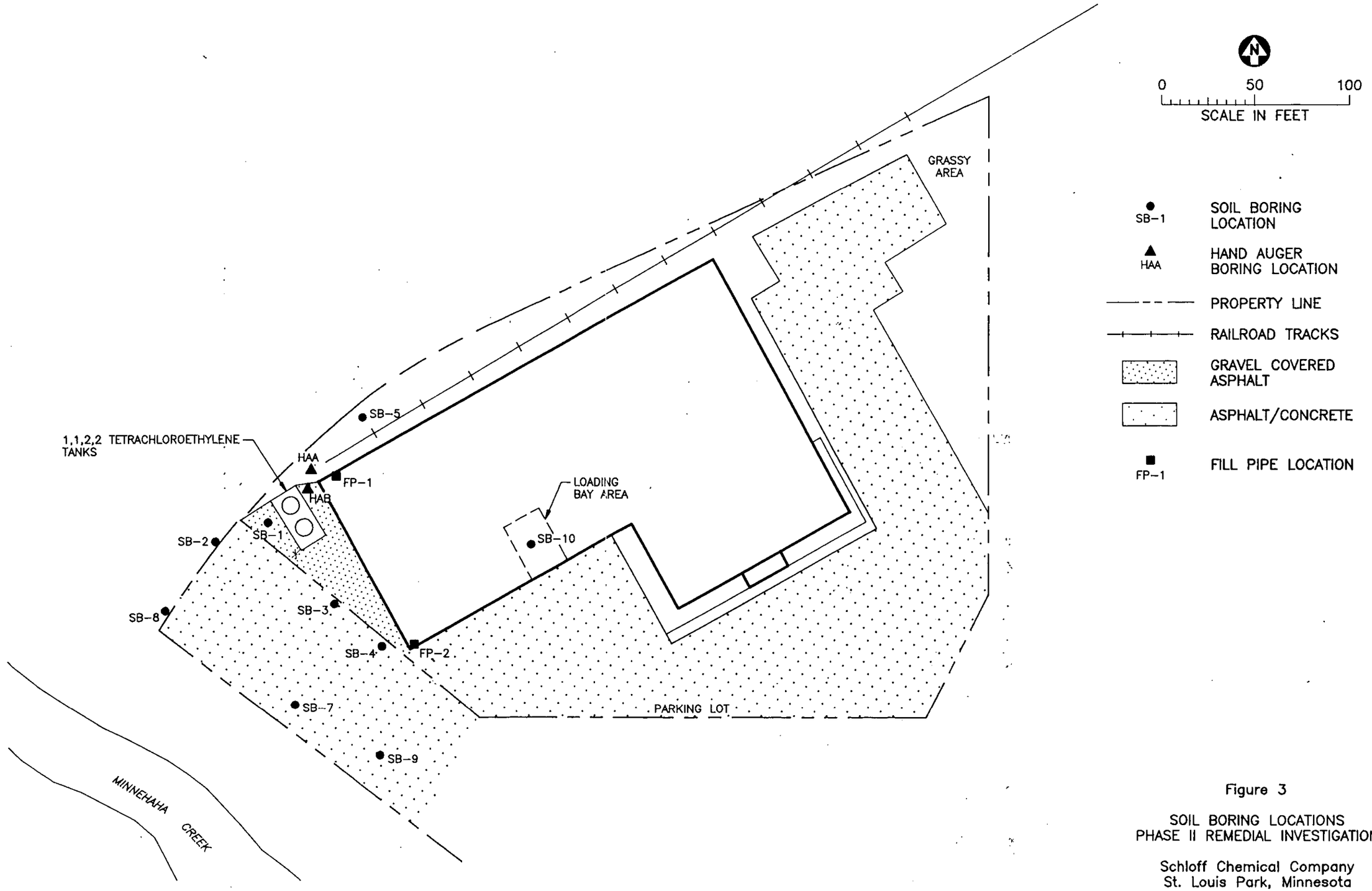


Figure 3

SOIL BORING LOCATIONS
PHASE II REMEDIAL INVESTIGATION

Schloff Chemical Company
St. Louis Park, Minnesota

JEM SOILBORE 100.0000 03/26/1992 11:18:56

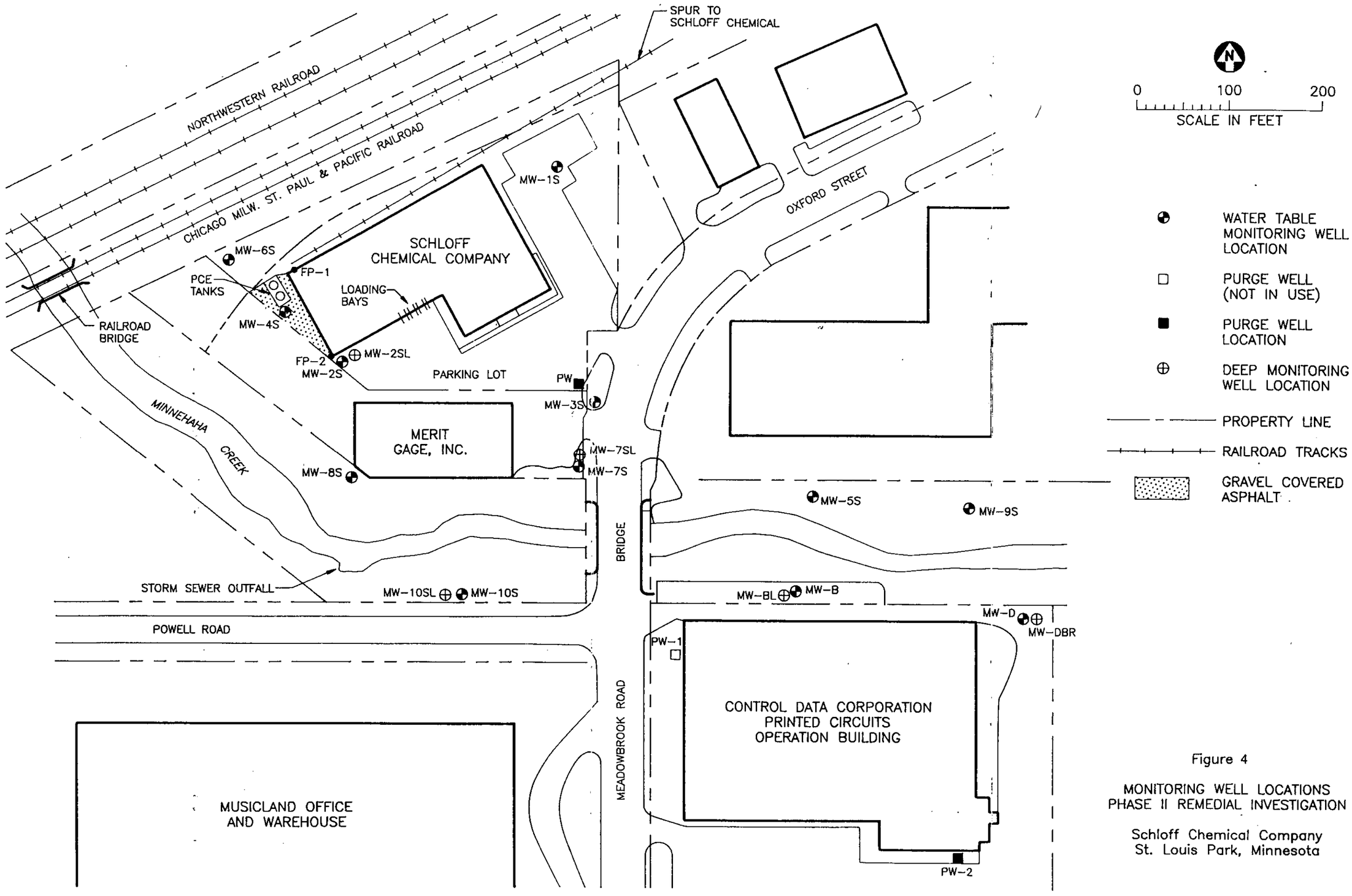


Figure 4

MONITORING WELL LOCATIONS
PHASE II REMEDIAL INVESTIGATION

Schloff Chemical Company
St. Louis Park, Minnesota

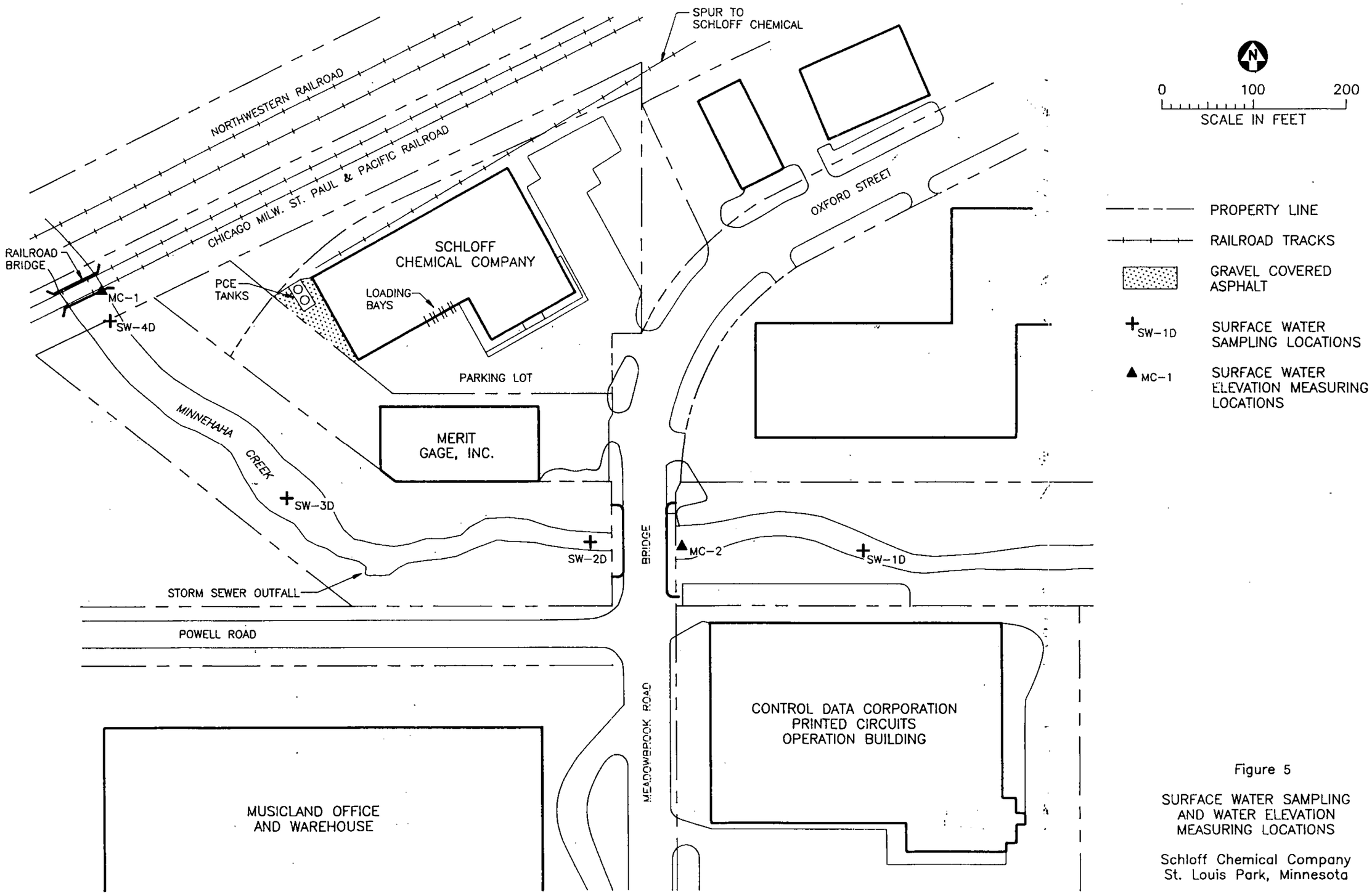


Figure 5

SURFACE WATER SAMPLING
AND WATER ELEVATION
MEASURING LOCATIONS

Schloff Chemical Company
St. Louis Park, Minnesota

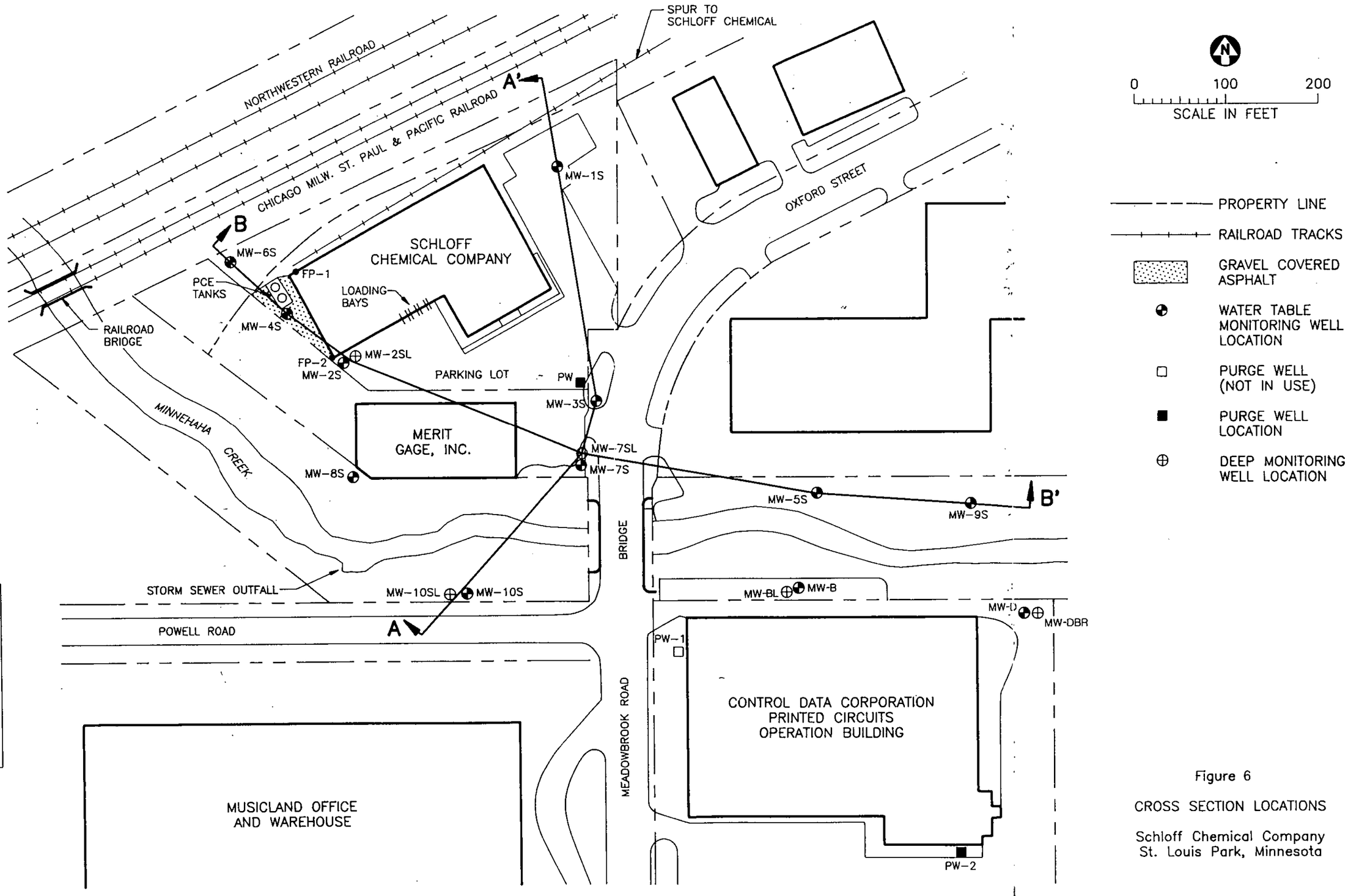
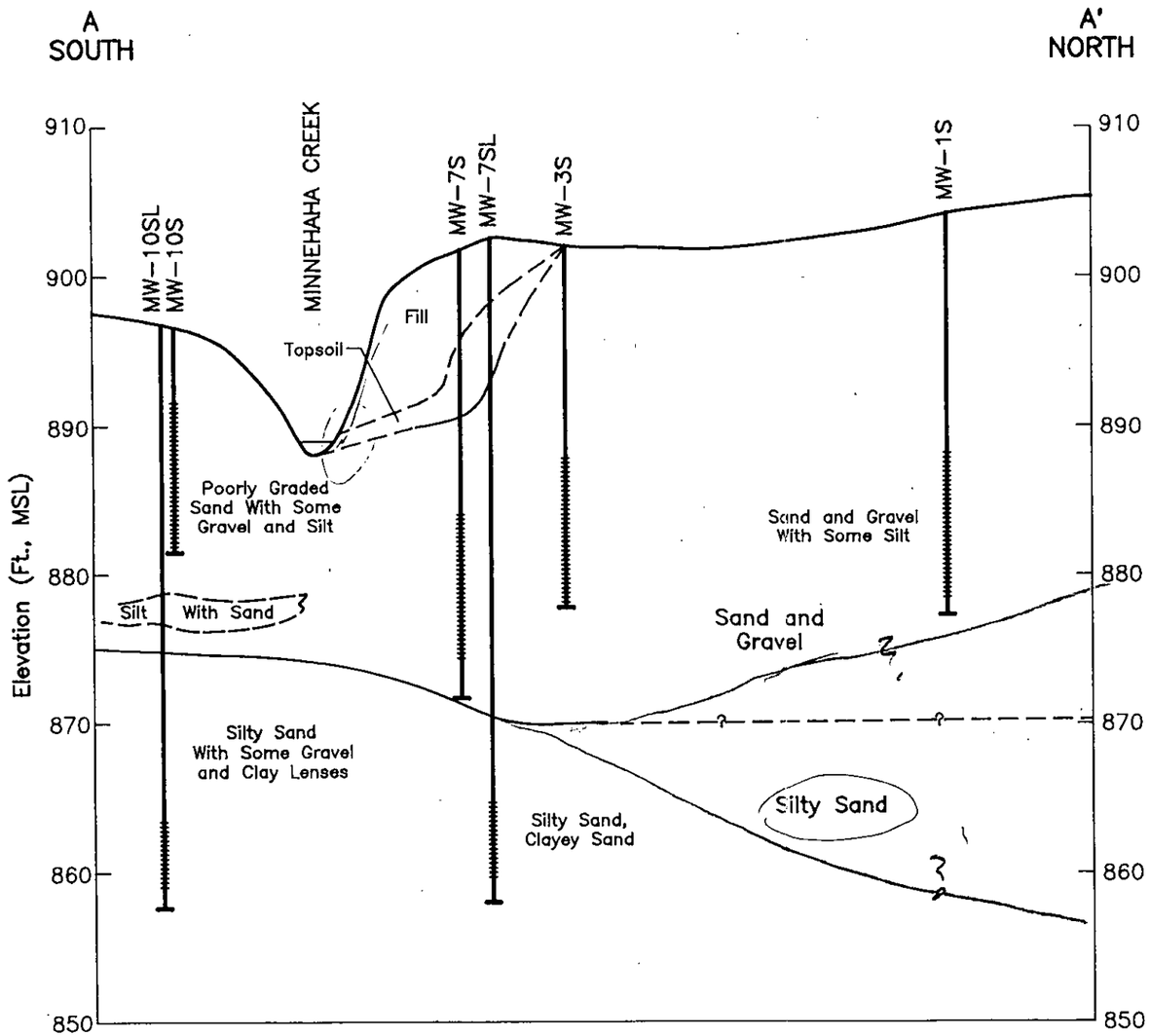


Figure 6

CROSS SECTION LOCATIONS

Schloff Chemical Company
St. Louis Park, Minnesota



0 100 200
SCALE IN FEET

Figure 7

CROSS SECTION A–A'

Schloff Chemical Company
St. Louis Park, Minnesota

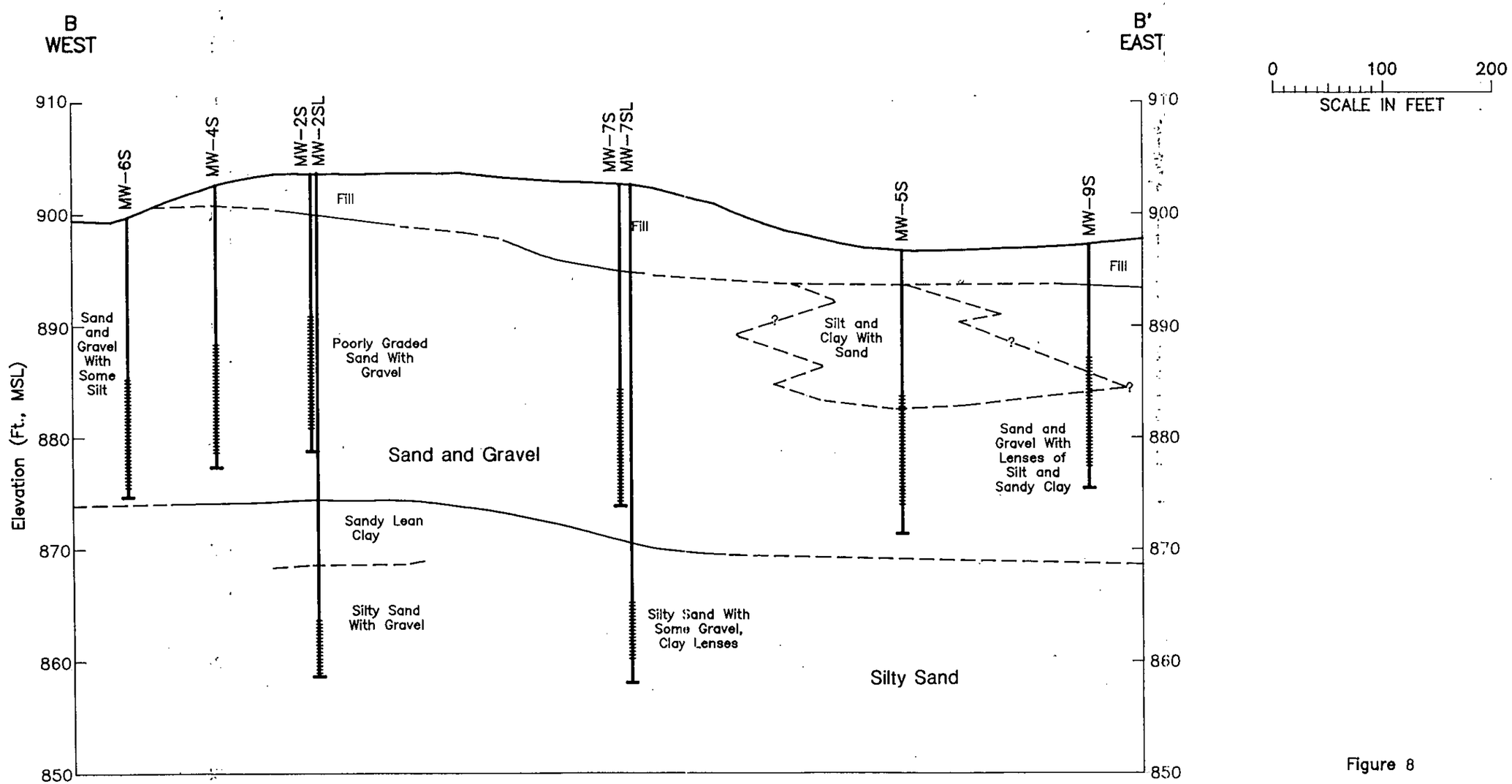


Figure 8

CROSS SECTION B–B'

Schloff Chemical Company
St. Louis Park, Minnesota

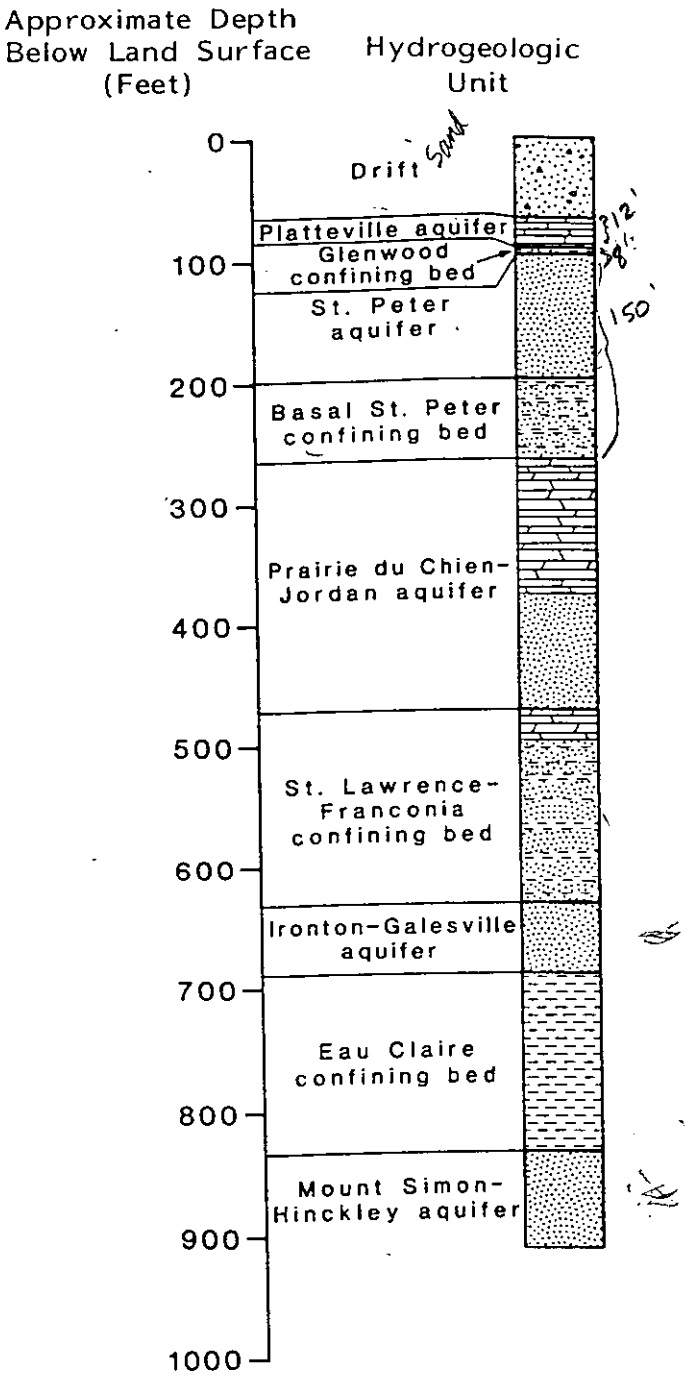


Figure 9

GENERALIZED STRATIGRAPHIC COLUMN

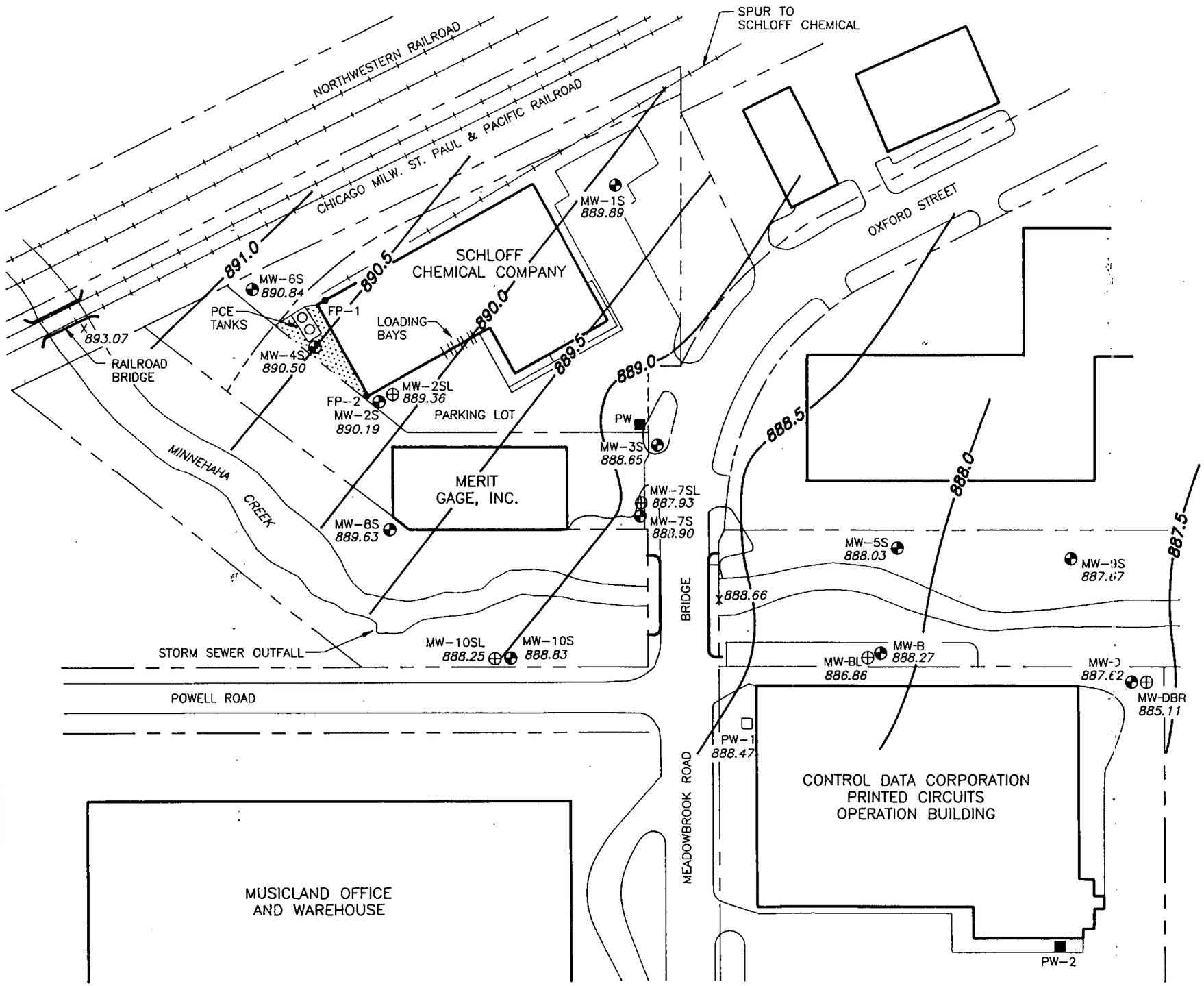


Figure 10

GENERALIZED WATER TABLE
ELEVATION (FT., MSL)
NOVEMBER 1991

Schloff Chemical Company
St. Louis Park, Minnesota

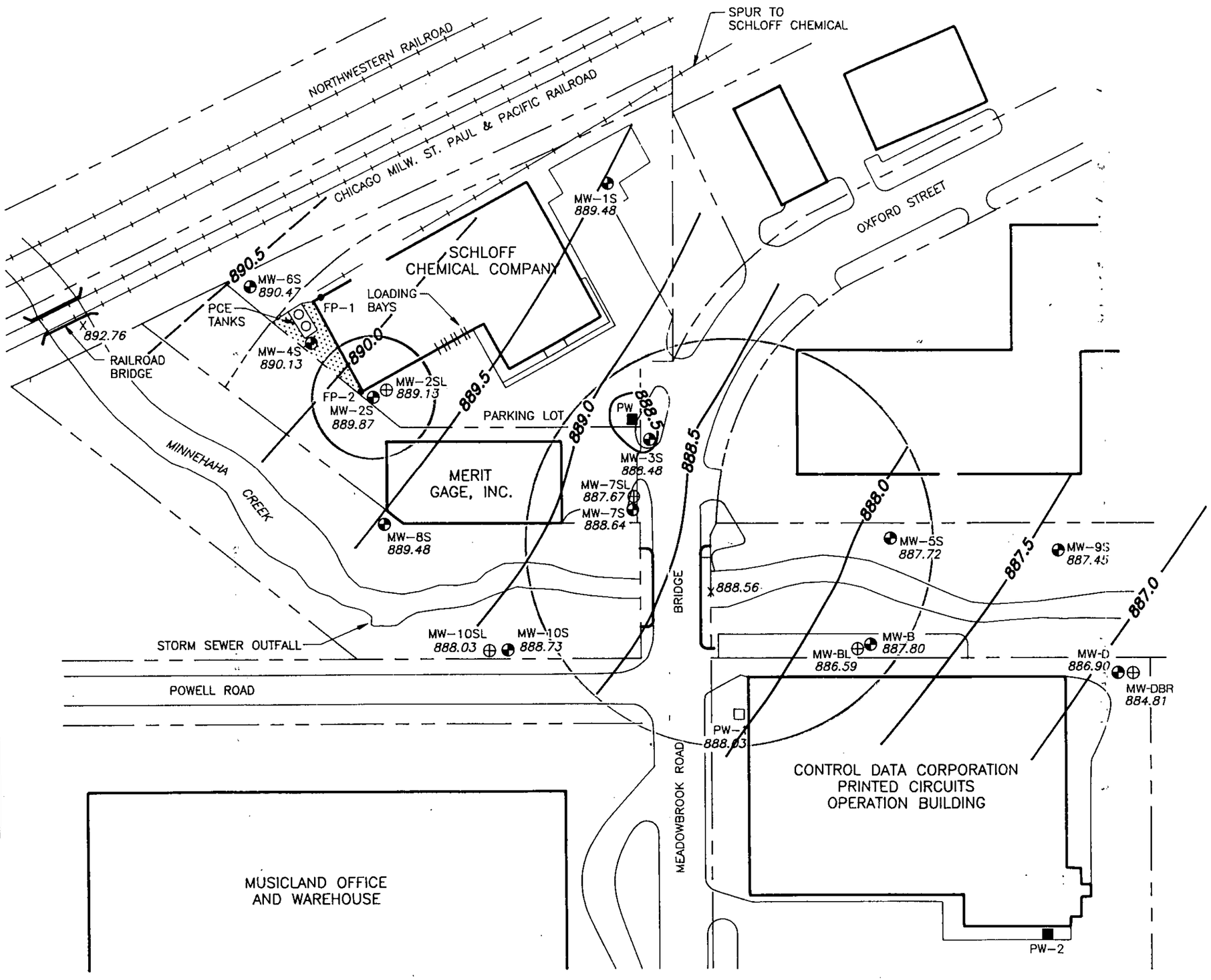


Figure 11

GENERALIZED WATER TABLE
ELEVATION (FT., MSL)
JANUARY 1992

Schloff Chemical Company
St. Louis Park, Minnesota

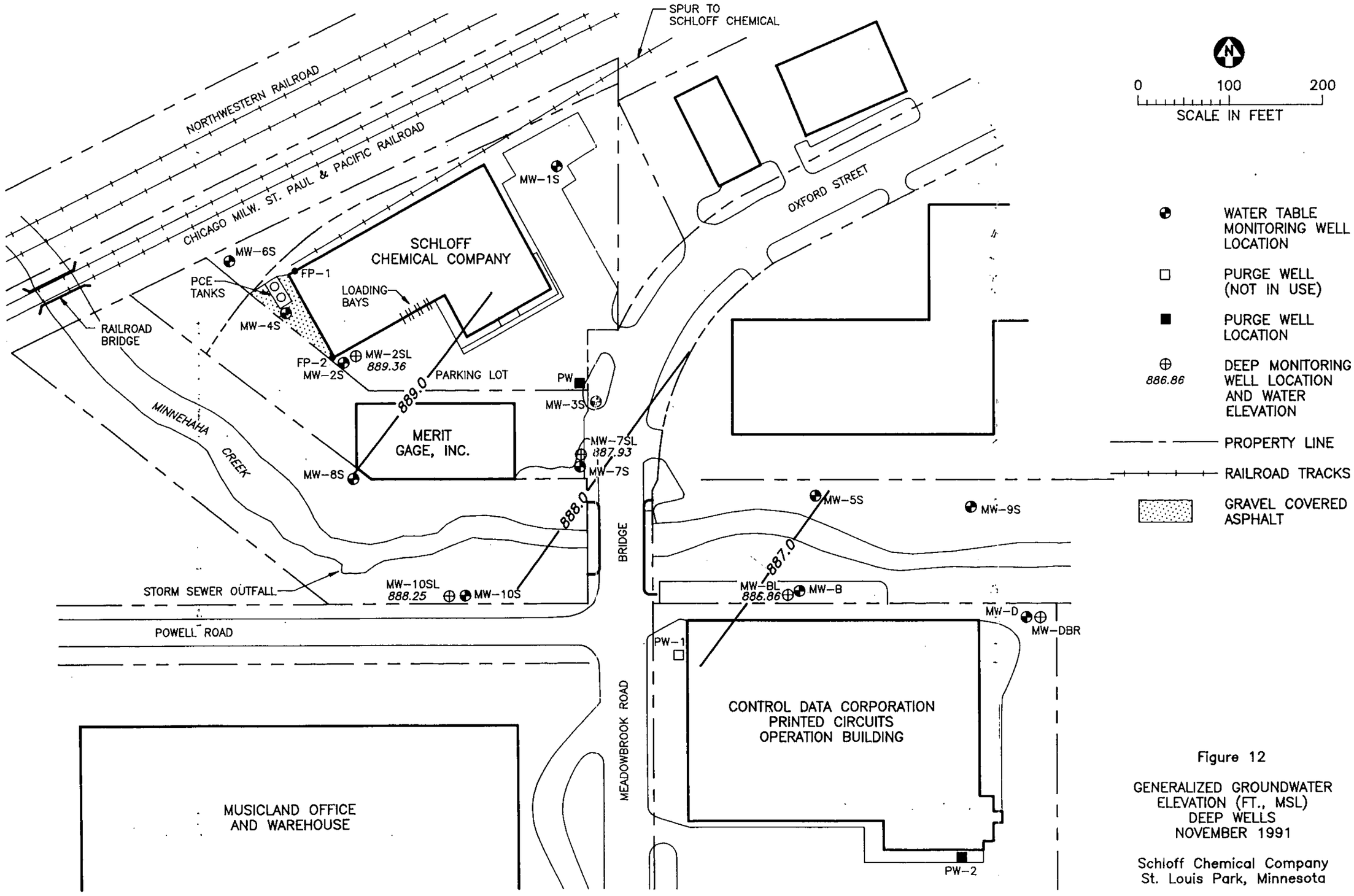


Figure 12

GENERALIZED GROUNDWATER ELEVATION (FT., MSL) DEEP WELLS NOVEMBER 1991

Schloff Chemical Company
St. Louis Park, Minnesota

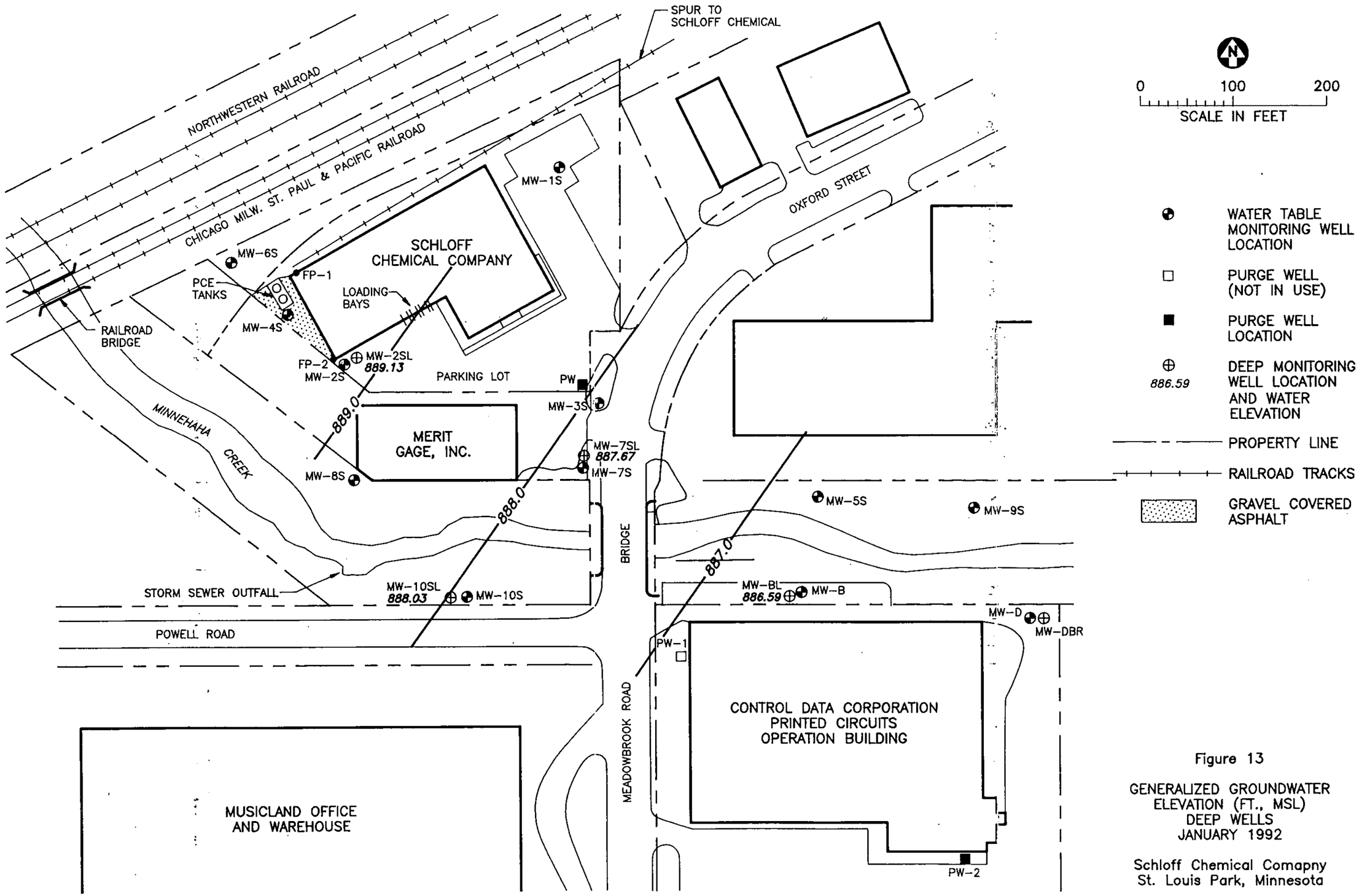
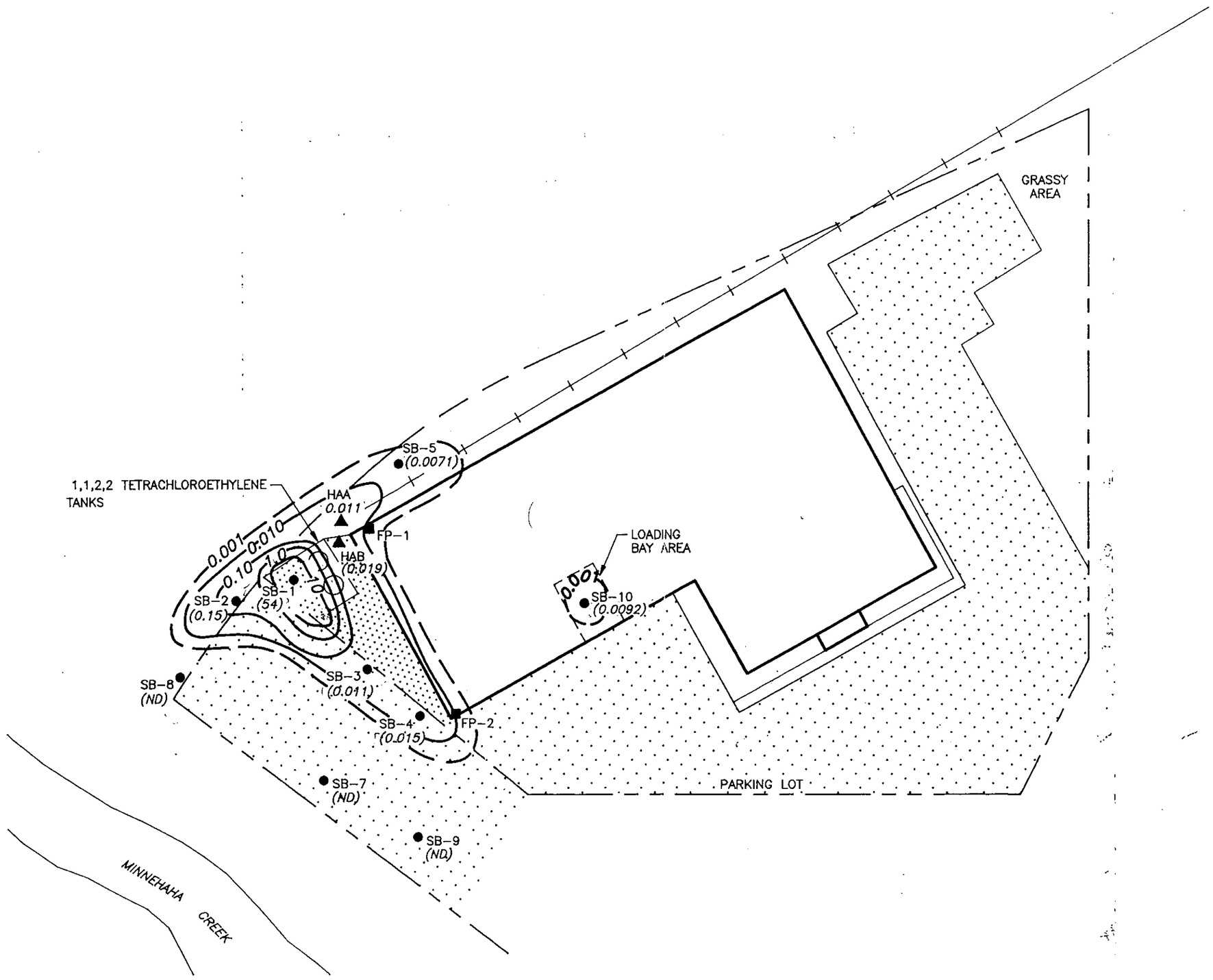


Figure 13

GENERALIZED GROUNDWATER
ELEVATION (FT., MSL)
DEEP WELLS
JANUARY 1992

Schloff Chemical Comapny
St. Louis Park, Minnesota



0 50 100
SCALE IN FEET

SOIL BORING LOCATION
(0.15) TETRACHLOROETHENE CONCENTRATION, (mg/Kg)

HAND AUGER BORING LOCATION
(0.011) TETRACHLOROETHENE CONCENTRATION (mg/Kg)

(ND) NOT DETECTED

PROPERTY LINE

RAILROAD TRACKS

GRAVEL COVERED ASPHALT

ASPHALT/CONCRETE

FP-1 FILL PIPE LOCATION

Figure 14

TETRACHLOROETHENE CONCENTRATION (mg/Kg) NEAR-SURFACE SOILS

Schloff Chemical Company
St. Louis Park, Minnesota

jem NEARSURF 100.0000 03/26/1992 12:38:10

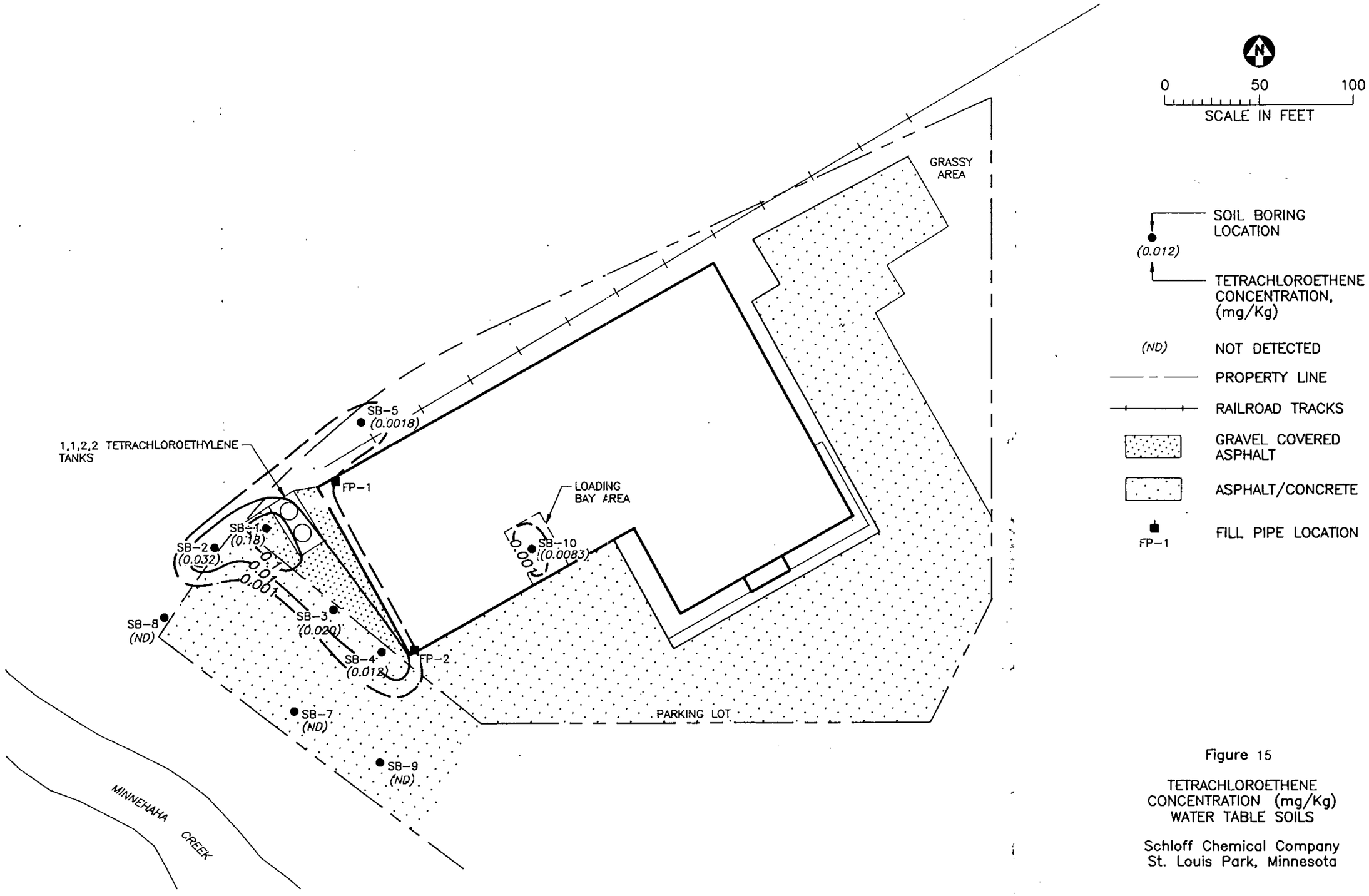


Figure 15

TETRACHLOROETHENE CONCENTRATION (mg/Kg) WATER TABLE SOILS

Schloff Chemical Company
St. Louis Park, Minnesota

jem WATABLE 100.0000 03/04/1992 11:31:50

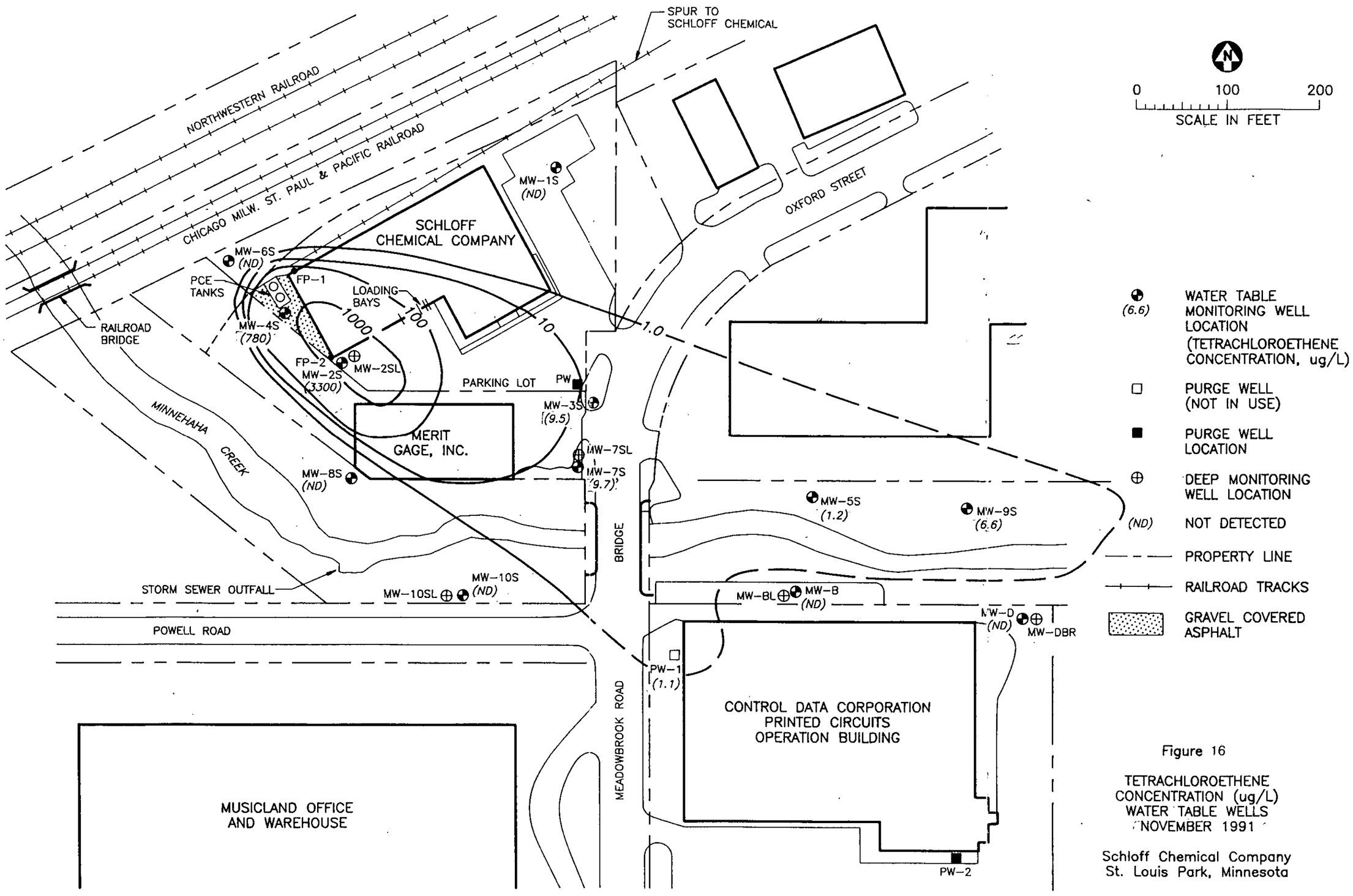


Figure 16

TETRACHLOROETHENE CONCENTRATION (ug/L) WATER TABLE WELLS NOVEMBER 1991

Schloff Chemical Company
St. Louis Park, Minnesota

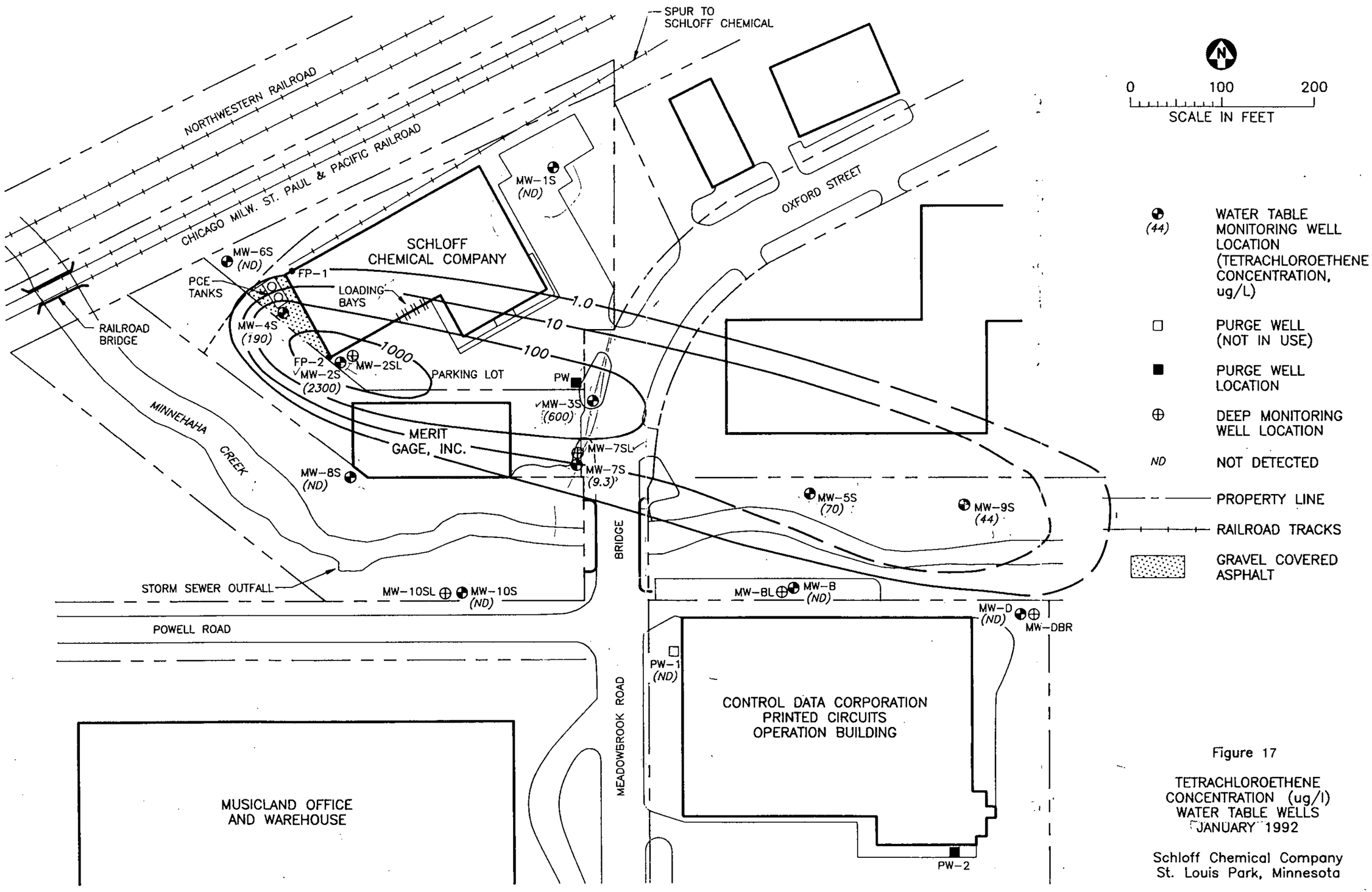


Figure 17

TETRACHLOROETHENE CONCENTRATION (ug/l) WATER TABLE WELLS JANUARY 1992

Schloff Chemical Company
St. Louis Park, Minnesota

JEM WTWJAN92 100.0000 03/04/1992 12:15:21

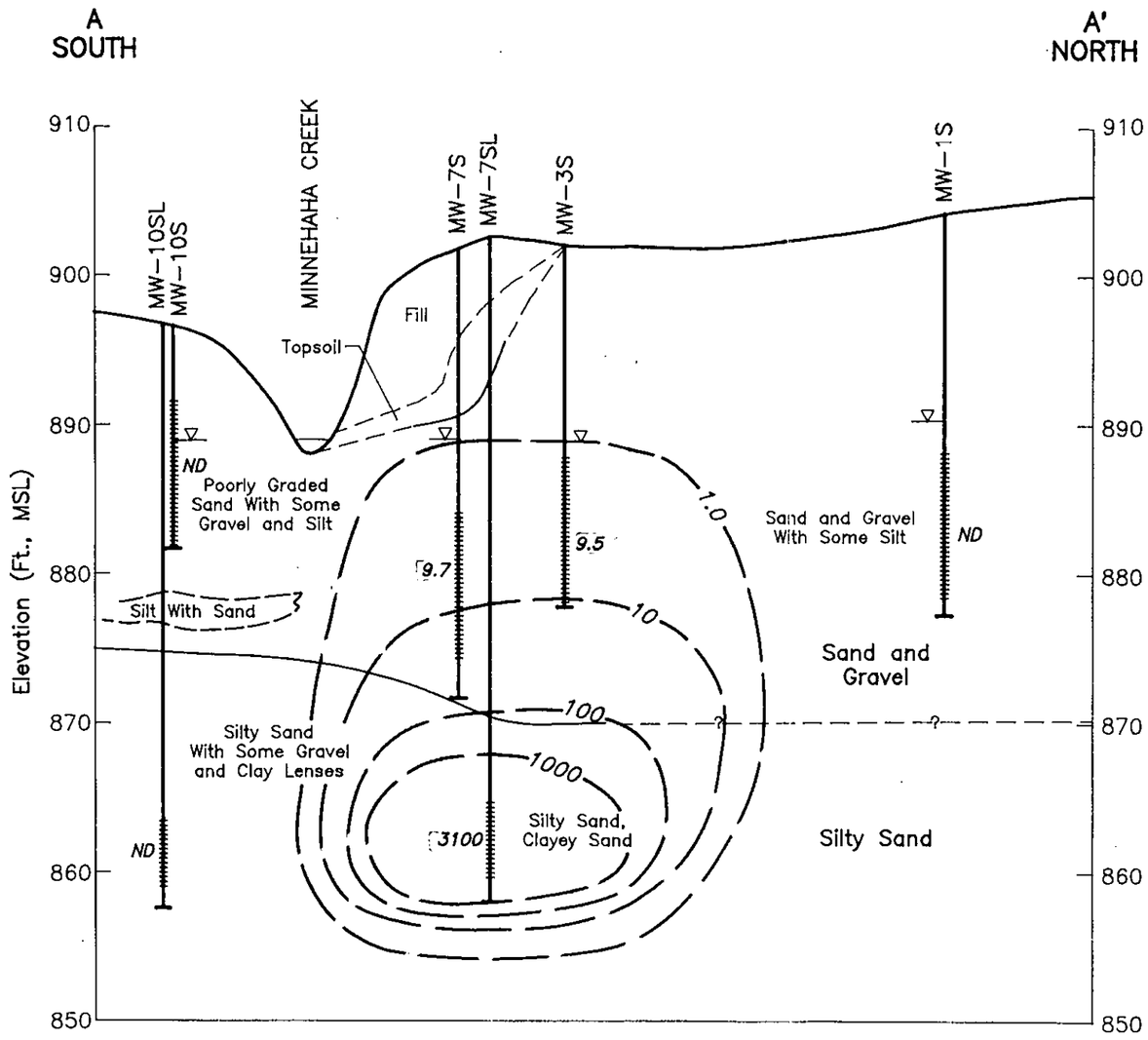


Figure 18

TETRACHLOROETHENE CONCENTRATION (ug/L) NOVEMBER 1991

Schloff Chemical Company
St. Louis Park, Minnesota

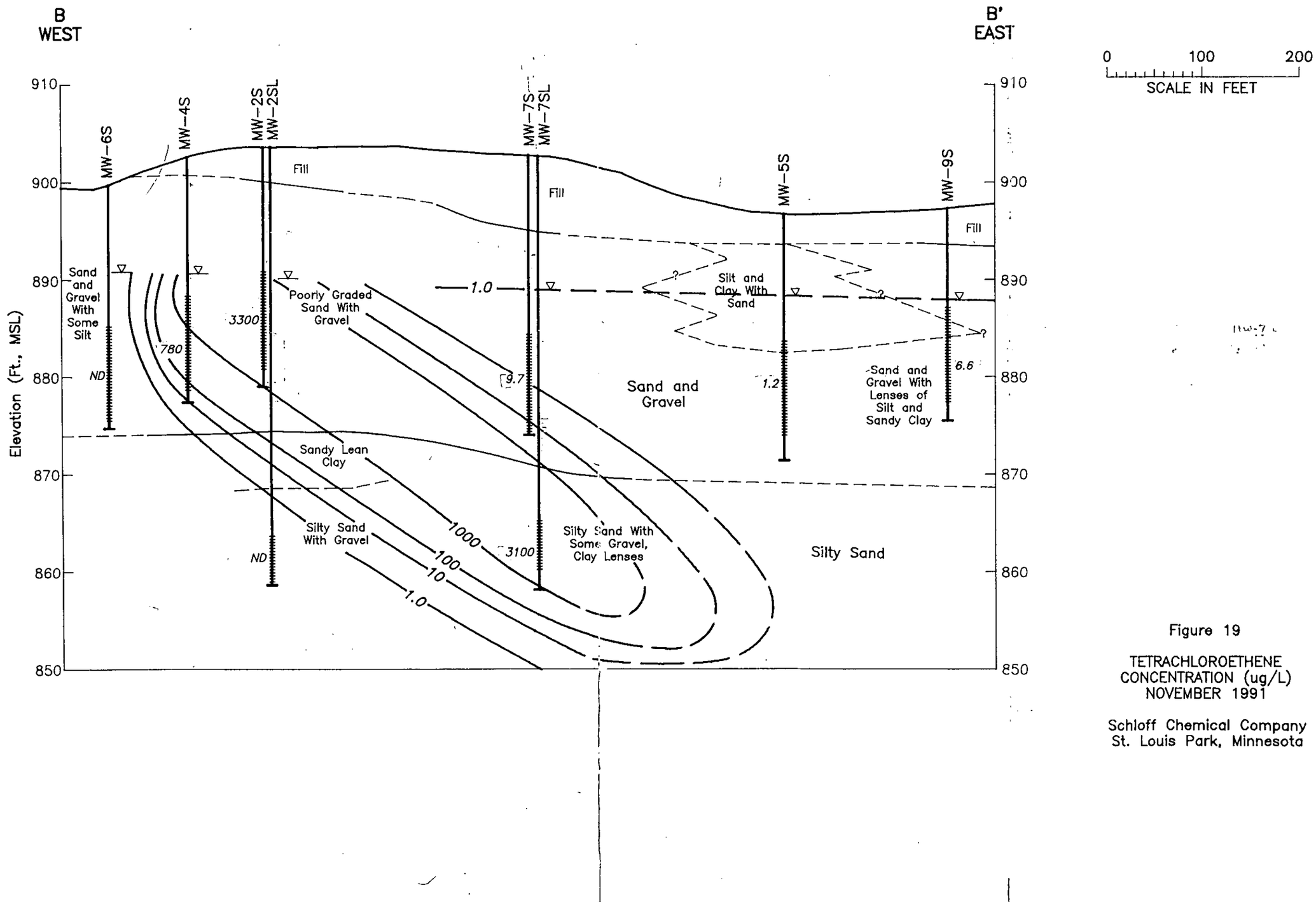
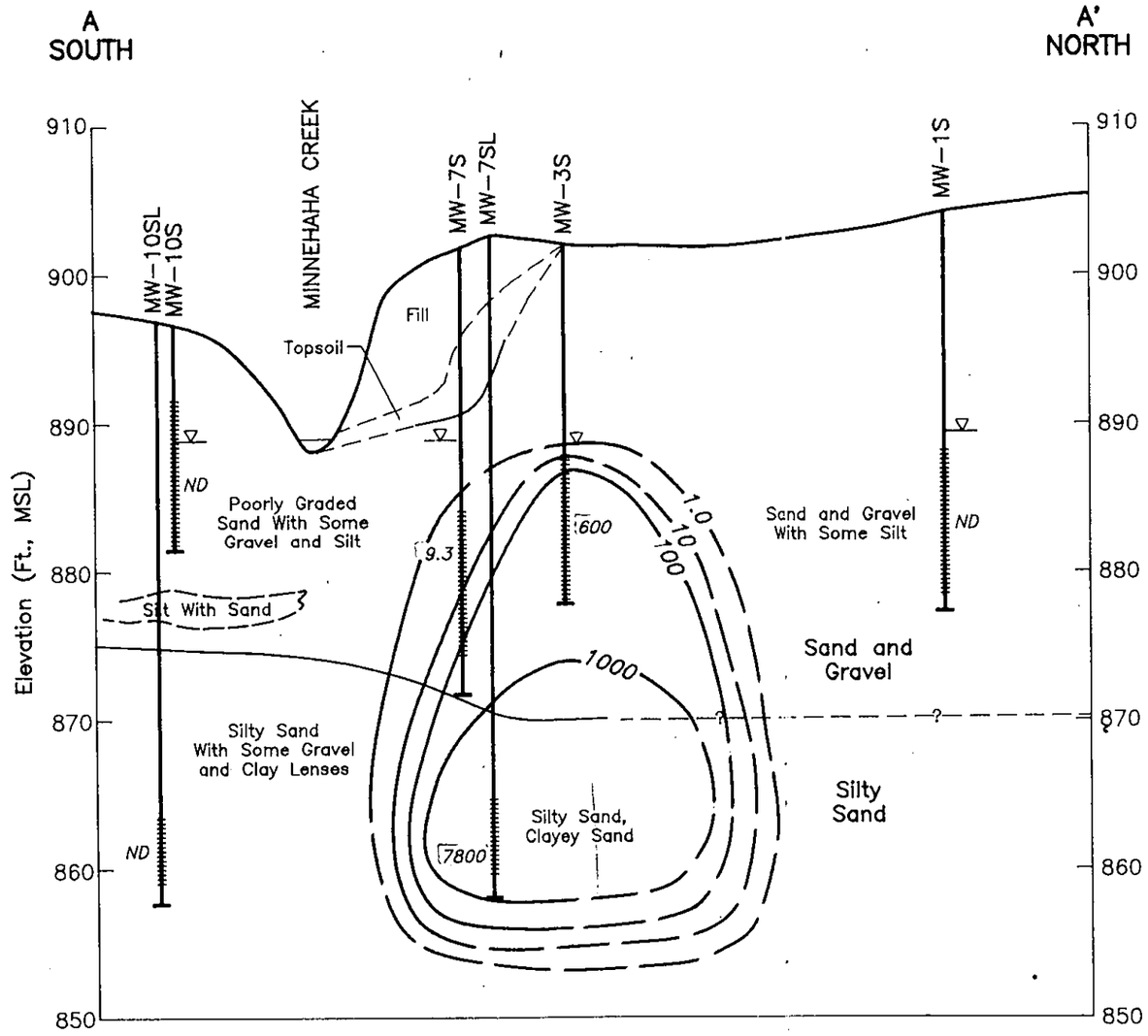


Figure 19

TETRACHLOROETHENE
CONCENTRATION (ug/L)
NOVEMBER 1991

Schloff Chemical Company
St. Louis Park, Minnesota



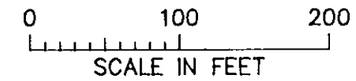


Figure 20

TETRACHLOROETHENE CONCENTRATION (ug/L) JANUARY 1992

Schloff Chemical Company
St. Louis Park, Minnesota

jwm JAN92 1.0000 03/30/1992 14:45:30

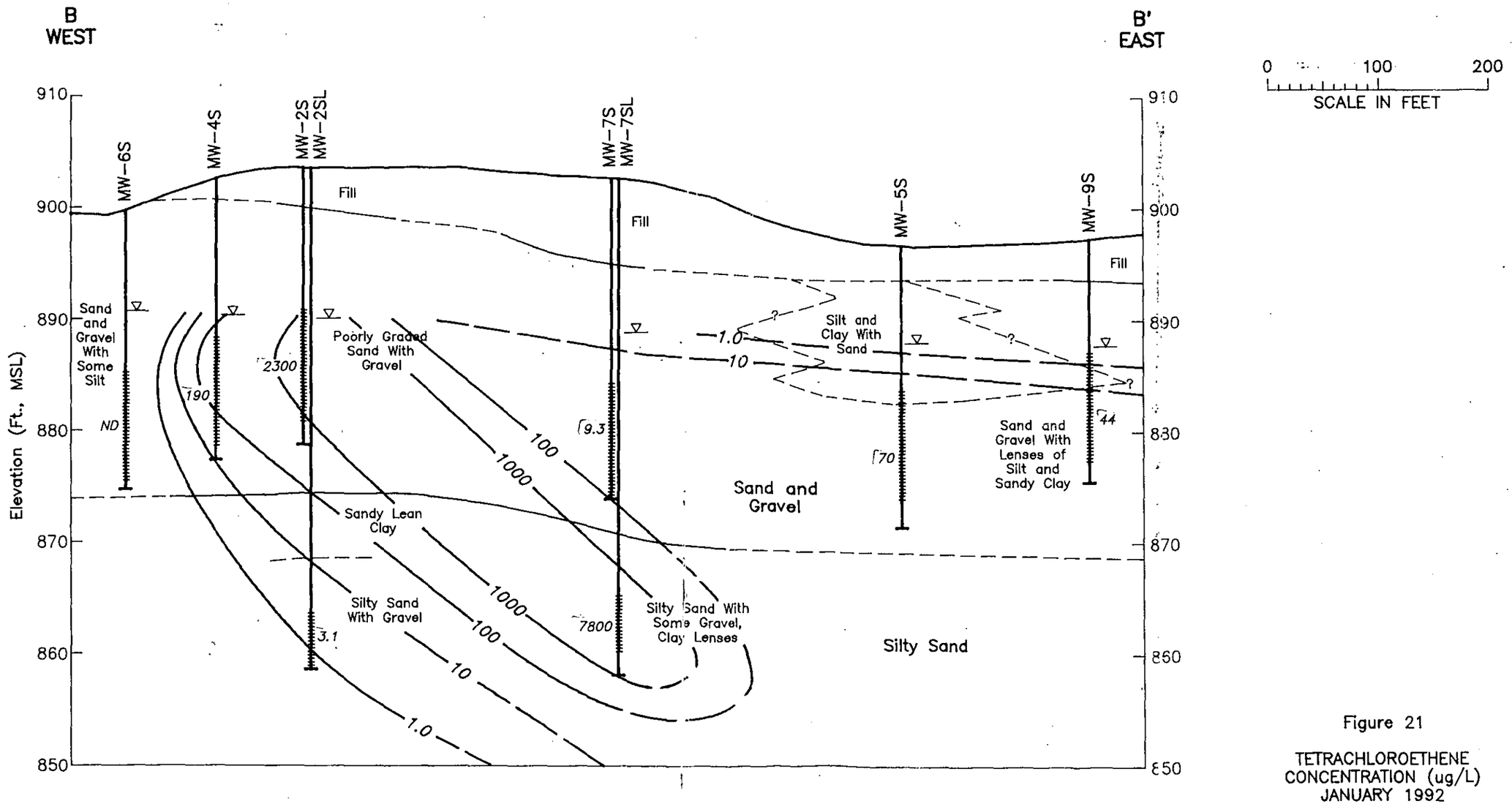


Figure 21

TETRACHLOROETHENE CONCENTRATION (ug/L)
JANUARY 1992

Schloff Chemical Company
St. Louis Park, Minnesota

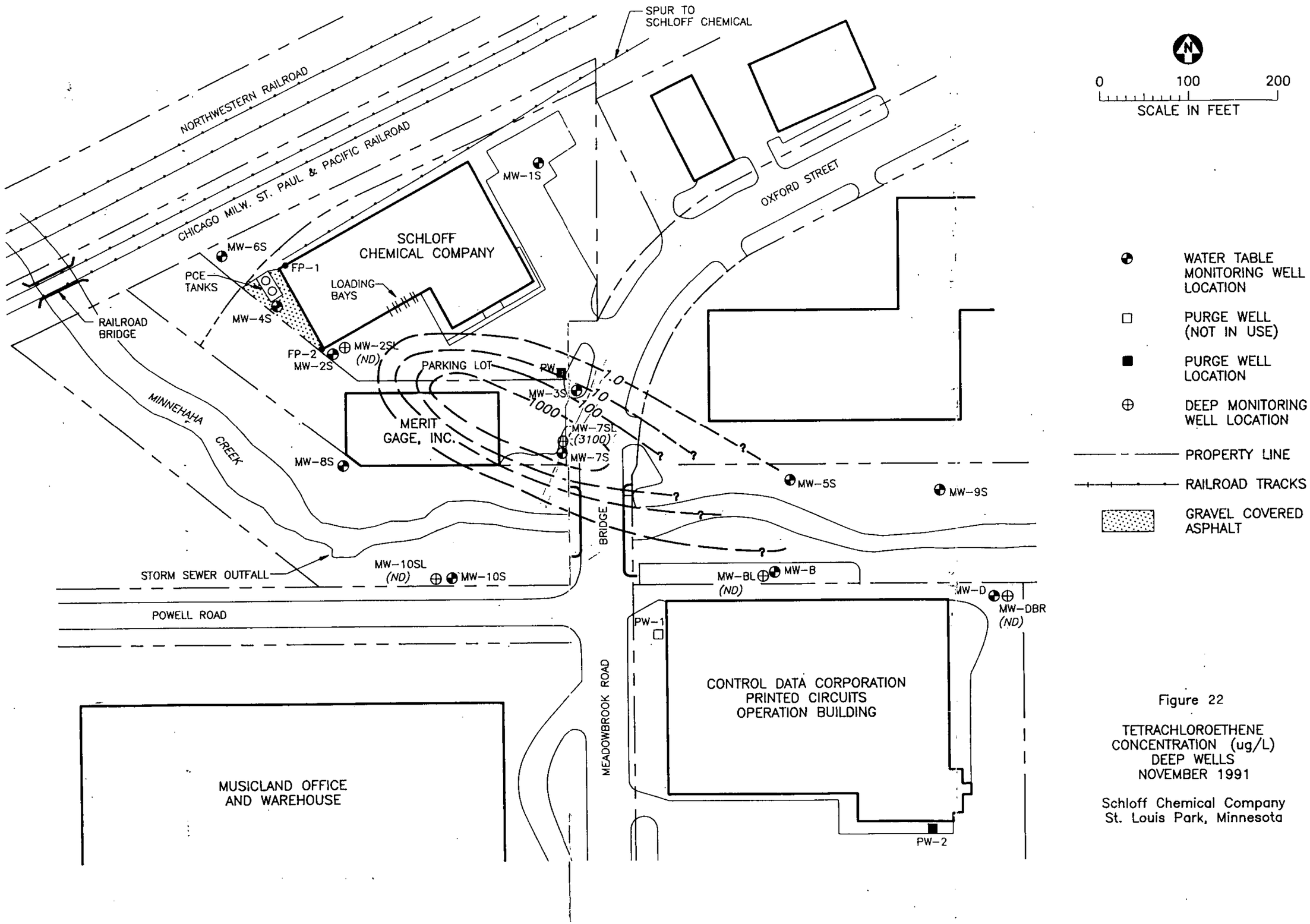


Figure 22

TETRACHLOROETHENE CONCENTRATION (ug/L) DEEP WELLS NOVEMBER 1991

Schloff Chemical Company
St. Louis Park, Minnesota

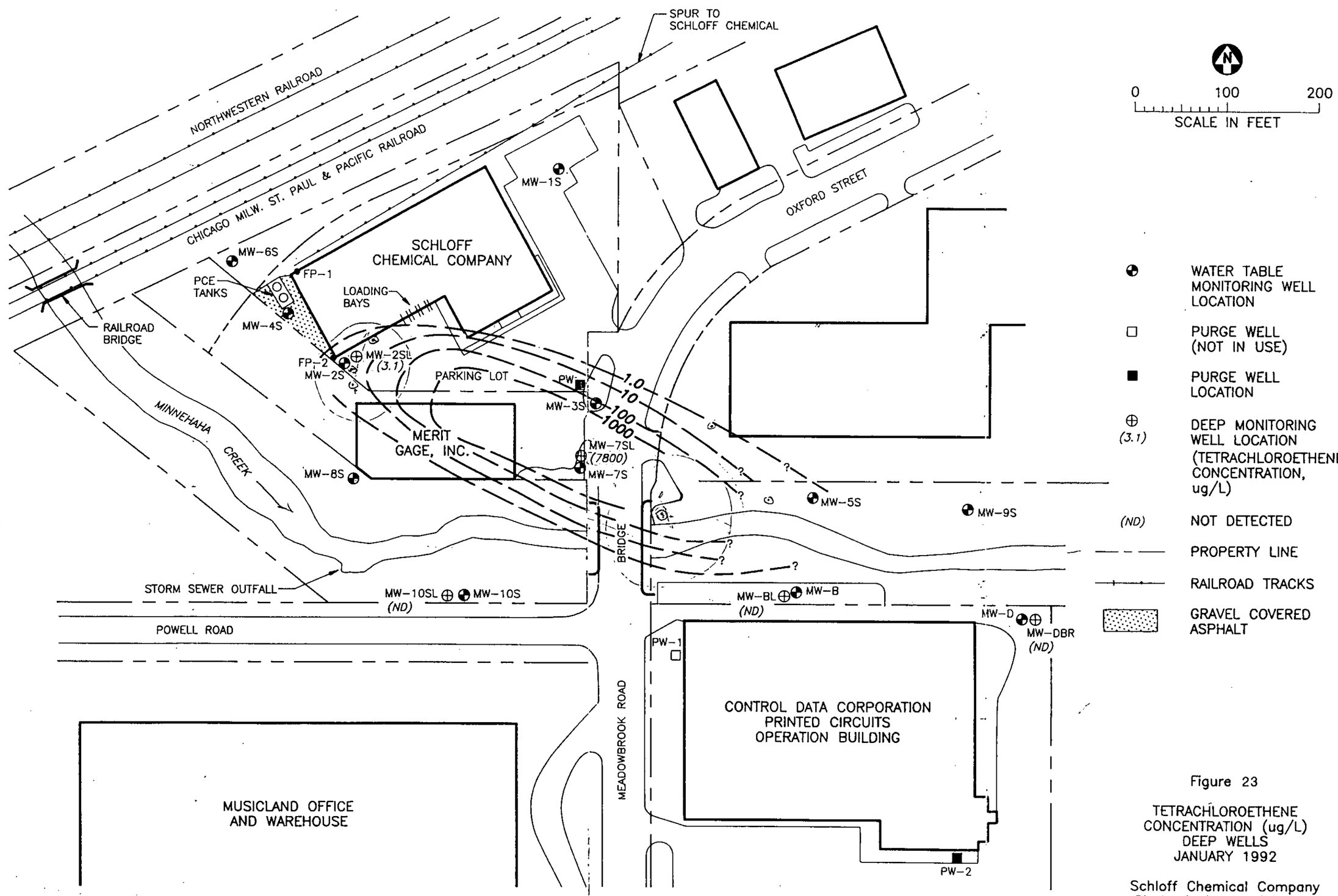


Figure 23

TETRACHLOROETHENE CONCENTRATION (ug/L) DEEP WELLS JANUARY 1992

Schloff Chemical Company
St. Louis Park, Minnesota

UVB-1
2 3mws +4

UVB-2
2 3mws +4

13

JEM DWJAN92 100.0000 03/04/1992 12:08:49

Appendix 1

Soil Boring Logs

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-13-91
DATE COMPLETED: 11-13-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-1
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: 901.8

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	666		HSA 0-2			Asphalt — 0.5' — MIXED FILL, MOSTLY; SILTY SAND (SM)- Fine to medium grained, brown, wet. [Slight solvent odor] — 2.0'
	385		2-4			POORLY GRADED SAND (SP-SW)- Fine to coarse grained with gravel, light brown, moist (Glacial Fluvial) [Slight solvent odor] — 4.5'
5	282		4 1/2 - 6 1/2			POORLY GRADED SAND (SP)- Mostly medium grained, light brown, moist (Glacial Fluvial) [Slight solvent odor] — 7.0'
	520		7-9			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to medium grained, light brown, moist (Glacial Fluvial)
10	502		9 1/2 - 11 1/2	▼		[With 1"-3" LENSES OF POORLY GRADED GRAVEL (GP)- Fine to medium grained, light brown, moist (Glacial Fluvial)] [Slight solvent odor]
	75.0		12-14			14.0' E.O.B.
15						
20						
25						
30						

COMMENT:

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-13-91
DATE COMPLETED: 11-13-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-2
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: APPROX. 901

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0	314		HSA 0-2			SILTY SAND (SM)- Fine grained, black (Slightly Organic), wet (Fill) [Slight solvent odor] — 0.5'
	39.0		2-4			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, moist (Glacial fluvial) [Slight solvent odor] — 4.5'
5	76.0		4 1/2 - 6 1/2			POORLY GRADED SAND (SP)-Mostly medium grained, light brown, moist (Glacial Fluvial) [Slight solvent odor] — 7.0'
	185		7-9	▼		POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown, moist -wet below 9'. (Glacial Fluvial) [Slight solvent odor]
10	52.0		9 1/2 - 11 1/2			— 12.0'
	1.4		12-14			POORLY GRADED SAND WITH GRAVEL (SP-SW) With a trace of silt, fine to coarse grained, grey, wet (Glacial Fluvial) — 14.0' E.O.B.
15						
20						
25						
30						

COMMENT:

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-12-91
DATE COMPLETED: 11-12-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: SB-3
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: 902.1

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	27.3		HSA 0-2			Black Top — 0.2' — Crushed Limestone Base Material — 0.4'
	51.4		2-4			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown, moist (Glacial Fluvial) [WITH 1"-3" LENSES OF POORLY GRADED GRAVEL (GP)- Fine to coarse grained, brown, moist (Glacial Fluvial)]
5	58.0		4 1/2 - 6 1/2			[Slight solvent odor] — 8.0'
	101		7-9			POORLY GRADED SAND (SP)- Mostly medium grained, light brown, moist (Glacial Fluvial) [Slight solvent odor] — 9.5'
10	73.0		9 1/2 - 11 1/2	▼		POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, moist-wet below 12' (Glacial Fluvial) [Slight solvent odor]
	255		12-14			14.0' E.O.B.
15						
20						
25						
30						

COMMENT:

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-12-91
DATE COMPLETED: 11-12-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: SB-4
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: 902.4

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	48.0		HSA 0-2			Black Top 0.5'
						CLAYEY SILT (ML-CL)- Light brown to grey, moist (Fill) [Slight solvent odor] 2.0'
	29.0		2-4			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown, moist (Glacial Fluvial) [Slight solvent odor] 7.0'
5	13.1		4 1/2 - 6 1/2			POORLY GRADED SAND (SP)- Mostly medium grained. Light brown, moist (Glacial Fluvial) [Slight solvent odor] 9.5'
	16.5		7-9			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown, moist (Glacial Fluvial) [Slight solvent odor]
10	39.0		9 1/2 - 11 1/2	▼		12.0'
	46.0		12-14			POORLY GRADED SAND WITH GRAVEL (SP-SW)-With a trace of silt, brown, wet (Glacial Fluvial)
15	202		14 - 15 1/2			[Slight Solvent Odor]
	1.4		15 1/2 - 17 1/2			17.3' SILTY SAND (SM)- Fine grained, grey, wet (Glacial Fluvial) 17.5' E.O.B.
20						
25						
30						

COMMENT:

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-14-91
DATE COMPLETED: 11-14-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-5
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: Approx. 904

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0	0.0		HSA 0-2			MIXED FILL, MOSTLY; CLAYEY SAND (SC)- Black to brown, wet. 2.0'
	0.0		2-4			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, moist (Glacial Fluvial)
5	0.5		4 1/2 - 6 1/2			6.0'
	0.3		7-9			POORLY GRADED SAND(SP)- Mostly medium grained, light brown, moist (Glacial Fluvial) 9.5'
10	0.0		9 1/2 - 11 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, mottled black and reddish brown 13-14', moist -wet below 13.5'. (Glacial Fluvial)
	0.0		12-14	▼		
15	0.0		14 1/2 - 16 1/2			17.0'
	0.0		17-19			POORLY GRADED SAND WITH GRAVEL (SP)- Mostly medium grained, light brown, wet (Glacial Fluvial) 19.5'
20	0.0		19 1/2 - 21 1/2			POORLY GRADED SAND WITH GRAVEL (SP)- Fine to medium grained, brownish-grey, wet (Glacial Fluvial)
	0.0		22-24			24.0'
25	0.0		24 1/2 - 26 1/2			POORLY GRADED SAND (SP)- Fine grained, grey, wet. (Glacial Fluvial) 26.0'
						POORLY GRADED GRAVEL (GP)- Fine to medium grained, grey, wet (Glacial Fluvial) 27.0'
	0.0		27-29			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, grey, wet WITH 1"-2" LENSES OF SILTY SAND (SM)- Fine grained, grey, wet; and CLAYEY SAND (SC)- Fine grained, grey, wet; and POORLY GRADED GRAVEL (GP)- (Glacial Fluvial)
30						29.0'

COMMENT:

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-14-91
DATE COMPLETED: 11-14-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-5
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: Approx. 904

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
30						
	0.0		29 1/2 - 31 1/2			INTERBEDDED 1/2' LENSES OF: POORLY GRADED SAND (SP)- Fine grained, grey, wet; and POORLY GRADED SAND (SP)- Medium grained, grey, wet: with 0.1' LAMINATION OF CLAYEY SILT (CL-ML)- Grey, wet @ 29.8' -29.9', and 0.3' LENS OF SILTY SAND (SM)-With a trace of clay, grey, wet @ 33.0-33.3' , and 35.7- E.O.B.(Glacial Fluvial or Till)
	0.0		32-34			
35	0.0		34-36			
						36.0' E.O.B.
40						
45						
50						
55						
60						

COMMENT:

SHEET 2 OF 2

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-15-91
DATE COMPLETED: 11-15-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-7
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: 902.5

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	0.0		HSA 0-2			Asphalt 0.4'
						CLAYEY SILT (ML/CL)- Black to brown, moist (Weathered Soil) 3.0'
	0.0		2-4			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown - mottled reddish brown and grey 10.5' -11.5', moist-wet below 12', (Glacial Fluvial)
5	0.0		4 1/2 - 6 1/2			
	0.0		7-9			
10	0.0		9 1/2 - 11 1/2			
	0.0		12-14	▼		14.5'
15	0.0		14 1/2 - 16 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light grey, wet. (Glacial Fluvial)
	0.0		17-19			20.0'
20	0.0		19 1/2 - 21 1/2			POORLY GRADED SAND WITH GRAVEL (SP)- Coarse grained, grey, wet (Glacial Fluvial) 21.0'
	0.0		22-24			POORLY GRADED SAND (SP)- Fine to medium grained, grey, wet (Glacial Fluvial) 24.0'
25	0.0		24 1/2 - 26 1/2			INTERBEDDED 2"-5" LENSES OF SILTY SAND (SM)- Fine to medium grained, reddish brown, wet; SILT WITH SAND (ML-SM)- Fine grained with gravel, reddish brown, moist; and SANDY LEAN CLAY WITH SILT (CL)- Reddish brown, moist (Glacial Fluvial or Till)
	0.0		27-29			
30						29.5'

COMMENT:

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-15-91
DATE COMPLETED: 11-15-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-7
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: 902.5

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
30						
	0.0		29 1/2 - 31 1/2			SILTY SAND (SM)- With a trace of gravel and clay, fine to medium grained, brownish grey, wet (Till)
	0.0		32-34			
35			34 1/2 - 36 1/2			
	0.0					
						36.5' E.O.B.
40						
45						
50						
55						
60						

COMMENT:

SHEET 2 OF 2

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-15-91
DATE COMPLETED: 11-15-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-8
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: Approx.900

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	0.0		HSA 0-2			ASPHALT 0.4'
	0.0		2-4			POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SW)- Fine to coarse grained, light brown, moist (Fill) 4.5'
5	0.0		4 1/2 - 6 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, moist (Fill) With pieces of wood.
	0.0		7-9			9.0'
10	0.0		9 1/2 - 11 1/2	▼		PEAT (PT)- Amorphous, black, moist (Swamp Deposit) 11.5'
	0.0		12-14			POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SW)- Fine to coarse grained, grey, wet (Glacial Fluvial) 14.0' E.O.B.
15						
20						
25						
30						

COMMENT:

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-15-91
DATE COMPLETED: 11-15-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-9
RISER PIPE ELEVATION: N.A.
GROUND SURFACE ELEVATION: 903.0

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	0.0		HSA 0-2			ASPHALT 0.5'
	0.0		2-4			SILTY CLAY (CL-ML)- Brown, moist (Fill) 4.0'
5	0.0		4 1/2 - 6 1/2			POORLY GRADED SAND (SP)- Fine to medium grained, light brown, moist (Glacial Fluvial) 7.0'
	0.0		7-9			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown, moist - wet below 13' (Glacial Fluvial)
10	0.0		9 1/2 - 11 1/2			
	0.0		12-14	▼		14.0' E.O.B.
15						
20						
25						
30						

COMMENT:

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-14-91
DATE COMPLETED: 11-14-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Craig Bundy (AET)

BORING NO.: SB-10
RISER PIPE ELEVATION: NA
GROUND SURFACE ELEVATION: 904.7

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
			HSA 0-2			CONCRETE
						0.7'
						POORLY GRADED SAND (SP)- Medium grained, light brown, moist (Fill) [Slight solvent odor]
	457		2-4			
						3.5'
5						POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown, moist (Glacial Fluvial) [Slight Solvent Odor]
	28.2		4-6			
						6.5'
			6-8			POORLY GRADED SAND (SP)- Mostly medium grained, light brown, moist (Glacial Fluvial) [Slight Solvent odor]
	89.5					
						8.5'
			8 1/2 - 10 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown - mottled/discolored black @ 13'-E.O.B., moist (Glacial Fluvial)
10	78.0					
	272		11-13			
				▽		[Slight solvent odor]
15			HSA			
						17.5' E.O.B.
20						
25						
30						

COMMENT:

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-20-91
DATE COMPLETED: 11-20-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: George Nichols (AET)

BORING NO.: MW-2SL
RISER PIPE ELEVATION: 905.32
GROUND SURFACE ELEVATION: 903.2

Depth (Feet)	Net OVU (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	85.0		HSA 0-2			ASPHALT 0.1'
						MIXED FILL, MOSTLY; POORLY GRADED SAND WITH SILT (SP-SM)- With a trace of gravel, fine to medium grained, brown, moist. [Slight solvent odor] 3.5'
5						POORLY GRADED SAND WITH GRAVEL AND COBBLES (SP-SW)- Fine to coarse grained, light brown, moist- wet below 13' (Glacial Fluvial)
	35.0		5-7			[Slight solvent odor]
10						
	42.7		10-12	▼		
15						
	0.0		15-17			
						18.5'
20						POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light grey, wet (Glacial fluvial)
	0.0		20-22			
	0.5		22 1/2 - 24 1/2			
25						
	0.0		25-27			
						27.0'
			27 1/2 -			POORLY GRADED SAND (SP)- Fine to medium grained with a trace of gravel, grey, wet (Glacial Fluvial)
	0.0		29 1/2			28.5' SANDY LEAN CLAY (CL)- Dark grey, moist (Glacial Fluvial or Till)
30						

COMMENT:

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-20-91
DATE COMPLETED: 11-20-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: George Nichols (AET)

BORING NO.: MW-2SL
RISER PIPE ELEVATION: 905.32
GROUND SURFACE ELEVATION: 903.2

Depth (Feet)	Net OVU (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
30						
	0.0		30-32			SANDY LEAN CLAY (CL)- Dark grey, moist (Glacial Fluvial Or Till)
						(May be interbedded with lens of SILTY SAND (SM)
	No RETURN		32 1/2 - 34 1/2			
						34.5'
35						SILTY SAND (SM)- Fine to medium grained with a trace of gravel, grey, wet (Till).
	0.0		35-37			
	0.0		37 1/2 - 39 1/2			
40						
	0.0		40-42			
	0.0		42 1/2 - 44 1/2			
						44.5' E.O.B.
45						
50						
55						
60						

COMMENT: Monitoring Well MW-2SL constructed in boring.

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-18-91
DATE COMPLETED: 11-19-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: MW-7SL
RISER PIPE ELEVATION: 904.25
GROUND SURFACE ELEVATION: 902.7

Depth (Feet)	Net OVU (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	0.0		HSA 0-2			MIXED FILL, MOSTLY; SILTY SAND (SM)- Fine to medium grained, dark brown to black(slightly organic), moist.
5						
	0.0		5-7			
						8.5'
10						POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light brown, moist (Glacial Fluvial)
	0.0		10-12			
				▼		13.5'
15						POORLY GRADED SAND (SP)- Fine to medium grained, light brown, wet (Glacial Fluvial)
	0.0		15-17			
						18.5'
20						POORLY GRADED SAND WITH GRAVEL (SP)- Mostly medium grained, light brown, wet (Glacial Fluvial)
	0.0		20-22			
	0.0		22 1/2 - 24 1/2			
25						25.0'
	0.0		25-27			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, light grey, wet (Glacial Fluvial)
30						

COMMENT:

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-18-91
DATE COMPLETED: 11-19-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: MW-7SL
RISER PIPE ELEVATION: 904.25
GROUND SURFACE ELEVATION: 902.7

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
30						
	0.0		30-32			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light grey, wet (Glacial Fluvial).
						32.0'
	0.0		32 1/2 - 34 1/2			INTERBEDDED 1"-6" LENSES OF SILTY SAND (SM)- Fine to medium grained, grey, wet; and SANDY LEAN CLAY (CL)- With a trace of gravel, grey, moist (Glacial Fluvial Or Till)
						34.0'
35						SILTY SAND (SM)- Fine to medium grained, with a trace of gravel, grey, wet (Till) [Slight solvent odor below 35']
	0.0		35-37			
	0.0		37 1/2 - 39 1/2			
40						
	0.0		40-42			
						42.5'
	0.0		42 1/2 - 44 1/2			CLAYEY SAND (SC)- Fine to medium grained, with a trace of gravel, grey, wet (Till)
45						44.5' E.O.B.
50						
55						
60						

COMMENT: Monitoring Well MW-7SL constructed in boring.

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-20-91
DATE COMPLETED: 11-20-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: MW-8S
RISER PIPE ELEVATION: 903.54
GROUND SURFACE ELEVATION: 901.1

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0	0.0		HSA 0-2			MIXED FILL, MOSTLY; SILTY SAND (SM)- Fine to medium grained, dark brown, moist.
	0.0		2-4			
						4.5'
5	0.0		4 1/2 - 6 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, moist (Glacial Fluvial)
	0.0		7-9			
10	0.0		9 1/2 - 11 1/2			
						12.0'
	0.0		12-14	▼		POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light grey, wet (Glacial Fluvial)
15	0.0		14 1/2 - 16 1/2			
						17.0'
	0.0		17-19			POORLY GRADED SAND (SP)- Fine to medium grained, with a trace of gravel, light grey, wet (Glacial Fluvial)
						19.0'
20	0.0		19 1/2 - 21 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light grey, wet (Glacial Fluvial)
						21.5' E.O.B.
25						
30						

COMMENT: Monitoring Well MW-8S constructed in boring.

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-21-91
DATE COMPLETED: 11-21-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: MW-9S
RISER PIPE ELEVATION: 899.14
GROUND SURFACE ELEVATION: 897.3

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	0.0		HSA 0-2			MIXED FILL, MOSTLY; SANDY LEAN CLAY (CL)- Dark brown (Slightly organic), moist
	0.0		2-4			3.5'
						ORGANIC SOIL (OL)- Black, moist (Top Soil)
5						4.0'
	0.0		4 1/2 - 6 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, moist (Glacial Fluvial) [Mottled black & reddish brown 8.5' -9.5']
	0.0		7-9			
10						1/2' LENS OF SILT (ML)- Light grey, wet @ 10.5'-11.0'
	0.0		9 1/2 - 11 1/2	▼		11.0'
						POORLY GRADED SAND WITH GRAVEL (SP-SW)- Medium to coarse grained, reddish brown, wet (Glacial Fluvial)
	0.0		12-14			12.0'
						SANDY LEAN CLAY (CL)- Light grey, wet (Glacial Fluvial)
						13.0'
15						POORLY GRADED SAND WITH GRAVEL (SP)- Medium to coarse grained, light brown, wet (Glacial Fluvial)
	0.0		14 1/2 - 16 1/2			
20						
	0.0		19 1/2 - 21 1/2			
						21.5' E.O.B.
25						
30						

COMMENT: Monitoring Well MW-9S constructed in boring.

SHEET 1 OF 1

BORING LOG

PROJECT: Schloff Chemical
DATE STARTED: 11-22-91
DATE COMPLETED: 11-22-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: MW-10SL
RISER PIPE ELEVATION: 898.49
GROUND SURFACE ELEVATION: 896.8

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
0						
	0.0		HSA 0-2			ORGANIC SOIL (OL)- Black, moist, topsoil
						0.1'
						SILTY SAND (SM)- Fine to medium grained, dark brown, moist (Weathered Soil)
						0.5'
	0.0		2-4			POORLY GRADED SAND WITH GRAVEL (SP-SW)- Fine to coarse grained, light brown, moist (Glacial Fluvial)
5						5.0'
	0.0		4 1/2 - 6 1/2			POORLY GRADED SAND (SP)- Fine to medium grained, light brown, moist (Glacial Fluvial)
				▼		7.0'
	0.0		7-9			POORLY GRADED SAND WITH SILT AND GRAVEL (SP/SP-SM)- Fine to coarse grained, brown, wet (Glacial Fluvial)
						9.0'
10	0.0		9 1/2 - 11 1/2			POORLY GRADED SAND WITH GRAVEL (SP-SW)-Fine to coarse grained, grey, wet (Glacial fluvial)
	0.0		12-14			
						14.0'
15	0.0		14 1/2 - 16 1/2			POORLY GRADED SAND (SP)- Fine grained with a trace of gravel, grey, wet (Glacial Fluvial)
	0.0		17-19			
						18.0'
						SILT WITH SAND (ML)- Sand portion is fine grained, trace of clay, reddish brown, moist (Glacial Fluvial)
20						20.0'
	0.0		19 1/2 - 21 1/2			POORLY GRADED SAND (SP)- Fine to medium grained, with a trace of gravel, grey, wet (Glacial Fluvial)
						22.0'
	0.0		22-24			INTERBEDDED 1"-5" LENSES OF: SILTY SAND (SM)- Fine grained, reddish brown, wet;and SANDY LEAN CLAY (CL)- Reddish brown, moist (Glacial Fluvial)
						24.5'
25	0.0		24 1/2 - 26 1/2			SILTY SAND (SM)- Fine to medium grained with a trace of gravel, grey, wet (Till)
	0.0		27-29			
30						

COMMENT:

BORING LOG

PROJECT: Schloff Chemical R.I.
DATE STARTED: 11-22-91
DATE COMPLETED: 11-22-91
FIELD INSPECTOR: John Fox (B.E.C.)
CREW CHIEF: Joe Field (AET)

BORING NO.: MW-10SL

RISER PIPE ELEVATION: 898.49

GROUND SURFACE ELEVATION: 896.8

Depth (Feet)	Net OVM (ppm)	Blows Per 6"	Sample Type	Water Content	Profile	DESCRIPTION OF MATERIALS AND REMARKS
30	0.0		29 1/2 - 31 1/2			SILTY SAND (SM)- Fine to medium grained with a trace of gravel, grey, wet (Till)
						32.0'
	0.0		32-34			SILTY SAND (SM-SC)- Fine to medium grained, with a trace of clay and gravel, grey, wet (Till)
						34.0'
35	0.0		34 1/2 - 36 1/2			SILTY SAND (SM)- Fine to medium grained with a trace of gravel, gray, wet (Till).
	0.0		37-39			
						39.0' E.O.B.
40						
45						
50						
55						
60						

COMMENT: Monitoring Well MW-10SL constructed in boring.

Appendix 2

Well Construction Diagrams

WELL LOG

BARR ENGINEERING CO.
Minneapolis, Minnesota

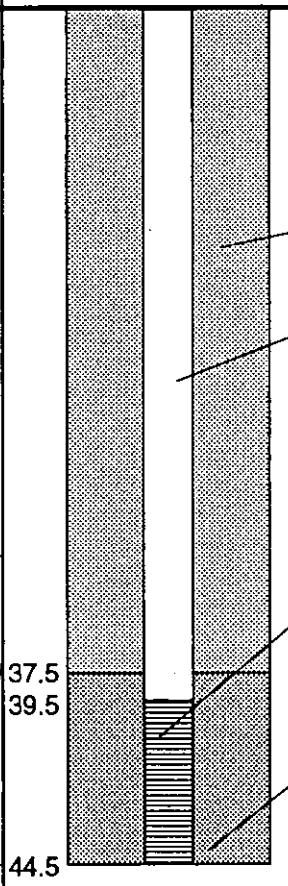
Project Schloff Chemical R.I. Well No. MW-2SL

Date Started 11-22-91

Date Completed 11-22-91 Riser Pipe Elevation 905.32

Field Inspector J. Fox (B.E.C.)

Crew Chief J. Field (A.E.T.) Ground Surface Elevation 903.2

BOREHOLE CONSTRUCTION NOTES	LITHOLOGY	WELL CONSTRUCTION	WELL CONSTRUCTION NOTES
Boring advanced with 4 1/4" I.D. Hollow Stem auger to 44.5 feet.	Mixed Fill 3.5' Poorly Graded Sand (SP-SW), (SP) 28.5' Sandy Lean Clay (CL) Interbedded with Silty Sand (SM) 34.5' Silty Sand (SM) 44.5'		Well head protected with locking protective casing and three steel posts. Neat Cement Grout 2" Steel Riser (Black Pipe). 2-inch diameter, 5-foot long, 0.010 inch slot stainless steel well screen. #30 Red Flint sand pack.

Comments: Unique Well # 497644

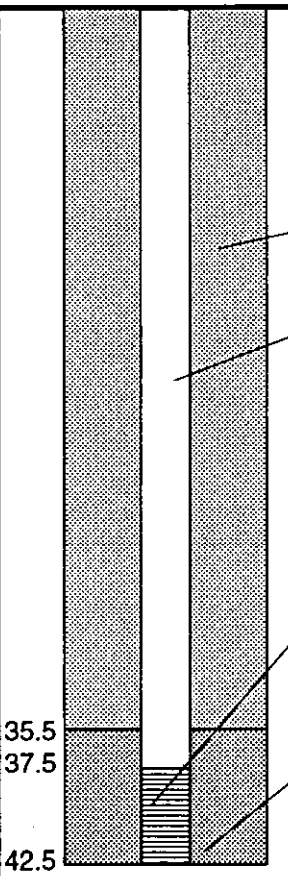
Sheet 1 of 1

WELL LOG

BARR ENGINEERING CO.
Minneapolis, Minnesota

Project Schloff Chemical R.I.
Date Started 11-18-91
Date Completed 11-19-91
Field Inspector J. Fox (B.E.C.)
Crew Chief J. Field (A.E.T.)

Well No. MW-7SL
Riser Pipe Elevation 904.25
Ground Surface Elevation 902.7

BOREHOLE CONSTRUCTION NOTES	LITHOLOGY	WELL CONSTRUCTION	WELL CONSTRUCTION NOTES
Boring advanced with 4 1/4" I.D. Hollow Stem auger to 42.5 feet.	Mixed Fill 8.5' Poorly Graded Sand (SP), (SP-SW) 32.0' Interbedded Silty Sand (SM) and Sandy Lean Clay (CL) 42.0' Clayey Sand (SC) 44.5'		Well head protected with locking protective casing and three steel posts. Neat Cement Grout 2" Steel Riser (Black Pipe). 2-inch diameter, 5-foot long, 0.010 inch slot stainless steel well screen. #30 Red Flint sand pack.

Comments: Unique Well # 497645

Sheet 1 of 1

WELL LOG

BARR ENGINEERING CO.
Minneapolis, Minnesota

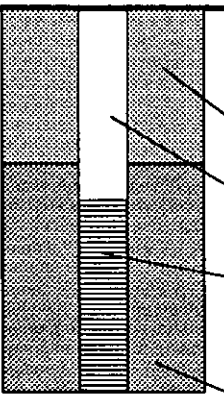
Project Schloff Chemical R.I. Well No. MW-8S

Date Started 11-20-91

Date Completed 11-20-91 Riser Pipe Elevation 903.54

Field Inspector J. Fox (B.E.C.)

Crew Chief J. Field (A.E.T.) Ground Surface Elevation 901.1

BOREHOLE CONSTRUCTION NOTES	LITHOLOGY	WELL CONSTRUCTION	WELL CONSTRUCTION NOTES
Boring advanced with 4 1/4" I.D. Hollow Stem auger to 20 feet.	Mixed Fill 4.5' Poorly Graded Sand (SP), (SP-SW) 20.0'	8.0 10.0 20.0 	Well head protected with locking protective casing and three steel posts. Neat Cement Grout 2" Steel Riser (Black Pipe). 2-inch diameter, 10-foot long, 0.010 inch slot, stainless steel well screen. #30 Red Flint sand pack.

Comments: Unique Well # 497641

Sheet 1 of 1

WELL LOG

BARR ENGINEERING CO.
Minneapolis, Minnesota

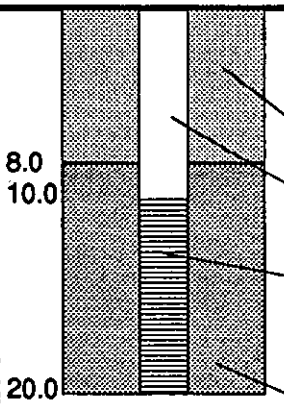
Project Schloff Chemical R.I. Well No. MW-9S

Date Started 11-21-91

Date Completed 11-21-91 Riser Pipe Elevation 899.14

Field Inspector J. Fox (B.E.C.)

Crew Chief J. Field (A.E.T.) Ground Surface Elevation 897.3

BOREHOLE CONSTRUCTION NOTES	LITHOLOGY	WELL CONSTRUCTION	WELL CONSTRUCTION NOTES
Boring advanced with 4 1/4" I.D. Hollow Stem auger to 20 feet.	Mixed Fill 3.5' Topsoil (OL) 4.0' Poorly Graded Sand (Sp-Sw) 12.0' Lens of Sandy Lean Clay (CL) 13.0' Poorly Graded Sand (Sp) 20.0'		Well head protected with locking protective casing and three steel posts. Neat Cement Grout 2" Steel Riser (Black Pipe). 2-inch diameter, 10-foot long, 0.010 inch slot, stainless steel well screen. #30 Red Flint sand pack.

Comments: Unique Well # 497642

Sheet 1 of 1

WELL LOG

BARR ENGINEERING CO.
Minneapolis, Minnesota

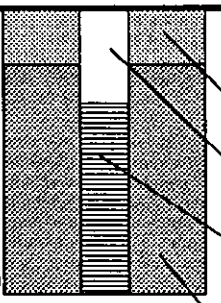
Project Schloff Chemical R.I. — Well No. MW-10S

Date Started 10-23-91

Date Completed 10-23-91 — Riser Pipe Elevation 898.68

Field Inspector J. Fox (B.E.C.)

Crew Chief J. Field (A.E.T.) — Ground Surface Elevation 897.0

BOREHOLE CONSTRUCTION NOTES	LITHOLOGY	WELL CONSTRUCTION	WELL CONSTRUCTION NOTES
Boring advanced with 4 1/4" I.D. Hollow Stem auger to 15 feet.	Not Sampled Refer To Log of MW-10SL 15.0'	3.0 5.0 15.0 	Well head protected with locking protective casing and three steel posts. Neat Cement Grout 2" Steel Riser (Black Pipe). 2-inch diameter, 10-foot long, 0.010 inch slot, stainless steel well screen. #30 Red Flint sand pack.

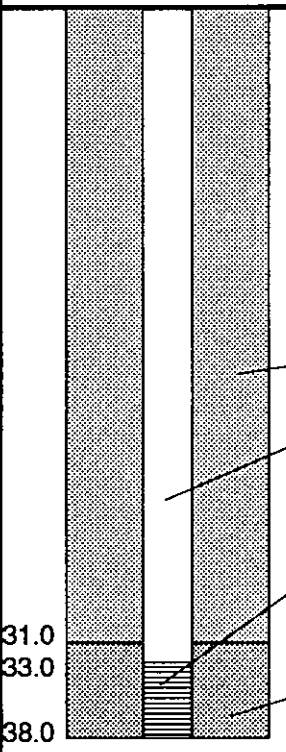
Comments: Unique Well # 497643

Sheet 1 of 1

WELL LOG

BARR ENGINEERING CO.
Minneapolis, Minnesota

Project Schloff Chemical R.I.
Well No. MW-10SL
Date Started 11-22-91
Date Completed 11-22-91
Riser Pipe Elevation 898.49
Field Inspector J. Fox (B.E.C.)
Crew Chief J. Field (A.E.T.)
Ground Surface Elevation 896.8

BOREHOLE CONSTRUCTION NOTES	LITHOLOGY	WELL CONSTRUCTION	WELL CONSTRUCTION NOTES
Boring advanced with 4 1/4" I.D. Hollow Stem auger to 38.0' feet.	Poorly Graded Sand (SP) (SP/SP-SW), (SP-SW) 18.0' Silt With Sand (ML) 20.0' Interbedded Poorly Graded Sand (SP), Silty Sand(SM), and Sandy Lean Clay (CL) 24.5' Silty Sand (SM) 38.0'		Well head protected with locking protective casing and three steel posts. Neat Cement Grout 2" Steel Riser (Black Pipe). 2-inch diameter, 5-foot long, 0.010 inch slot, stainless steel well screen. #30 Red Flint sand pack.

Comments: Unique Well # 497646

Sheet 1 of 1

Appendix 3

Drillers Report

AMERICAN
ENGINEERING
TESTING, INC.

CONSULTANTS
• GEOTECHNICAL
• MATERIALS
• ENVIRONMENTAL

February 24, 1992

Barr Engineering Company
8300 Norman Center Drive
Minneapolis, MN 55437-1026

Attn: Mark Hagley

RE: Soil Borings and Monitor Well Installation
Schloff Chemical Remedial Investigation
3938 Meadowbrook Road
St. Louis Park, Minnesota
Barr Project No. 23/27-540 MTH 40
AET Project No. 91-1328

Dear Mr. Hagley:

American Engineering Testing, Inc. has completed soil borings and monitor well installation at your above-referenced project. Our services were performed in accordance with a Professional Services Agreement with you dated November 7, 1991.

Additional snow removal and well development services were authorized by you during the course of the work. This report presents the following:

- Soil Boring and Monitoring Well Location Drawings
- Monitoring Well Permit Application (copy)
- Monitoring Well Permit (copy)
- Subsurface Boring Logs
- Water Well Records (copies)
- Sheets describing drilling, sampling and soil classification procedures used, including symbol descriptions

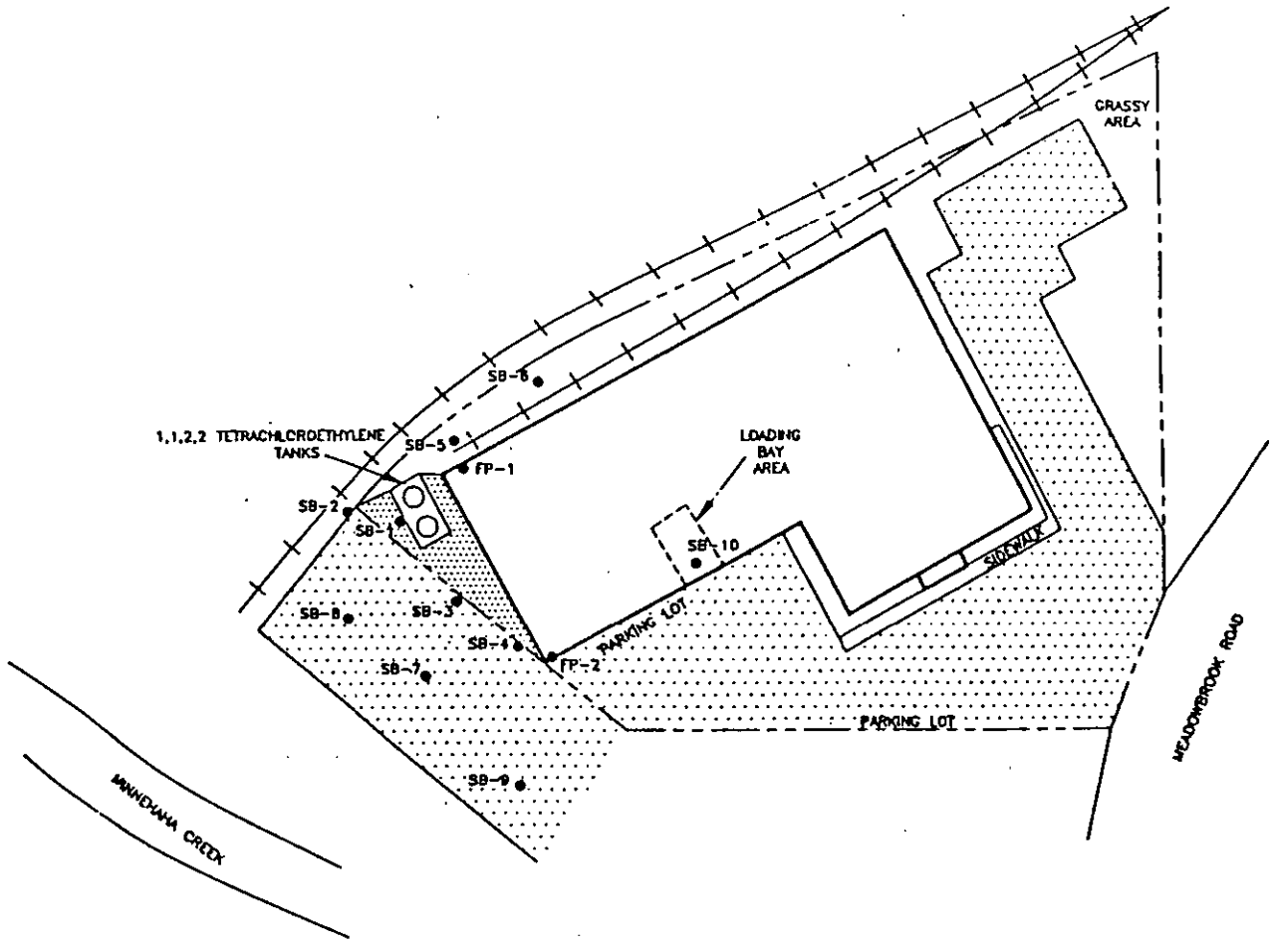
Fifteen soil borings were drilled and six monitoring wells were installed at the site during a period from November 12 through 22, 1991. Borings not having wells installed were grout filled after sampling was completed. All monitoring wells were developed after installation.

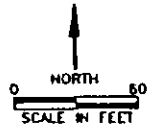
Our authorized services for this project are now completed. For any additional information, please contact me at 659-1300.

Sincerely,

Donovan K. Stormoe

Donovan K. Stormoe, PE
Principal





LEGEND:

- PROPOSED SOIL BORING LOCATIONS
- PROPERTY LINE
- RAILROAD TRACKS
- GRAVEL COVERED ASPHALT
- ASPHALT/CONCRETE

Figure 2

PROPOSED SOIL BORING LOCATIONS
PHASE II REMEDIAL INVESTIGATION

Schloff Chemical
St. Louis Park, Minnesota

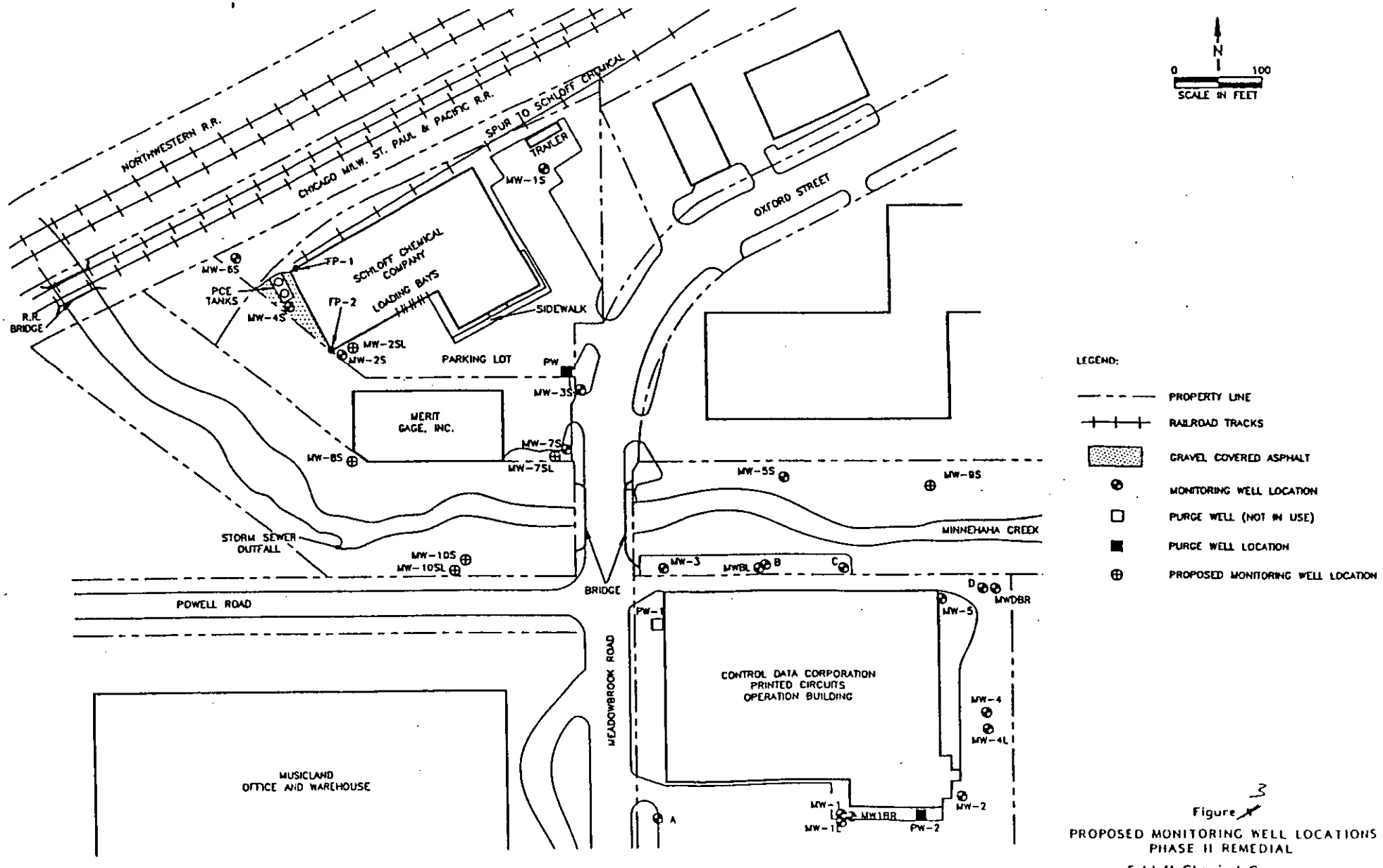


Figure 3

PROPOSED MONITORING WELL LOCATIONS
PHASE II REMEDIAL

Schloff Chemical Company
St. Louis Park, Minnesota

MINNESOTA DEPARTMENT OF HEALTH
MONITORING WELL PERMIT APPLICATION

Copies bJS 11/19/91

Make check or money order payable to the Minnesota State Treasurer. Mail completed application and fee to the Minnesota Department of Health (MDH), Well Management Unit, P.O. Box 59040, Minneapolis, Minnesota 55459-0040, ATTN: Permits.

MDH USE ONLY
Amount Received N/C Govt
Date Received 11-14-91
So. Codes: Well (20) Site (21)
Deposit No.
Not Approved
Date Approved [illegible] 11-15-91
Site Permit No.

CHECK ALL THAT APPLY. FEE

- ☐ Motor fuel retail outlet. $50/site
  - ☐ Site permit exists, Permit No. _____ None
- ☒ Well owned by State or local government. None
- ☐ All other monitoring wells $50/well

1. LEGAL DESCRIPTION OF WELL LOCATION COUNTY Hennepin

A.

Township Name	Township	Range	Section	Smallest Quarters Largest	Unique Well Number	Depth
	117 N	21 W	20	SE ¼ NE ¼ SW ¼ NW ¼	497641	20'
	117 N	21 W	20	SW ¼ NW ¼ SE ¼ NW ¼	497642	20'
	117 N	21 W	20	SE ¼ NE ¼ SW ¼ NW ¼	497643	20'
	117 N	21 W	20	SE ¼ NE ¼ SW ¼ NW ¼	497644	45'
	117 N	21 W	20	SE ¼ NE ¼ SW ¼ NW ¼	497645	45'

B. Site address 3938 Meadowbrook Road; St. Louis Park, Minnesota
Street City

C. Sketch (attach map showing well location including distance from nearest road intersection) Attache

2. ☐ For wells constructed through a CONFINING LAYER, submit the following information: well diameter, grout material, drilling method, grouting method, casing materials, cross-sectional diagram of well, and cross-section of anticipated geologic formations.

3. ☐ For AT-GRADE WELLS, check the box and submit the following information: an explanation of why the well casing cannot terminate 12 inches above ground; a map showing the location of the proposed well referenced to a benchmark, permanent landmark, or property boundaries; cross-sectional diagram of the well cap and vault or manhole.

4. WELL CONTRACTOR INFORMATION
Business name American Engineering Testing, Inc. Reg. or Lic. No. M0024
Contact person Donovan K. Stormoe, PE Phone No. (612) 659-1300

5. CONSULTANT NAME Barr Engineering Company Phone No. (612) 832-2600

6. WELL OWNER INFORMATION
Well owner name State of Minnesota (Pollution Control Agency)
Well owner address 520 Lafayette Road St. Paul MN 55155
Street City State Zip Code
Contact person Todd Goeks or Kathy Villas-Horns Phone No. (612) 296-7710

7. PROPERTY OWNER INFORMATION if different from well owner (if completed, see No. 8 below)
Property owner name Ruth Schloff
Property owner address 3938 Neadowbrook Road St. Louis Park, MN 55426
Street City State Zip Code

8. If the well owner is not the property owner, Minnesota Statutes, Chapter 103I.205, require that "A person may not construct a monitoring well on the property of another until the owner of the property on which the well is to be located and the well owner sign a written agreement that identifies which party will be responsible for obtaining maintenance permits and for sealing the monitoring well. If the property owner refuses to sign the agreement, the well owner may, in lieu of a written agreement, state in writing that the well owner will be responsible for obtaining maintenance permits and sealing the well."

☐ Well owner and property owner same. ☑ Signed agreement exists. ☐ Statement enclosed.

NOV 1991 RECEIVED WELL MGT

I certify that all the information provided in this application is true and complete. I understand that misstatement of facts may result in forfeiture of all rights to licensure/registration as a well contractor/monitoring well contractor in accordance with Minnesota Statutes, Chapter 103I.

Donovan K. Stormoe
Licensed or Registered Contractor Signature

Kenneth M. [illegible]
Property Owner Signature (or agent)

Penalties: Failure to obtain a permit prior to well construction is a violation of Minnesota Statutes, Chapter 103I, and will result in the assessment of a $250 fine.

All variance requests must be accompanied by a permit application.

F:\ROBLET\WORD\MOWEAPP.HWA 04/05/91

Please FAX to: 659-1379
Attn: Don Stormoe

MINNESOTA DEPARTMENT OF HEALTH
MONITORING WELL PERMIT APPLICATION

Make check or money order payable to the Minnesota State Treasurer. Mail completed application and fee to the Minnesota Department of Health (MDH), Well Management Unit, P.O. Box 59040, Minneapolis, Minnesota 55459-0040, ATTN: Permits.

Lofees B/S 11/19/91

MDH USE ONLY
Amount Received N/C - Govt.
Date Received 11-14-91
So. Codes: Well (20) Site (21)
Deposit No.
Not Approved
Date Approved HWA 11-15-91
Site Permit No.

CHECK ALL THAT APPLY.	FEE
☐ Motor fuel retail outlet.	$50/site
☐ Site permit exists, Permit No.	None
☒ Well owned by State or local government.	None
☐ All other monitoring wells	$50/well

1. LEGAL DESCRIPTION OF WELL LOCATION COUNTY Hennepin

A.

Township Name	Township	Range	Section	Smallest Quarters Largest	Unique Well Number	Depth
	117 N	21 W	20	SE ¼ NE ¼ SW ¼ NW ¼	497646	45'
	N	W		¼ ¼ ¼ ¼		
	N	W		¼ ¼ ¼ ¼		
	N	W		¼ ¼ ¼ ¼		
	N	W		¼ ¼ ¼ ¼		

B. Site address 3938 Meadowbrook Road (Street) St. Louis Park, Minnesota (City)

C. Sketch (attach map showing well location including distance from nearest road intersection) Attache

2. ☐ For wells constructed through a CONFINING LAYER, submit the following information: well diameter, grout material, drilling method, grouting method, casing materials, cross-sectional diagram of well, and cross-section of anticipated geologic formations.

3. ☐ For AT-GRADE WELLS, check the box and submit the following information: an explanation of why the well casing cannot terminate 12 inches above ground; a map showing the location of the proposed well referenced to a benchmark, permanent landmark, or property boundaries; cross-sectional diagram of the well cap and vault or manhole.

4. WELL CONTRACTOR INFORMATION
Business name American Engineering Testing, Inc. Reg. or Lic. No. M0024
Contact person Donovan K. Stormoe, PE Phone No. (612) 659-1300

5. CONSULTANT NAME Barr Engineering Company Phone No. (612) 832-2600

6. WELL OWNER INFORMATION
Well owner name State of Minnesota (Pollution Control Agency)
Well owner address 520 Lafayette Road (Street) St. Paul (City) MN (State) 55155 (Zip Code)
Contact person Todd Goeks or Kathy Villas-Horns Phone No. (612) 296-7710

7. PROPERTY OWNER INFORMATION if different from well owner (if completed, see No. 8 below)
Property owner name Ruth Schloff
Property owner address 3938 Meadowbrook Road (Street) St. Louis Park, MN (City) 55426 (State) (Zip Code)

8. If the well owner is not the property owner, Minnesota Statutes, Chapter 103I.205, require that "A person may not construct a monitoring well on the property of another until the owner of the property on which the well is to be located and the well owner sign a written agreement that identifies which party will be responsible for obtaining maintenance permits and for sealing the monitoring well. If the property owner refuses to sign the agreement, the well owner may, in lieu of a written agreement, state in writing that the well owner will be responsible for obtaining maintenance permits and sealing the well."

☐ Well owner and property owner same. ☑ Signed agreement exists. ☐ Statement enclosed.

NOV 1991 RECEIVED WELL MGT.

I certify that all the information provided in this application is true and complete. I understand that misstatement of facts may result in forfeiture of all rights to licensure/registration as a well contractor/monitoring well contractor in accordance with Minnesota Statutes, Chapter 103I.

Donovan K. Stormoe
Licensed or Registered Contractor Signature

Kenneth M. Haberman
Property Owner Signature (or agent)

Penalties: Failure to obtain a permit prior to well construction is a violation of Minnesota Statutes, Chapter 103I, and will result in the assessment of a $250 fine.

All variance requests must be accompanied by a permit application.

F:\FOBLET\WORD\MOWEAPP.HWA 04/05/91

Please FAX to 659-1379 Attn: Don Stormoe

MONITORING WELL PERMIT
MINNESOTA DEPARTMENT OF HEALTH
WELL MANAGEMENT UNIT

Pursuant to Minnesota Statutes, Chapter 103I, and on the basis of statements and information contained in the permit application and supporting materials, permission is hereby granted, to the contractor who signed the application to construct groundwater monitoring wells located on property described, as approved by the MINNESOTA DEPARTMENT OF HEALTH on the MONITORING WELL PERMIT APPLICATION.

GENERAL PROVISIONS

1. This permit shall not release the permittee from any liability or obligation imposed by State law or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.

2. No changes shall be made in construction materials, construction procedures, or well location specified in the permit application and other submitted documents without prior approval of the Commissioner of Health.

3. The permittee shall allow inspection by the Minnesota Department of Health.

4. No liability shall be imposed upon or incurred by the State of Minnesota or any of its officers, agents, or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person against the permittee, its agents, employees, or contractors for violation of, or failure to comply with the provisions of the permit or applicable provisions of the law.

5. Wells shall be constructed, maintained and sealed in accordance with the requirements of the Minnesota Water Well Construction Code.

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-1 (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: ____ MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	Fill, mostly silty sand, layer of bituminous at .5', brown	FILL	33	M	SS	10					
2											
3	Poorly graded sand, mostly medium grained, medium dense, brown (SP)	COARSE ALLUVIUM	22	M	SS	13					
4											
5			22	M	SS	10					
6											
7											
8	Poorly graded sand with gravel, mostly medium grained, medium dense, brown (SP)		12	M	SS	15					
9											
10			6	M/W	SS	16					
11	Poorly graded sand with gravel, mostly medium grained, loose, brown (SP)										
12											
13			5	W	SS	15					
14	END OF BORING *Note: Boring backfilled to surface with neat cement/bentonite grout.										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-12'	3.25" HSA	11/13/91	11:24	14.0	12.0	12.0		11.6
BORING COMPLETED: 11/13/91								
CC: CB CA: SV Rig: 5								

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-2 (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
	Fill, mostly sandy lean clay, black (CL)	FILL	16	M	SS	16					
1											
2	Poorly graded sand with gravel, mostly medium grained, medium dense, brown (SP)		17	M	SS	14					
3											
4											
5	Poorly graded sand, mostly medium grained, medium dense, brown (SP)		10	M	SS	11					
6											
7	Poorly graded sand with silt, medium to coarse grained, loose, dark brown (SP-SM)	COARSE ALLUVIUM	5	M	SS	13					
8											
9											
10	Poorly graded sand with clay, mostly medium grained, loose, brown (SP-SC)		9	W	SS	12					
11											
12	Poorly graded sand, mostly medium grained, loose, brown (SP)		6	W	SS	16					
13											
14	END OF BORING Note: Boring backfilled to surface with neat cement/bentonite grout.										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-12'	3.25" HSA	11/13/91	2:33	11.5	9.5	10.7		10.5
		11/13/91	2:45	14.0	12.0	11.5		10.5
BORING COMPLETED:	11/13/91							
CC: CB	CA: SV Rig: 5							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-3 (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
	3" of bituminous over 3" base	FILL									
1			24	M	SS	12					
2	Poorly graded sand, fine to medium grained, medium dense, brown (SP)										
3			24	M	SS	14					
4											
5	Poorly graded sand with gravel, mostly medium grained, medium dense (SP)		23	M	SS	15					
6											
7		COARSE ALLUVIUM									
8	Poorly graded sand, mostly medium grained, loose, brown (SP)		9	M	SS	15					
9											
10			11	M	SS	15					
11	Poorly graded sand, mostly medium grained, medium dense, dark brown (SP)										
12											
13			4	W	SS	13					
14	END OF BORING										
	Note: Boring backfilled to surface with neat cement/bentonite grout.										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-12'	3.25" HSA	11/13/91	9:47	14.0	12.0	12.0		11.8
BORING COMPLETED:	11/13/91							
CC: CB	CA: SV Rig: 5							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-4 (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	Fill, mostly lean clay, gray and brown	FILL	8	M	SS	8					
2–7	Poorly graded sand, mostly medium grained, medium dense, brown (SP)	COARSE ALLUVIUM	24	M	SS	10					
5–6			21	M	SS	14					
7–9	Poorly graded sand, mostly medium grained, medium dense, light brown (SP)		13	M	SS	14					
10–11	Poorly graded sand with gravel, mostly medium grained, loose, brown (SP)		5	M	SS	15					
12–17	Samples taken by client		15	W	SS	4					
15			8	W	SS	3					
17			9	W	SS	6					
	END OF BORING Note: Boring backfilled to surface with neat cement/bentonite grout.										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
0-15.5'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
		11/12/91	2:15	14.0	12.0	12.5		12.2
		11/12/91	2:51	17.5	15.5	13.9		12.4
BORING COMPLETED: 11/12/91								
CC: CB CA: SV Rig: 5								

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-5 (p. 1 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1–2	Fill, mostly clayey sand with gravel, dark brown	FILL	5	M	SS	12					
3–5	Poorly graded sand with gravel, mostly medium grained, medium dense, brown (SP)	COARSE ALLUVIUM	36	M	SS	15					
			14	M	SS	16					
6–9	Poorly graded sand, fine to medium grained, medium dense, light brown (SP)		19	M	SS	18					
10–11	Poorly graded sand with gravel, mostly medium grained, medium dense, light brown (SP)		29	M	SS	18					
12–13	Poorly graded sand with silt, medium to coarse grained, loose, dark brown (SP-SM)		5	W	SS	18					
14–16	Poorly graded sand, fine to medium grained, medium dense, brown (SP)		21	W	SS	20					
17–21	Poorly graded sand with gravel, mostly medium grained, medium dense, brown (SP)		27	W	SS	10					
			26	W	SS	13					

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-34'	3.25" HSA	11/14/91	10:15	14.0	12.0	13.5		13.4
		11/14/91	12:50	36.0	34.0	33.9		13.5
BORING COMPLETED:	11/14/91							
CC: CB	CA: SV Rig: 5							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-5 (p. 2 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
23	Poorly graded sand, mostly medium grained, dense, brown (SP)	COARSE ALLUVIUM	31	W	SS	10					
24											
25			19	W	SS	17					
26	Poorly graded sand with gravel, medium to coarse grained, medium dense, brown (SP)										
27											
28	Poorly graded sand, fine to medium grained, dense to medium dense, lenses of sandy silt, brown (SP)		36	W	SS	16					
29											
30			21	W	SS	18					
31											
32											
33	Silty sand, fine to medium grained, medium dense, brown (SM)		15	W	SS	10					
34											
35	Poorly graded sand, fine to medium grained, medium dense, lenses of sandy silt, brown (SP)		11	W	SS	12					
36	END OF BORING										

Note: Boring backfilled to surface with neat cement/bentonite grout.

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-7 (p. 1 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1, 2	Fill, 4" bituminous over mostly lean clay, black and brown	FILL	8	M	SS	11					
3, 4	Poorly graded sand, mostly medium grained, loose, lenses of lean clay, brown (SP)	COARSE ALLUVIUM	9	M	SS	12					
5, 6, 7, 8, 9	Poorly graded sand with gravel, mostly medium grained, dense, brown (SP)		30	M	SS	13					
			31	M	SS	6					
10	Poorly graded sand, mostly medium grained, loose, light brown (SP)		2	M	SS	16					
11, 12	Poorly graded sand with silt and gravel, medium to coarse grained, loose, reddish brown (SP-SM)										
13, 14	Poorly graded sand, mostly medium grained, loose, brown (SP)		6	W	SS	10					
15, 16, 17, 18, 19	Poorly graded sand, medium to coarse grained, very loose, gray (SP)		2	W	SS						
			4	W	SS	4					
20, 21	Poorly graded sand with gravel, mostly medium grained, loose, gray (SP)		6	W	SS	12					

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
0-34.5'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
		11/15/91	8:15	14.0	12.0	12.5		12.4
		11/15/91	10:06	36.5	34.5	34.3		15.7
BORING COMPLETED: 11/15/91								
CC: CB CA: SV Rig: 5								

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-7 (p. 2 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
23–24	Poorly graded sand with gravel, mostly medium grained, medium dense, brown (SP)	COARSE ALLUVIUM	14	M	SS	12					
25–26	Sandy lean clay, very stiff, brown (CL)	TILL	24	M	SS	15					
27–29	Clayey sand, fine grained, very dense, brown (SC)	TILL	82	M	SS	18					
30–31	Silty sand with gravel, mostly fine grained, medium dense, brown (SM)	TILL	24	W	SS	22					
32–33	Silty sand with gravel, mostly fine grained, very loose, grayish brown (SM)	TILL	4	W	SS	22					
34–36		TILL	4	W	SS	22					
	END OF BORING										

Note: Boring backfilled to surface with neat cement/bentonite grout.

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-8 (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	Fill, 4" bituminous over mostly poorly graded sand with silt, brown	FILL	13	M	SS	12					
2											
3			21	M	SS	18					
4	Fill, mostly poorly graded sand with gravel, some wood, brown										
5			9	M	SS	13					
6											
7											
8			2	M	SS	13					
9											
10	Peat, sapric, black (PT)	SWAMP DEPOSITS	7	M	SS	12					
11											
12	Poorly graded sand with gravel, mostly medium grained, medium dense, brown (SP)	COARSE ALLUVIUM	11	W	SS	5					
13											
14	END OF BORING Note: Boring backfilled to surface with neat cement/bentonite grout.										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-12'	3.25" HSA	11/15/91	1:41	14.0	12.0	12.2		11.8
BORING COMPLETED:	11/15/91							
CC: CB	CA: SV Rig: 5							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

4/90

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-9 (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	Fill, 5" bituminous over 4" base over mostly organic soil with sand, dark brown and black	FILL	11	M	SS	12					
2											
3	Fill, mostly sandy lean clay, brown		14	M	SS	12					
4											
5	Poorly graded sand, fine to medium grained, very loose, brown (SP)		4	M	SS	14					
6											
7											
8	Poorly graded sand, mostly medium grained, loose, dark brown (SP)		7	M	SS	10					
9											
10	Poorly graded sand with gravel, mostly medium grained, loose, dark brown (SP)		10	M	SS	12					
11											
12											
13	Poorly graded sand with silt, mostly medium grained, loose, brown (SP-SM)		8	W	SS	12					
14	END OF BORING										

Note: Boring backfilled to surface with neat cement/bentonite grout.

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
0-12'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
		11/15/91	12:51	14.0	12.0	13.2		13.1
BORING COMPLETED:	11/15/91							
CC: CB	CA: SV Rig: 5							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

4/90

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. SB-10 (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	No samples taken until 2'										
2											
3	Poorly graded sand with gravel, mostly medium grained, very dense, brown (SP)	COARSE ALLUVIUM	55	M	SS	12					
4											
5	Poorly graded sand, mostly medium grained, medium dense, brown (SP)		25	M	SS	10					
6											
7	Poorly graded sand, mostly medium grained, medium dense, light brown (SP)		12	M	SS	15					
8											
9											
10	Poorly graded sand with gravel, medium to coarse grained, medium dense, brown (SP)		19	M	SS	10					
11											
12			9	M	SS	12					
13	END OF BORING										

Note: Boring backfilled to surface with neat cement/bentonite grout.

DEPTH:	DRILLING METHOD
0-11.5'	3.25" HSA

WATER LEVEL MEASUREMENTS						
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
11/14/91	3:30	13.0	14.5	14.4		14.0

BORING COMPLETED: 11/14/91

CC: DA CA: EG Rig: 7

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW2SL (p. 1 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1–2	Fill, 5" bituminous over mostly sandy lean clay, brown	FILL									
3–8	Poorly graded sand, mostly medium grained, medium dense, brown (SP)	COARSE ALLUVIUM	20	M	SS	15					
8–18	Poorly graded sand with gravel, mostly medium grained, loose, brown (SP)	COARSE ALLUVIUM	9	M	SS	13					
			6	W	SS	10					
18–21	Poorly graded sand with gravel, mostly medium grained, loose, dark gray (SP)	COARSE ALLUVIUM	10	W	SS	11					

DEPTH:	DRILLING METHOD
0-44.5'	4.25" HSA

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
11/20/91	12:33	17.0	15.0	14.0		12.8

BORING COMPLETED: 11/20/91

CC: GN CA: JO Rig: 22

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW2SL (p. 2 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
23	Poorly graded sand with gravel, mostly medium grained, medium dense, dark gray (SP)		19	W	SS	15					
24											
25			21	W	SS	8					
26											
27											
28	Poorly graded sand, mostly medium grained, loose, gray (SP)		6	W	SS	13					
29											
30	Sandy lean clay, medium stiff to stiff, gray (CL)		5	W	SS	18					
31											
32			9	W	SS	0					
33											
34											
35	Clayey sand, mostly medium grained, very loose, gray (SC)	TILL	3	W	SS	22					
36											
37			4	W	SS	22					
38											
39											
40			2	W	SS	22					
41											
42											
43	Clayey sand, mostly medium grained, medium dense, gray (SC)		18	W	SS	22					
44											
	END OF BORING Note: Monitoring well installed in boring to depth of 44.5'. See attached Water Well Record.										

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. *for Water Sample*: 497644

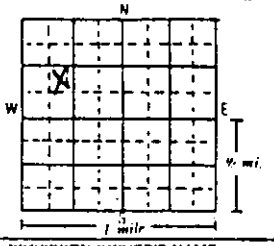
1. LOCATION OF WELL

County Name: HENNEPIN

Township Name	Township Number	Range Number	Section No.	Fraction
St. Louis Park	117 (N)	21 (E)	20	NE¼SW¼NW¼

Numerical Street Address and City of Well Location or Distance from Road Intersection: 3938 Meadowbrook Rd

Show exact location of well in section grid with "X."

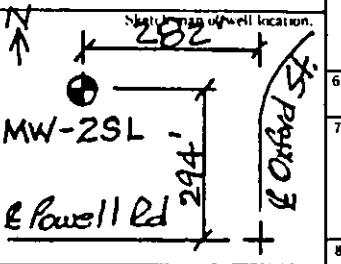


Addition Name

Block Number

Lot Number

Sketch map of well location.



2. PROPERTY OWNER'S NAME: Ruth Schoff

Mailing Address if different than property address indicated above: 3938 Meadowbrook Rd, St. Louis Park, MN

3. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Fill, Mostly Sandy	Brown	Med	0'	2½'
Lean Clay				
Sand, Medium	Brown	Med	2½'	18'
Grained w/ Gravel				
Sand Medium	Gray	Med Dense	18'	29½'
Grained ~~[illegible]~~				
Sandy Lean Clay	Gray	Med Stiff	29½'	34½'
Clayey Sand	Gray	Very Loose	34½'	44½'

Use a second sheet, if needed

4. WELL DEPTH (completed): 44.5' ft.

Date of Completion: 11/20/91

5. DRILLING METHOD

☐ Cable Tool ☐ Reverse ☐ Driven ☐ Dug
☒ Hollow Rod ☐ Air ☐ Bored ☐ _____
☐ Rotary ☐ Jetted ☐ Power Auger

6. DRILLING FLUID: None Used

7. USE

☐ Domestic ☒ Monitoring ☐ Heat Pump
☐ Irrigation ☐ Public ☐ Industry
☐ Test Well ☐ Municipal ☐ Commercial
☐ Air Conditioning ☐ _____

8. CASING

☒ Black ☒ Threaded
☐ Galv. ☐ Welded
☐ Plastic ☐

HEIGHT (Above) Below Surface 2.0 ft.

Drive Shoe? Yes ___ No ___

2 in. to 42.5 ft. Weight _____ lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.

HOLE DIAM.: 8¼ in. to 44.5 ft.
___ in. to ___ ft.
___ in. to ___ ft.

9. SCREEN

Make: Johnson

Type: Stainless Steel Diam. 2"

Slot/Gauze: #10 Slot Length: 5'

Set between 39.5 ft. and 44.5 ft.

Or open hole from _____ ft. to _____ ft.

FITTINGS:

10. STATIC WATER LEVEL

12.3 ft. ☒ below ☒ above land surface Date Measured 11/20/91

11. PUMPING LEVEL (below land surface) N/A

44.5 ft. after .25 hrs. pumping 5.0 g.p.m.
44.5 ft. after .25 hrs. pumping 5.0 g.p.m.

12. HEAD WELL COMPLETION

☐ Pitless adapter manufacturer _____ Model _____
☐ Basement offset ☒ At least 12" above ground
☐ Plastic casing protection _____

13. WELL GROUTED? ☒ Yes ☐ No

☒ Neat Cement ☐ Bentonite ☒ Concrete

Grout material: Neat Cement from 2 to 37.5 ft. cu. yds. _____
Concrete 0 2

14. NEAREST SOURCES OF POSSIBLE CONTAMINATION Unknown

_____ feet _____ direction _____ type

Well disinfected upon completion? ☐ Yes ☒ No

15. PUMP N/A

Date installed _____ ☒ Not installed

Manufacturer's name _____

Model number _____ HP _____ Volts _____

Length of drop pipe _____ ft. Capacity _____ g.p.m.

Material of drop pipe _____

Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating
☐ Jet ☐ Centrifugal ☐ _____

16. ABANDONED WELLS

Unused well on property? ☐ Yes ☒ No Unknown

Sealed ☐ Permanent ☐ Temporary ☐ Not sealed

17. REMARKS, ELEVATION, SOURCE OF DATA, etc.

AET 91-1378

MW-~~2SL~~ 2SL

18. WATER WELL CONTRACTOR CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

American Engineering Testing (Licensee Business Name) M0024 (License No.)

Address: 2102 University Ave W

Signed: Donovan K. Stormoe (Authorized Representative) Date 1/15/92

George Nichols (Name of Driller) Date 11/20/91

IMPORTANT: FILE WITH DELD – WELL OWNER COPY

497644

5/74 30M
7/76 30M
7/78 30M

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW7SL (p. 1 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
	Fill, mostly lean clay, slightly organic, black	FILL	12	M	SS	16					
1											
2	Fill, mostly sandy lean clay, dark brown to black										
3											
4											
5			4	M	SS	8					
6	Fill, mostly clayey sand with gravel, dark brown										
7											
8											
9		COARSE ALLUVIUM									
10			4	W	SS	12					
11	Poorly graded sand with gravel, mostly medium grained, very loose, dark brown (SP)										
12											
13											
14											
15			1	W	SS	12					
16	Poorly graded sand, mostly medium grained, very loose, brown (SP)										
17											
18											
19											
20			WH	W	SS	8					
21											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-20'	4.25" HSA							
20-43'	ADDED WATER	11/19/91	10:06	17.0	15.0	15.0		13.6
	IN AUGER							
BORING COMPLETED:	11/19/91							
CC: JO	CA: KS Rig: 3							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW7SL (p. 2 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
23	poorly graded sand, mostly medium, very loose, brown (SP)		2	W	SS	10					
24											
25			4	W	SS	7					
26											
27											
28	Poorly graded sand with gravel, medium to coarse grained, very loose to loose, gray (SP)										
29											
30			8	W	SS	7					
31											
32											
33			16	W	SS	10					
34	Silty sand with gravel, mostly medium grained, medium dense, brown (SM)										
35			8	W	SS	10					
36											
37											
38	Poorly graded sand with silt and gravel, mostly medium grained, loose, brownish gray (SP-SM)		14	W	SS	11					
39											
40			9	W	SS	17					
41											
42											
43	Sandy lean clay with gravel, medium stiff, brownish gray (CL)	TILL	7	W	SS	17					
44											
	END OF BORING Note: Monitoring well installed in boring to depth of 43.0'. See attached Water Well Record.										

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Sample 497645

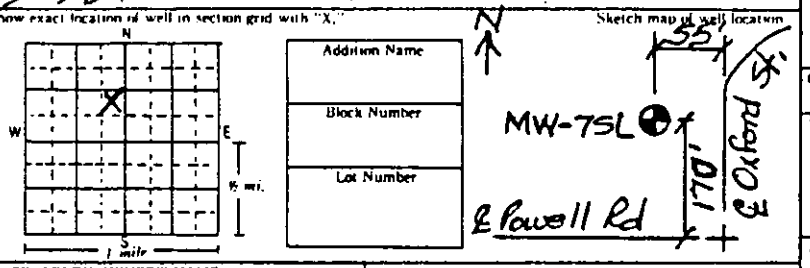
1. LOCATION OF WELL

County Name: HENNIPEN

Township Name	Township Number	Range Number	Section No.	Fraction
ST LOUIS PARK	117 N/S	21 E/W	20	NE ¼ SW ¼ NW ¼

Numerical Street Address and City of Well Location or Distance from Road Intersection: 3938 MEADOWBROOK ROAD

Show exact location of well in section grid with "X." Sketch map of well location.



2. PROPERTY OWNER'S NAME

RUTH SCHOFF
3938 MEADOWBROOK RD
ST. LOUIS PK MN 55426

Mailing Address if different than property address indicated above: SAME

3. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
SOIL - FILL	BROWN	MED	0	8½
SAND W/ GRAVEL	BROWN	SOFT	8½	42
SANDY CLAY - GRAVEL	GRAY	MED	42	44½

Use a second sheet, if needed

4. WELL DEPTH (completed) 43.0 ft. **Date of Completion** 11-19-91

5. DRILLING METHOD
☐ Cable Tool ☐ Reverse ☐ Driven ☐ Dug
☐ Hollow Rod ☐ Air ☒ Bored ☐ ____
☐ Rotary ☐ Jetted ☐ Power Auger

6. DRILLING FLUID NONE

7. USE
☐ Domestic ☒ Monitoring ☐ Heat Pump
☐ Irrigation ☐ Public ☐ Industry
☐ Test Well ☐ Municipal ☐ Commercial
☐ Air Conditioning ☐ ____

8. CASING
☒ Black ☐ Threaded
☐ Galv. ☐ Welded
☐ Plastic ☐
HEIGHT Above/Below Surface 2.0 ft.
Drive Shoe? Yes ___ No X
2.0 in. to 38 ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
HOLE DIAM. 8¼ in. to 43 ft.

9. SCREEN
Make JOHNSON
Type STAINLESS STEEL Diam. 2"
Slot/Gauze 10 SLOT Length 5.0
Set between 43.0 ft. and 38.0 ft.
Or open hole from ___ ft. to ___ ft.
FITTINGS:

10. STATIC WATER LEVEL 13.6 ft. ☒ below ☐ above land surface Date Measured 11-19-91

11. PUMPING LEVEL (below land surface)
43 ft. after .5 hrs. pumping 5.0 g.p.m.
43 ft. after .5 hrs. pumping 5.0 g.p.m.

12. HEAD WELL COMPLETION
☐ Pitless adapter manufacturer ___ Model ___
☐ Basement, offset ☒ At least 12" above ground
☐ Plastic casing protection ___

13. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite X Concrete
Grout material Neat Cement from 38.0 to 2.0 ft. cu. yds. ___
Concrete 0 2.0 ___

14. NEAREST SOURCES OF POSSIBLE CONTAMINATION
___ feet ___ direction UNKNOWN type
Well disinfected upon completion? ☐ Yes X No

15. PUMP
Date installed NONE X Not installed
Manufacturer's name ___
Model number ___ HP ___ Volts ___
Length of drop pipe ___ ft. Capacity ___ g.p.m.
Material of drop pipe ___
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating
☐ Jet ☐ Centrifugal ☐ ____

16. ABANDONED WELLS
Unused well on property? ☐ Yes ☒ No Unknown
Sealed ☐ Permanent ☐ Temporary ☐ Not sealed

17. REMARKS, ELEVATION, SOURCE OF DATA, etc.

AET # 91-1328
MW-7SL

18. WATER WELL CONTRACTOR CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

AMERICAN ENGINEERING TESTING INC M0024
Licensee Business Name *License No.*
Address 2102 UNIVERSITY AVE W ST PAUL
Signed Andrew K. Steiner *Authorized Representative* Date 1/15/92
JOE FIELD *Name of Driller* Date 11-19-91

IMPORTANT: FILE WITH DEED — WELL OWNER COPY 497645

5/74 30M
7/76 30M
7/78 30M

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW8S (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

SURFACE ELEVATION:

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	Fill, mixture of poorly graded sand and sandy lean clay, black to dark brown	FILL	5	M	SS	10					
2											
3			11	M	SS	8					
4											
5	Poorly graded sand with gravel, mostly medium grained, loose, brown (SP)	COARSE ALLUVIUM	9	M	SS	11					
6											
7			5	M	SS	11					
8											
9											
10			6	M	SS	6					
11											
12	Poorly graded sand with silt, mostly medium grained, very loose, brown (SP-SM)		4	W	SS	7					
13											
14											
15	Poorly graded sand, mostly medium grained, very loose, gray (SP)		4	W	SS	10					
16											
17											
18			6	W	SS	12					
19											
20	Poorly graded sand with gravel, mostly medium grained, loose, gray (SP)		9	W	SS	15					
21											
	END OF BORING										

Note: Monitoring well installed in boring to depth of 20.0'. See attached Water Well Record.

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-20'	4.25" HSA	11/20/91	1:10	21.5	19.5	19.3		11.6
BORING COMPLETED:	11/20/91							
CC: JF	CA: KS Rig: 3							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

4/90

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-08

MINNESOTA UNIQUE WELL NO. for Water Sample 497641

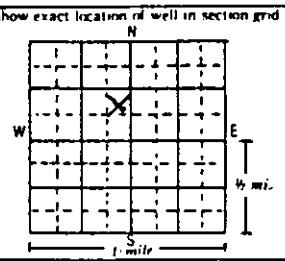
1. LOCATION OF WELL

County Name: HENNEPIN

Township Name	Township Number	Range Number	Section No.	Fraction
ST. LOUIS PARK	117	21	20	NE ¼ SW ¼ NW

Numerical Street Address and City of Well Location or Distance from Road Intersection: 3938 MEADOWBROOK RD.

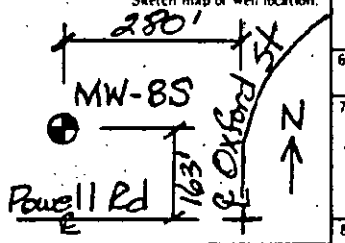
Show exact location of well in section grid with "X." Sketch map of well location.



Addition Name

Block Number

Lot Number



2. PROPERTY OWNER'S NAME

RUTH SCHOFF
3938 MEADOWBROOK RD.
ST LOUIS PARK, MN. 55426

Mailing Address if different than property address indicated above.

3. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
SOIL	BLK-BRN	MED	0	4
SAND WITH GRAVEL	BROWN	LOOSE	4.0	21.0

Use a second sheet, if needed

4. WELL DEPTH (completed) 20.0 ft. Date of Completion 11-20-91

5. DRILLING METHOD

☐ Cable Tool ☐ Reverse ☐ Driven ☐ Dug
☐ Hollow Rod ☐ Air ☒ Bored ☐ _____
☐ Rotary ☐ Jetted ☐ Power Auger

6. DRILLING FLUID NONE

7. USE

☐ Domestic ☒ Monitoring ☐ Heat Pump
☐ Irrigation ☐ Public ☐ Industry
☐ Test Well ☐ Municipal ☐ Commercial
☐ Air Conditioning ☐ _____

8. CASING

☒ Black ☐ Threaded
☐ Galv. ☐ Welded
☐ Plastic ☐

HEIGHT: Above/Below Surface 2.0 ft.
Drive Shoe? Yes ___ No X

2.0 in. to 8.0 ft. Weight _____ lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.

HOLE DIAM. 8¼ in. to 20.0 ft.
___ in. to ___ ft.
___ in. to ___ ft.

9. SCREEN Or open hole from _____ ft. to _____ ft.

Make JOHNSON
Type STAINLESS STEEL Diam. 2.0"
Slot/Gauze 10 SLOT Length 10.0'
FITTINGS:
Set between 20.0 ft. and 10.0 ft.

10. STATIC WATER LEVEL 11.6 ft. ☒ below ☐ above land surface Date Measured 11-20-91

11. PUMPING LEVEL (below land surface)

18.2 ft. after 0.5 hrs. pumping 3.0 g.p.m.
_____ ft. after _____ hrs. pumping _____ g.p.m.

12. HEAD WELL COMPLETION

☐ Pitless adapter manufacturer _____ Model _____
☐ Basement, offset ☒ At least 12" above ground
☐ Plastic casing protection _____

13. WELL GROUTED? ☒ Yes ☐ No

☒ Neat Cement ☐ Bentonite X Concrete

Grout material NEAT CEMENT from 8.0 to 2.0 ft. cu. yds. _____
CONCRETE 2.0 0

14. NEAREST SOURCES OF POSSIBLE CONTAMINATION

_____ feet _____ direction UNKNOWN type

Well disinfected upon completion? ☐ Yes ☒ No

15. PUMP

Date installed NONE ☒ Not installed
Manufacturer's name _____
Model number _____ HP _____ Volts _____
Length of drop pipe _____ ft. Capacity _____ g.p.m.
Material of drop pipe _____
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating
☐ Jet ☐ Centrifugal ☐ _____

16. ABANDONED WELLS

Unused well on property? ☐ Yes ☒ Unknown
Sealed ☐ Permanent ☐ Temporary ☐ Not sealed

17. REMARKS, ELEVATION, SOURCE OF DATA, etc.

AET #91-1328
Monitor Well MW8S

18. WATER WELL CONTRACTOR CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

AMERICAN ENGINEERING TESTING INC M0024
Licensee Business Name *License No.*

Address 2103 UNIVERSITY AVE W. ST PAUL

Signed [signature] Date 1/15/92
Authorized Representative

JOE FIELD Date 11-20-91
Name of Driller

IMPORTANT: FILE WITH DEED - WELL OWNER COPY 497641

5/74 30M
7/76 30M

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW9S (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

SURFACE ELEVATION:

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	Fill, mostly sandy lean clay, dark brown to black	FILL	6	M	SS	15					
2			6	M	SS	8					
3	Clayey sand, mostly medium grained, loose, slightly organic, black, possible fill (SC)	TOPSOIL/ FILL									
4											
5	Poorly graded sand with gravel, mostly medium grained, loose to very loose, laminations of sandy lean clay, brown (SP)	COARSE ALLUVIUM	9	M	SS	15					
6											
7			4	W	SS	11					
8											
9	Clayey sand with gravel, mostly medium grained, very loose, black (SC)										
10	Silt with sand, very loose, lenses of dark brown silty sand, gray (ML)	FINE ALLUVIUM	WH	W	SS	16					
11											
12	Poorly graded sand, mostly medium grained, very loose, lenses of gray sandy lean clay, brown (SP)	COARSE ALLUVIUM	5	W	SS	15					
13											
14	Poorly graded sand with gravel, medium to coarse grained, very dense, brown (SP)										
15			56/9	W	SS	18					
16											
17			-	W	SS	0					
18											
19											
20			-	W	SS	15					
21											
	END OF BORING										

Note: Monitoring well installed in boring to depth of 20.0'. See attached Water Well Record.

DEPTH:	DRILLING METHOD
0-19.5'	4.25" HSA

WATER LEVEL MEASUREMENTS						
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL

BORING COMPLETED: 11/22/91

CC: JF CA: KS Rig: 3

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Sample: 497642

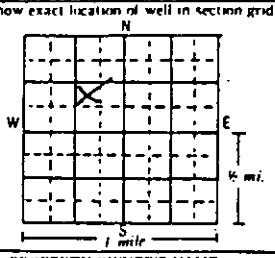
1. LOCATION OF WELL

County Name: HENNEPIN

Township Name	Township Number	Range Number	Section No.	Fraction
ST LOUIS PARK	117 N/S	21 E/W	20	NW ¼ SE ¼ NW ¼

Numerical Street Address and City of Well Location or Distance from Road Intersection: 3938 MEADOWBROOK ROAD

Show exact location of well in section grid with "X."

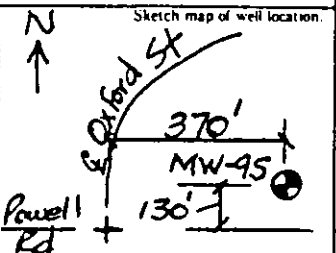


Addition Name

Block Number

Lot Number

Sketch map of well location.



2. PROPERTY OWNER'S NAME

RUTH SCHOFF
3938 MEADOW BROOK RD
ST LOUIS PK MN 55426

Mailing Address if different than property address indicated above.

3. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
SOIL DK. BRN		MED	0	3.0
SOIL	BLACK	LOOSE	3.0	4.0
SAND W/ GRAVEL	BROWN	MED	4.0	9.5
SILTY SAND	GRAY	SOFT	9.5	11.5
SAND W/ GRAVEL	BROWN	MED	11.5	21.5

Use a second sheet, if needed

4. WELL DEPTH (completed) 20.0 ft. **Date of Completion** 11-21-91

5. DRILLING METHOD
☐ Cable Tool ☐ Reverse ☐ Driven ☐ Dug
☐ Hollow Rod ☐ Air ☒ Bored ☐ ____
☐ Rotary ☐ Jetted ☐ Power Auger

6. DRILLING FLUID NONE

7. USE
☐ Domestic ☒ Monitoring ☐ Heat Pump
☐ Irrigation ☐ Public ☐ Industry
☐ Test Well ☐ Municipal ☐ Commercial
☐ Air Conditioning ☐ ____

8. CASING
☒ Black ☐ Threaded
☐ Galv. ☐ Welded
☐ Plastic ☐
2.0 in. to 4.5 ft. Weight ____ lbs./ft.
____ in. to ____ ft. Weight ____ lbs./ft.
____ in. to ____ ft. Weight ____ lbs./ft.
HEIGHT: Above/Below Surface 2.0 ft.
Drive Shoe? Yes ____ No ____
HOLE DIAM.
8 in. to 21.5 ft.

9. SCREEN
Make JOHNSON
Type STAINLESS STEEL Diam. 2.0"
Slot/Gauze 10 SLOT Length 10.0'
Set between 10.0 ft. and 20.0 ft.
Or open hole from ____ ft. to ____ ft.
FITTINGS:

10. STATIC WATER LEVEL 9.4 ft. ☒ below ☐ above land surface Date Measured 11-22-91

11. PUMPING LEVEL (below land surface) 9.37 ft. after 0.5 hrs. pumping 5.0 g.p.m.
____ ft. after ____ hrs. pumping ____ g.p.m.

12. HEAD WELL COMPLETION
☐ Pitless adapter manufacturer ____ Model ____
☐ Basement, offset ☒ At least 12" above ground
☐ Plastic casing protection ____

13. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Concrete
Grout material NEAT CEMENT from 2.0 to 8.0 ft. cu. yds. ____
CONCRETE 0 2.0

14. NEAREST SOURCES OF POSSIBLE CONTAMINATION
____ feet ____ direction UNKNOWN type
Well disinfected upon completion? ☐ Yes ☒ No

15. PUMP
Date installed NONE ☒ Not installed
Manufacturer's name ____
Model number ____ HP ____ Volts ____
Length of drop pipe ____ ft. Capacity ____ g.p.m.
Material of drop pipe ____
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating
☐ Jet ☐ Centrifugal ☐ ____

16. ABANDONED WELLS
Unused well on property? ☐ Yes ☒ Unknown
Sealed ☐ Permanent ☐ Temporary ☐ Not sealed

17. REMARKS, ELEVATION, SOURCE OF DATA, etc.

AET # 91-1328
Monitor Well MW95

18. WATER WELL CONTRACTOR CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

AMERICAN ENGINEERING TESTING INC M0024
License Business Name License No.

Address 2107 UNIVERSITY AVE W, ST PAUL

Signed [signature] Date 11/15/93
Authorized Representative

JOE FIELD Date 11-21-91
Name of Driller

IMPORTANT: FILE WITH DEED — WELL OWNER COPY

497642

HE-01205-03 (Rev. 9/88)

5/74 30M
7/76 30M
7/78 30M

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW10S (p. 1 of 1)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	SURFACE ELEVATION: MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1											
2											
3											
4											
5											
6	No Samples Taken										
7											
8											
9											
10											
11											
12											
13											
14											
15	END OF BORING Note: Monitoring well installed in boring to depth of 15.0'. See attached Water Well Record.										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-15'	4.25" HSA							
BORING COMPLETED: 11/20/91								
CC: GN CA: AT Rig: 22								

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Sample: 497643

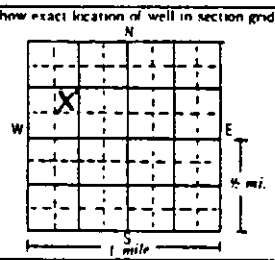
1. LOCATION OF WELL

County Name: HENNEPIN

Township Name: ST. LOUIS PARK | Township Number: 117 (N/S) | Range Number: 21 (E/W) | Section No.: 20 | Fraction: NE ¼ SW ¼ NW ¼

Numerical Street Address and City of Well Location or Distance from Road Intersection: 3938 MEADOWBROOK RD

Show exact location of well in section grid with "X."

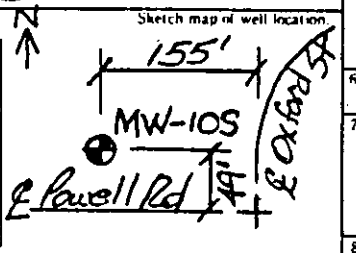


Addition Name

Block Number

Lot Number

Sketch map of well location.



2. PROPERTY OWNER'S NAME: RUTH SCHOFF

Mailing Address if different than property address indicated above: 3938 MEADOWBROOK RD, ST. LOUIS PARK, MN

3. FORMATION LOG

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
LEAN CLAY	BLACK	MED	0'	1½'
SAND, W/ GRAVEL	BROWN	MED	1½'	15'

Use a second sheet, if needed

4. WELL DEPTH (completed): 15.0' ft. | Date of Completion: 11/20/91

5. DRILLING METHOD: ☐ Cable Tool ☐ Reverse ☐ Driven ☐ Dug ☒ Hollow Rod ☐ Air ☐ Bored ☐ ____ ☐ Rotary ☐ Jetted ☐ Power Auger

6. DRILLING FLUID: NONE USED

7. USE: ☐ Domestic ☒ Monitoring ☐ Heat Pump ☐ Irrigation ☐ Public ☐ Industry ☐ Test Well ☐ Municipal ☐ Commercial ☐ Air Conditioning ☐ ____

8. CASING: ☒ Black ☒ Threaded ☐ Galv. ☐ Welded ☐ Plastic ☐

HEIGHT (Above/below) Surface 2.0 ft. Drive Shoe? Yes ___ No ___

2 in. to 5 ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM.: 8¼ in. to 15 ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

9. SCREEN: Or open hole from ___ ft. to ___ ft.

Make JOHNSON

Type STAINLESS STEEL Diam. 2"

Slot/Gauze #10 SLOT Length 10'

Set between 5 ft. and 15 ft.

FITTINGS:

10. STATIC WATER LEVEL: NO MEASUREMENT TAKEN ___ ft. ☐ below ☐ above land surface. Date Measured ___

11. PUMPING LEVEL (below land surface): N/A

9.7 ft. after 0.5 hrs. pumping 5.0 g.p.m.

9.7 ft. after 0.5 hrs. pumping 5.0 g.p.m.

12. HEAD WELL COMPLETION: ☐ Pitless adapter manufacturer ___ Model ___ ☐ Basement offset ☒ At least 12" above ground ☐ Plastic casing protection ___

13. WELL GROUTED? ☒ Yes ☐ No

☒ Neat Cement ☐ Bentonite ☒ CONCRETE

Grout material: NEAT CEMENT from 2 to 3 ft. cu. yds.

CONCRETE 0 2

14. NEAREST SOURCES OF POSSIBLE CONTAMINATION: ___ feet ___ direction UNKNOWN type

Well disinfected upon completion? ☐ Yes ☒ No

15. PUMP: Date installed N/A ☒ Not installed

Manufacturer's name ___

Model number ___ HP ___ Volts ___

Length of drop pipe ___ ft. Capacity ___ g.p.m.

Material of drop pipe ___

Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ Centrifugal ☐ ___

16. ABANDONED WELLS: Unused well on property? ☐ Yes ☒ Unknown

Sealed ☐ Permanent ☐ Temporary ☐ Not sealed

17. REMARKS, ELEVATION, SOURCE OF DATA, etc.

AET 91-1378

MW-10S

18. WATER WELL CONTRACTOR CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

AMERICAN ENGINEERING TESTING (License Business Name) M0024 (License No.)

Address 2102 UNIVERSITY AVE W

Signed Monowan K. Stormoe (Authorized Representative) Date 1/15/92

GEORGE NICHOLS (Name of Driller) Date 11/20/91

IMPORTANT: FILE WITH DEED – WELL OWNER COPY

497643

5/74 30M
7/76 30M
7/78 30M

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328

LOG OF BORING NO. MW10SL (p. 1 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

SURFACE ELEVATION:

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
1	Sandy organic soil, black, possible fill (OL/OH)	TOPSOIL OR FILL	10	M	SS	12					
2–6	Poorly graded sand, mostly medium grained, loose to very loose, brown (SP)	COARSE ALLUVIUM	6	M	SS	10					
5–6			4	M	SS	11					
7–11	Poorly graded sand with gravel, mostly medium grained, very loose, brown (SP)		4	W	SS	6					
10–11			2	W	SS	10					
12–18	Poorly graded sand with gravel, mostly medium grained, loose to very loose, gray (SP)		6	W	SS	11					
15–18			4	W	SS	9					
18			17	W	SS	15					
18–19	Sandy lean clay, very stiff, brown (CL)	TILL									
20–21	Poorly graded sand with silt, mostly medium grained, loose, brown (SP-SM)	COARSE ALLUVIUM	9	W	SS	9					

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-37'	4.25" HSA	11/22/91	3:35	11.5	9.5	9.4		7.2
BORING COMPLETED:	11/22/91							
CC: JF	CA: KS Rig: 3							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET JOB NO: 91-1328 LOG OF BORING NO. MW10SL (p. 2 of 2)

PROJECT: SCHLOFF CHEMICAL COMPANY; ST. LOUIS PARK, MINNESOTA

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	BPF	MC	SAMPLE TYPE	REC. IN.	FIELD & LABORATORY TESTS WC	DEN	LL	PL	%-200
23	Lean clay with sand, brownish gray (CL)		15	W	SS	10					
24											
25			12	W	SS	7					
26											
27	Clayey sand with gravel, fine to medium grained, medium dense, dark brown (SC)	TILL									
28			12	W	SS	12					
29											
30			18	W	SS	2					
31											
32											
33											
34											
35			9	W	SS	16					
36											
37											
38			7	W	SS	15					
39	END OF BORING										

Note: Monitoring well installed in boring to depth of 37.0'. See attached Water Well Record.

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 156A 01-.08

MINNESOTA UNIQUE WELL NO. *for Water Sample* 497646

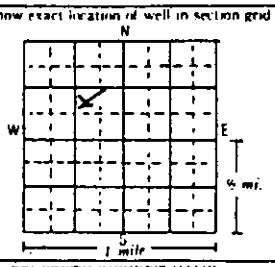
1. LOCATION OF WELL

County Name: HENNIPEN

Township Name	Township Number	Range Number	Section No.	Fraction
ST LOUIS PARK	117 N	21 E	20	NE¼ SW¼ NW¼

Numerical Street Address and City of Well Location or Distance from Road Intersection: 3938 MEADOWBROOK ROAD

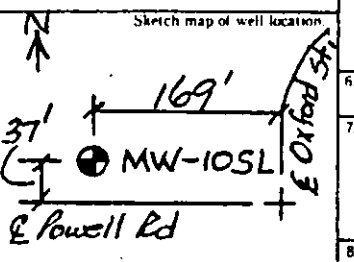
Show exact location of well in section grid with "X." Sketch map of well location.



Addition Name

Block Number

Lot Number



2. PROPERTY OWNER'S NAME
RUTH SCHOFF
3938 MEADOW BROOK RD
ST LOUIS PK, MN 55426

Mailing Address if different than property address indicated above.

3. FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
SOIL	BLACK	MED	0	1½
SAND W/GRAVEL	BROWN	MED	1½	18
SANDY LEAN CLAY	BROWN	HARD	18	19
SAND W SILT	BROWN	MED	19	22
LEAN CLAY	BROWN	MED	22	39

Use a second sheet, if needed

4. WELL DEPTH (completed): 37.0 ft. Date of Completion: 11-19-91

5. DRILLING METHOD: ☐ Cable Tool ☐ Reverse ☐ Driven ☐ Dug ☐ Hollow Rod ☐ Air ☒ Augered ☐ ____ ☐ Rotary ☐ Jetted ☐ Power Auger

6. DRILLING FLUID

7. USE: ☐ Domestic ☒ Monitoring ☐ Heat Pump ☐ Irrigation ☐ Public ☐ Industry ☐ Test Well ☐ Municipal ☐ Commercial ☐ Air Conditioning ☐ ____

8. CASING: ☒ Black ☐ Threaded ☐ Galv. ☐ Welded ☐ Plastic ☐

HEIGHT (Above/Below) Surface 2.0 ft. Drive Shoe? Yes ___ No ___

2" in. to 32.0 ft. Weight — lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM.: 8¼ in. to 37 ft.

9. SCREEN: Make JOHNSON; Type STAINLESS STEEL; Diam. 2"; Slot/Gauze 10 SLOT; Length 5.0; Set between 37 ft. and 32 ft.; FITTINGS:

Or open hole from ___ ft. to ___ ft.

10. STATIC WATER LEVEL: 7.2 ft. ☒ below ☐ above land surface; Date Measured 11-22-91

11. PUMPING LEVEL (below land surface): 37.0 ft. after 0.5 hrs. pumping 5.0 g.p.m.; ___ ft. after ___ hrs. pumping ___ g.p.m.

12. HEAD WELL COMPLETION: ☐ Pitless adapter manufacturer ___ Model ___; ☐ Basement, offset ☒ at least 12" above ground; ☐ Plastic casing protection ___

13. WELL GROUTED? ☐ Yes ☐ No

☒ Neat Cement ☐ Bentonite ☐ ___

Grout material NEAT CEMENT from 32 to 2 ft. cu. yds. ___
CONCRETE 2 0

14. NEAREST SOURCES OF POSSIBLE CONTAMINATION: ___ feet ___ direction UNKNOWN type

Well disinfected upon completion? ☐ Yes ☒ No

15. PUMP: Date installed NONE ☒ Not installed

Manufacturer's name ___

Model number ___ HP ___ Volts ___

Length of drop pipe ___ ft. Capacity ___ g.p.m.

Material of drop pipe ___

Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ Centrifugal ☐ ___

16. ABANDONED WELLS

Unused well on property? ☐ Yes ☒ Unknown

Sealed ☐ Permanent ☐ Temporary ☐ Not sealed

17. REMARKS, ELEVATION, SOURCE OF DATA, etc.

AET # 91-1328
Monitor Well MW 105L

18. WATER WELL CONTRACTOR CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

AMERICAN ENGINEERING TESTING — License Business Name; M0024 — License No.

Address 2100 UNIVERSITY AVE W ST PAUL

Signed [signature] — Authorized Representative; Date 1/15/92

JOE FIGED — Name of Driller; Date 11-22-91

IMPORTANT: FILE WITH DEED -- WELL OWNER COPY

497646

HF-01205-03 (Rev. 9/88)

5/74 30M
7/76 30M
7/78 30M

FIELD SAMPLING AND TESTING METHODS

Standard Penetration/Split-Spoon Sampling (ASTM:D1586). A steel split-barrel sampling tube is driven into the soil with a 140-pound hammer dropped from a height of 30" (the hammer is dropped onto a rod attached to the sampler). The number of hammer blows required to drive the sampler tube 12" into the ground (after an initial set of 6") is recorded as the standard penetration resistance (N-value) of the soil for the sampling interval. Penetration of less than 18" is permitted under ASTM:D1586. When driving is complete, the sampler is retracted and opened, and soil samples are taken from the tube. The bore hole is advanced between sampling intervals with an auger, casing, or rotary drill bit with drilling fluid. When the ground surface is frozen, soil samples from the frozen zone are taken off the flights of the hollow-stem auger.

Thin-Walled Tube Sampling (ASTM:D1587). Thin-walled tubes (2" or 3" in diameter and about 2' long, and fitted with a ball check value) are pushed into the soil, then retracted. Relatively undisturbed soil samples are extruded from inside the tubes.

Rock Coring (ASTM:D2113). A diamond or carbide bit on a double-tubed barrel is rotated into rock to the desired depth, then retracted. Rock samples are taken from the inner tube.

Auger Borings. Two procedures are available in drilling power auger borings: "spinning" and "pulling."

- Spinning - The auger is drilled into the ground in increments of 5' or less. The auger is then spun rapidly. Soil "rides up" the flights of the auger to the ground surface, where samples are taken. In general, this method results in reasonably accurate identification of the soil profile above the ground water table, but it can be very misleading below the water table, particularly in sandy and gravelly soils.

- Pulling - The auger is drilled into the ground and then withdrawn to above the ground surface. The general soil profile can be observed, and samples of materials adhering to the auger are taken. In general, this method is considered to be a little more accurate than the spinning method in soil above the ground water table, and more accurate than the spinning method in soil below the ground water table.

BORING LOGS, ABBREVIATIONS, NOTATIONS AND SYMBOLS

(Page 1 of 2)

B,H,N:	Size of flush-joint casing or core barrel
AC:	At completion of boring
CA:	Crew assistant
CAS:	Casing
CC:	Crew chief
CONS:	One-dimensional consolidation test
COT:	Clean-out tube
D:	Sampled soil appears dry
DEN:	Dry density, pounds per cubic foot
DM:	Drilling mud or bentonite slurry
F:	Sampled soil appears frozen
FA:	Power drive flight auger; P-pulling procedure; S-spinning procedure
HA:	Hand auger
HSA:	Hollow-stem auger
HYD:	Hydrometer analysis
LL:	Liquid limit
M:	Sampled soil appears moist
MC:	Column used to describe moisture condition of samples and for the ground water level symbol
N (BPF):	Standard penetration resistance (N-value) in blows per foot (see Note #2a below)
PAP:	Paper plug
PL:	Plastic limit
q_p:	Pocket penetrometer strength, tons per square foot
q_c:	Static cone bearing pressure, tons per square foot
q_u:	Unconfined compressive strength, pounds per square foot
R(est):	Hveem Stabilometer R-Value (estimated)
Res:	Electrical resistivity, ohm-cms
RD:	Rotary drilling with fluid and cone-type roller bit
REC:	In split-spoon (see Note #2b below) and thin-walled-tube sampling, the length (in inches) of sample recovered. In rock coring, the length of core recovered (expressed as percent of the total core run)
REV:	Revert drilling fluid
SA:	Sieve analysis

SR:	Skid rig; non-rotary drill (skid-mounted)
SS:	Standard split-spoon sampler (steel; 1⅜" inside diameter; 2" outside diameter)
TW:	Thin-walled tube (2" and 3" diameter)
VANE:	Vane shear strength, pounds per square foot; L-laboratory; F-field
WC:	Water content, as percent of dry weight
W:	Sampled soil appears wet
WASH:	Sample of material obtained by screening returning rotary drilling fluid or by taking a split-spoon sample of material which has collected inside the bore hole after "falling" through drilling fluid
WAT:	Water
WH:	Sampler advanced by static weight of drill rod and 140-pound hammer
WR:	Sampler advanced by static weight of drill rod
-200:	Percent of material finer than #200 sieve
▼:	Water level symbol
25:	Diedrich Model 25 rotary drill (skid or truck-mounted)
55:	Central Mine Equipment Model 55 rotary drill (truck-mounted)
57:	Mobile Drill Company Model 57 rotary drill (truck-mounted)
550:	Central Mine Equipment Model 550 rotary drill (rubber tire-mounted)

NOTES:

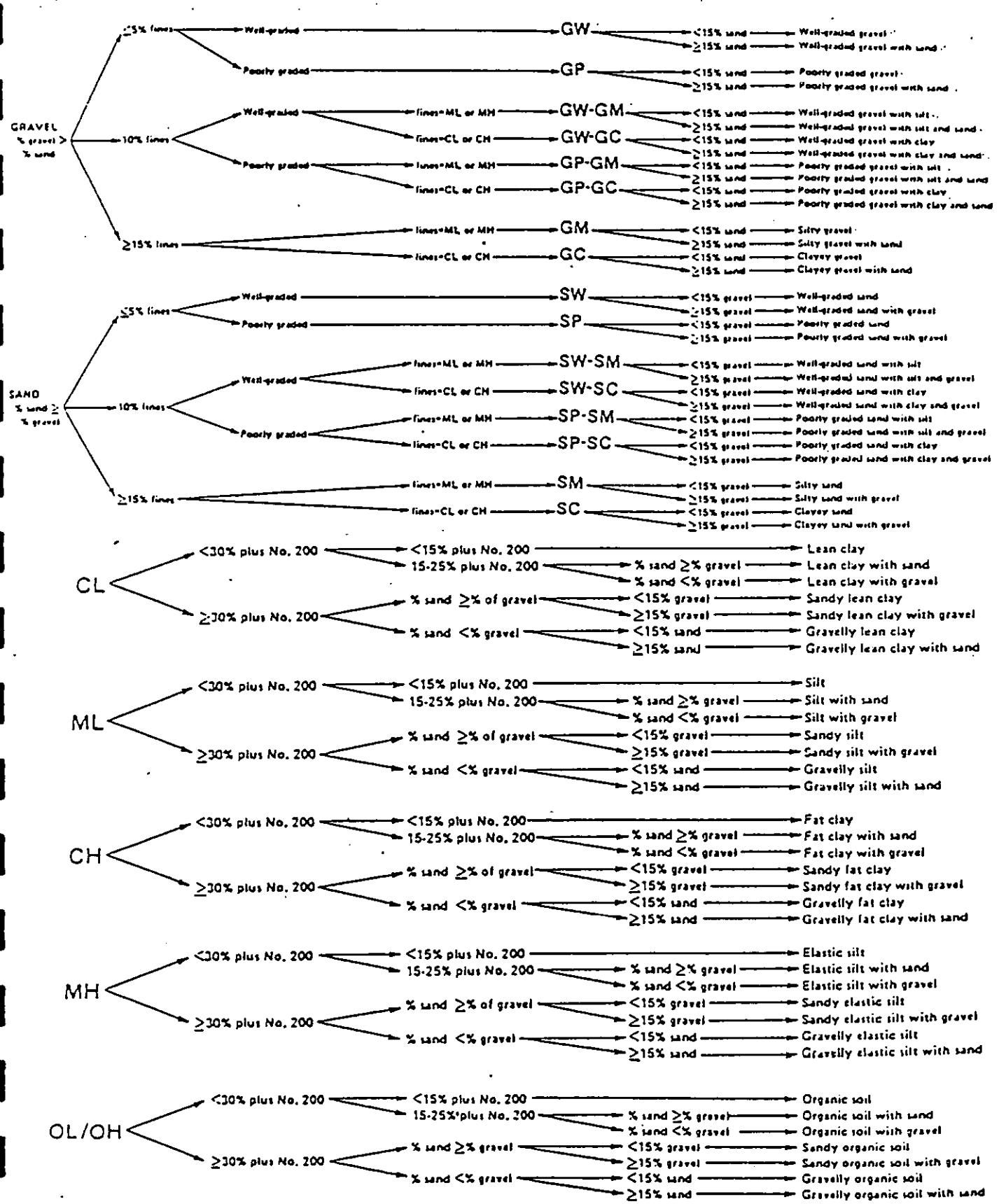
1. The size of drilling tools and related equipment is indicated by a number or letter. Examples: 1) a hollow-stem auger with an inside diameter of 3¼" is shown as 3.25 HSA; 2) a B size core barrel is shown as B core.

2. In highly resistant material:

   a) The standard penetration test consists of driving the sampler with a 140-pound hammer and counting the number of blows applied in each of three 6" increments of penetration. If the sampler is driven less than 18", as permitted in ASTM-D1586, the blows for each complete 6" increment and for each partial increment is recorded on the boring log. For partial increments, the number of blows is shown over a bar (-) or slash (/) and the partial penetration less than 6" is shown to the nearest inch below the bar or slash.

   b) The length of sample recovered, as shown on the "REC" column, may be greater than the distance indicated in the N column. The disparity is because the N-value is recorded below the initial 6" set (unless partial penetration defined in ASTM:D1586 is encountered) whereas the length of sample recovered is for the entire sampler drive.

IDENTIFICATION OF SOILS
(VISUAL-MANUAL PROCEDURE)



NOTE—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

GENERAL TERMINOLOGY NOTES FOR SOIL IDENTIFICATION AND DESCRIPTION

Grain Size

Term	ASTM	AASHTO
Boulders	Over 12"	Over 3"
Cobbles	3" to 12"	-
Gravel	#4 sieve to 3"	#10 sieve to 3"
Sand	#200 to #4 sieve	#200 to #10 sieve
Fines (silt & clay)	Pass #200 sieve	Pass #200 sieve

Gravel Percentages

Term	Percent
Trace	< 5%
Little	5%-15%
With	15%-50%

Layering Notes

Laminations - Differing material or color layers less than 1/2" thick

Stratifications - Differing material or color layers greater than 1/2" thick

Lenses - Small pockets/inclusions of differing material

Color Notes

Mottled - Presence of spots or streaks of one or more colors in a soil mass of another predominant color.

Marbled - Presence of two or more distinct colors in approximately equal amounts, but not blended.

Consistency of Fine Grained Soils

Term	N-Value, BPF
Very Soft	0-1
Soft	2-4
Medium	5-8
Stiff	9-15
Very Stiff	16-30
Hard	Greater than 30

Relative Density of Coarse Grained Soils

Term	N-Value, BPF
Very Loose	0-4
Loose	5-8
Medium Dense	9-15
Dense	16-30
Very Dense	Greater than 30

Fiber Content of Peat (ASTM D4427)

Term	Fiber Content (Visual Estimate)
Fibric	Greater than 67%
Hemic	33-67%
Sapric	Less than 33%

Organic Description (ASTM D2488)

Non-peat soils are described as organic, if soil is judged to have sufficient organic content to influence the soil properties.

GEOLOGIC TERMINOLOGY

The geologic description indicates the apparent depositional origin or stratigraphic name. Geologic identification is interpretive. Judgment is sometimes limited due to small or disturbed samples.

General categories of geologic deposits, and descriptive information is as follows:

ALLUVIUM	*COARSE:*	Sandy (and gravelly). Stratified. Deposited from fast moving waters in streams and rivers. (Includes glacial outwash.)
	FINE:	Clayey and/or silty. Stratified. Deposited from slow moving waters in streams, rivers, lakes and ponds.
	MIXED:	Combination of Fine and Coarse Alluvium.
BEDROCK:	Wide range of characteristics: from hard, dense, consolidated rock; to soft, compressible, and unconsolidated soil-like material.	
FILL	*CONTROLLED:*	Compact, uniform material; inorganic; no debris.
	UNCONTROLLED:	Loose or variable density. Mixture of soil types. Often contains debris and organic material.
TILL:	Normally contains a wide range of grain sizes, from boulders through clay. Usually non-stratified. Deposited directly from glaciers.	
LOESS:	Silty. Non-stratified. Upper layer. Deposited from wind.	
SLOPEWASH:	Organic and/or inorganic material washed from slopes and redeposited.	
SWAMP DEPOSITS:	Peat, muck and marl, and organic soil. Formed through accumulation of organic material under water.	
TOPSOIL:	Contains both inorganic and organic material. Upper, black layer of soil. Formed by weathering of inorganic soil and accumulation of organic material.	
TUMBLEROCK OR COLLUVIUM:	Dominantly gravel, boulders and rock slabs. Deposited from gravity flow down hills or cliffs.	
WEATHERED BEDROCK:	Bedrock which has been substantially weathered through disintegration or decomposition. Texture and composition grades into bedrock.	
WEATHERED SOIL:	Texture, composition, and position is intermediate between topsoil and non-weathered soil.	

BORING LOGS: GROUND WATER INFORMATION

Ground water information is shown under "Water Level Measurements" at the bottom of the log and in the "MC" (moisture condition) column on the right side. Because the presence of water in the soil and the level of the ground water table can change over time, the information presented is accurate only for the date and time the observations and measurements were made.

The following information (in addition to the sampling date and time) appears under "Water Level Measurements:"

- The sampled depth, which is the lowest depth of soil sampling at the time of measurement.
- The casing depth, which is the depth to the bottom of the casing or hollow-stem auger at the time of measurement.
- The cave-in depth, which is the depth at which the measuring tape stops in the bore hole.
- The water level, which is the point in the bore hole at which free-standing water is encountered with the measuring tape.
- The drilling fluid level is similar to the water level, except that the liquid in the bore hole is drilling fluid.

The water level, drilling fluid level, and cave-in depths are measured with a weighted measuring tape.

The "MC" column indicates the moisture condition of soil samples. A "D" in the column means that a soil sample appears dry (absence of moisture, dusty, dry to touch); "M" means moist (damp but no visible water), and "W" means wet (visible free water). An "F" is used if the sample is frozen.

The water level symbol ▼ in the "MC" column indicates the estimated position of the ground water table in the boring. The absence of the water level symbol on a log does not necessarily mean that ground water was not encountered or that the water table or piezometric surface was not penetrated.

Overall, determining the position of the ground water table is an interpretative process that depends on such factors as water level measurements, the presence and type of drilling fluid, the condition of samples, subsurface conditions, site conditions, whether the bore hole is covered or open, and weather conditions. Because of these factors and those noted previously, the actual ground water level in the field may vary from that shown on the boring logs.

Appendix 4

"Slug" Test Data and Curve Matching Plots

MW-2SL, PLUG IN WELL

```
slugt1
2.84    ..................... Initial "drawdown" (feet)
0.1667  ..................... Radius of well casing (feet)
0.71    ..................... Radius of gravel pack (feet)
slugt2
35      ..................... Aquifer saturated thickness (feet)
7       ..................... Well screen (gravel pack) length (feet)
31.42   ..................... Static height of water in well (feet)
tsdata
0.1   2.84   1              Column 1 - Time (minutes)
0.1166   2.84   1           Column 2 - "Drawdown" (feet)
0.1333   2.83   1           Column 3 - Weighting Factor (not used)
0.15   2.83   1
0.1666   2.83   1
0.1833   2.82   1
0.2   2.82   1
0.2166   2.82   1
0.2333   2.82   1
0.25   2.82   1
0.2666   2.82   1
0.2833   2.82   1
0.3   2.81   1
0.3166   2.81   1
0.3333   2.81   1
0.4167   2.8   1
0.5   2.79   1
0.5833   2.78   1
0.6667   2.77   1
0.75   2.76   1
0.8333   2.75   1
0.9167   2.75   1
1   2.74   1
1.0833   2.72   1
1.1667   2.72   1
1.25   2.71   1
1.3333   2.7   1
1.4166   2.69   1
1.5   2.68   1
1.5833   2.67   1
1.6667   2.66   1
1.75   2.65   1
1.8333   2.65   1
1.9167   2.63   1
2   2.63   1
2.5   2.58   1
3   2.53   1
3.5   2.48   1
4   2.42   1
4.5   2.38   1
5   2.33   1
5.5   2.29   1
6   2.24   1
6.5   2.19   1
7   2.15   1
7.5   2.11   1
8   2.06   1
8.5   2.03   1
9   1.98   1
9.5   1.94   1
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10	1.9	1
12	1.76	1
14	1.61	1
16	1.49	1
18	1.38	1
20	1.27	1
22	1.17	1
24	1.08	1
26	1	1
28	0.93	1
30	0.85	1
32	0.79	1

MW-2SL, PLUG REMOVED

slugt1

2.82 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

35 ..... Aquifer saturated thickness (feet)

7 ..... Well screen (gravel pack) length (feet)

31.42..... Static height of water in well (feet)

tsdata

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

0.05	2.82	1
0.0666	2.15	1
0.0833	2.12	1
0.1	2.07	1
0.1166	2.08	1
0.1333	2.07	1
0.15	2.07	1
0.1666	2.07	1
0.1833	2.06	1
0.2	2.06	1
0.2166	2.05	1
0.2333	2.05	1
0.25	2.05	1
0.2666	2.05	1
0.2833	2.05	1
0.3	2.05	1
0.3166	2.04	1
0.3333	2.04	1
0.4167	2.03	1
0.5	2.03	1
0.5833	2.02	1
0.6667	2.01	1
0.75	2	1
0.8333	2	1
0.9167	1.99	1
1	1.98	1
1.0833	1.98	1
1.1667	1.97	1
1.25	1.97	1
1.3333	1.97	1
1.4166	1.96	1
1.5	1.95	1
1.5833	1.95	1
1.6667	1.94	1
1.75	1.93	1
1.8333	1.93	1
1.9167	1.92	1
2	1.91	1
2.5	1.88	1
3	1.86	1
3.5	1.82	1
4	1.79	1
4.5	1.76	1
5	1.73	1
5.5	1.71	1
6	1.68	1
6.5	1.65	1
7	1.62	1
7.5	1.6	1
8	1.57	1

8.5	1.55	1
9	1.52	1
9.5	1.5	1
10	1.47	1
12	1.38	1
14	1.29	1
16	1.21	1
18	1.13	1
20	1.06	1
22	0.99	1
24	0.93	1
26	0.87	1
28	0.82	1
30	0.77	1
32	0.73	1
34	0.68	1
36	0.64	1
38	0.6	1
40	0.56	1
42	0.53	1

MW-7SL, PLUG IN WELL

slugt1

3.92 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

35 ..... Aquifer saturated thickness (feet)

7 ..... Well screen (gravel pack) length (feet)

29.2 ..... Static height of water in well (feet)

tsdata

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

0.05	3.92	1
0.0666	2.62	1
0.0833	2.51	1
0.1	2.51	1
0.1166	2.52	1
0.1333	2.5	1
0.15	2.48	1
0.1666	2.46	1
0.1833	2.44	1
0.2	2.42	1
0.2166	2.4	1
0.2333	2.39	1
0.25	2.37	1
0.2666	2.35	1
0.2833	2.34	1
0.3	2.33	1
0.3166	2.31	1
0.3333	2.3	1
0.4167	2.23	1
0.5	2.17	1
0.5833	2.11	1
0.6667	2.06	1
0.75	2.02	1
0.8333	1.97	1
0.9167	1.92	1
1	1.88	1
1.0833	1.85	1
1.1667	1.8	1
1.25	1.77	1
1.3333	1.73	1
1.4166	1.7	1
1.5	1.66	1
1.5833	1.63	1
1.6667	1.6	1
1.75	1.57	1
1.8333	1.54	1
1.9167	1.51	1
2	1.48	1
2.5	1.33	1
3	1.19	1
3.5	1.08	1
4	0.98	1
4.5	0.89	1
5	0.81	1
5.5	0.74	1
6	0.68	1
6.5	0.62	1
7	0.57	1
7.5	0.53	1
8	0.48	1

8.5	0.44	1
9	0.41	1
9.5	0.38	1
10	0.35	1
12	0.26	1
14	0.19	1
16	0.15	1
18	0.11	1
20	0.09	1
22	0.07	1
25	0.05	1
27	0.04	1

MW-7SL, PLUG REMOVED

slugt1

2.92 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

35 ..... Aquifer saturated thickness (feet)

7 ..... Well screen (gravel pack) length (feet)

29.2 ..... Static height of water in well (feet)

tsdata

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

0.0233	2.92	1
0.0266	2.52	1
0.03	2.59	1
0.0333	2.67	1
0.05	2.58	1
0.0666	2.53	1
0.0833	2.53	1
0.1	2.54	1
0.1166	2.52	1
0.1333	2.51	1
0.15	2.5	1
0.1666	2.49	1
0.1833	2.48	1
0.2	2.47	1
0.2166	2.46	1
0.2333	2.46	1
0.25	2.44	1
0.2666	2.44	1
0.2833	2.43	1
0.3	2.42	1
0.3166	2.41	1
0.3333	2.4	1
0.4167	2.37	1
0.5	2.33	1
0.5833	2.29	1
0.6667	2.25	1
0.75	2.22	1
0.8333	2.19	1
0.9167	2.16	1
1	2.13	1
1.0833	2.1	1
1.1667	2.07	1
1.25	2.04	1
1.3333	2.01	1
1.4166	1.98	1
1.5	1.95	1
1.5833	1.93	1
1.6667	1.9	1
1.75	1.88	1
1.8333	1.85	1
1.9167	1.83	1
2	1.8	1
2.5	1.66	1
3	1.54	1
3.5	1.41	1
4	1.31	1
4.5	1.21	1
5	1.12	1
5.5	1.04	1
6	0.96	1

6.5	0.89	1
7	0.82	1
7.5	0.77	1
8	0.71	1
8.5	0.66	1
9	0.61	1
9.5	0.57	1
10	0.53	1
12	0.39	1
14	0.29	1
16	0.22	1
18	0.17	1

MW-10SL, PLUG IN WELL

slugt1

3.2 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

35 ..... Aquifer saturated thickness (feet)

7 ..... Well screen (gravel pack) length (feet)

29.88 ..... Static height of water in well (feet)

tsdata

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

0.03	3.2	1
0.0333	3.13	1
0.05	3.05	1
0.0666	3.04	1
0.0833	3.03	1
0.1	3.03	1
0.1166	3.02	1
0.1333	3.01	1
0.15	3.01	1
0.1666	3	1
0.1833	2.99	1
0.2	2.98	1
0.2166	2.97	1
0.2333	2.96	1
0.25	2.95	1
0.2666	2.94	1
0.2833	2.93	1
0.3	2.93	1
0.3166	2.92	1
0.3333	2.91	1
0.4167	2.87	1
0.5	2.82	1
0.5833	2.79	1
0.6667	2.75	1
0.75	2.72	1
0.8333	2.68	1
0.9167	2.65	1
1	2.61	1
1.0833	2.58	1
1.1667	2.54	1
1.25	2.52	1
1.3333	2.49	1
1.4166	2.46	1
1.5	2.43	1
1.5833	2.41	1
1.6667	2.37	1
1.75	2.35	1
1.8333	2.32	1
1.9167	2.3	1
2	2.27	1
2.5	2.14	1
3	2.02	1
3.5	1.91	1
4	1.82	1
4.5	1.73	1
5	1.64	1
5.5	1.57	1
6	1.5	1
6.5	1.44	1
7	1.38	1

7.5	1.32	1
8	1.27	1
8.5	1.22	1
9	1.17	1
9.5	1.13	1
10	1.09	1
12	0.95	1
14	0.83	1
16	0.75	1

MW-10SL, PLUG REMOVED

slugt1

2.49 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

35 ..... Aquifer saturated thickness (feet)

7 ..... Well screen (gravel pack) length (feet)

29.88 ..... Static height of water in well (feet)

tsdata

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

0.0333	2.49	1
0.05	2.02	1
0.0666	2.12	1
0.0833	2.11	1
0.1	2.07	1
0.1166	2.08	1
0.1333	2.06	1
0.15	2.05	1
0.1666	2.04	1
0.1833	2.04	1
0.2	2.02	1
0.2166	2.02	1
0.2333	2	1
0.25	2	1
0.2666	1.99	1
0.2833	1.98	1
0.3	1.97	1
0.3166	1.97	1
0.3333	1.96	1
0.4167	1.93	1
0.5	1.9	1
0.5833	1.87	1
0.6667	1.85	1
0.75	1.83	1
0.8333	1.81	1
0.9167	1.79	1
1	1.77	1
1.0833	1.75	1
1.1667	1.73	1
1.25	1.72	1
1.3333	1.7	1
1.4166	1.69	1
1.5	1.67	1
1.5833	1.66	1
1.6667	1.65	1
1.75	1.64	1
1.8333	1.62	1
1.9167	1.61	1
2	1.6	1
2.5	1.53	1
3	1.47	1
3.5	1.41	1
4	1.36	1
4.5	1.31	1
5	1.26	1
5.5	1.2	1
6	1.16	1
6.5	1.12	1
7	1.07	1
7.5	1.03	1

8	0.99	1
8.5	0.95	1
9	0.91	1
9.5	0.87	1
10	0.84	1
12	0.71	1
14	0.59	1
16	0.49	1
18	0.4	1
20	0.32	1

MW-8S, PLUG REMOVED

slugt1

1.46 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

20.0 ..... Aquifer saturated thickness (feet)

10.0 ..... Well screen (gravel pack) length (feet)

7.0 ..... Static height of water in well (feet)

tsdata

0.0033	1.4600	1.0000
0.0066	1.2900	1.0000
0.0099	1.1000	1.0000
0.0133	0.9600	1.0000
0.0166	0.8300	1.0000
0.0200	0.7400	1.0000
0.0233	0.6200	1.0000
0.0266	0.5300	1.0000
0.0300	0.4500	1.0000
0.0333	0.3900	1.0000
0.0500	0.1800	1.0000
0.0666	0.1100	1.0000
0.0833	0.0700	1.0000
0.1000	0.0500	1.0000
0.1166	0.0500	1.0000
0.1333	0.0400	1.0000
0.1500	0.0400	1.0000
0.1666	0.0300	1.0000
0.1833	0.0200	1.0000
0.2000	0.0200	1.0000
0.2166	0.0200	1.0000
0.2333	0.0200	1.0000
0.2500	0.0200	1.0000
0.2666	0.0100	1.0000
0.2833	0.0200	1.0000
0.3000	0.0100	1.0000
0.3166	0.0100	1.0000
0.3333	0.0100	1.0000

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

MW-9S, PLUG REMOVED

slugt1

2.07 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

20.0 ..... Aquifer saturated thickness (feet)

10 ..... Well screen (gravel pack) length (feet)

10.78 ..... Static height of water in well (feet)

tsdata

0.0666	2.0700	1.0000
0.0833	2.0400	1.0000
0.1000	1.6600	1.0000
0.1166	1.4100	1.0000
0.1333	1.2900	1.0000
0.1500	0.0600	1.0000

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

MW-10S, PLUG REMOVED

slugt1

1.22 ..... Initial "drawdown" (feet)

0.1667 ..... Radius of well casing (feet)

0.71 ..... Radius of gravel pack (feet)

slugt2

20.0 ..... Aquifer saturated thickness (feet)

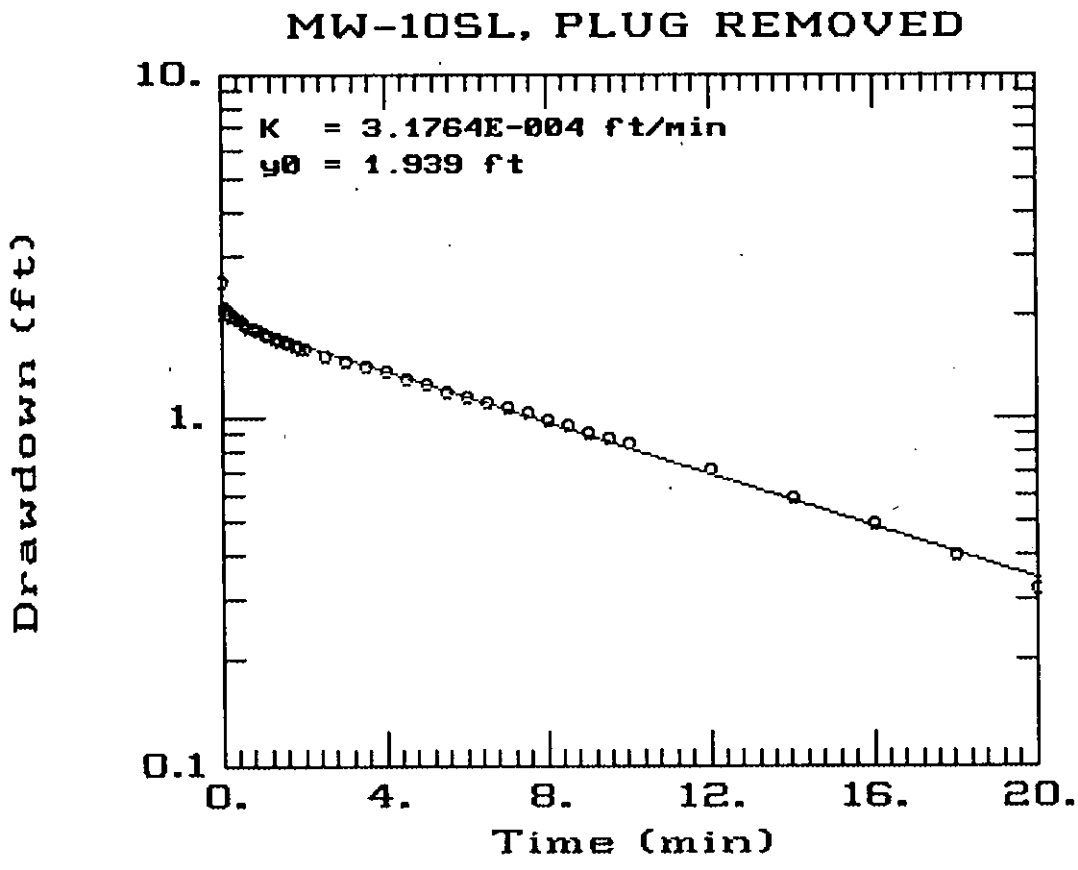
10.0 ..... Well screen (gravel pack) length (feet)

7.02 ..... Static height of water in well (feet)

tsdata

Column 1 - Time (minutes)
Column 2 - "Drawdown" (feet)
Column 3 - Weighting Factor (not used)

0.0000	1.2200	1.0000
0.0033	1.1500	1.0000
0.0066	1.1000	1.0000
0.0099	1.0400	1.0000
0.0133	0.9900	1.0000
0.0166	0.9100	1.0000
0.0200	0.8500	1.0000
0.0233	0.8000	1.0000
0.0266	0.7600	1.0000
0.0300	0.7100	1.0000
0.0333	0.6700	1.0000
0.0500	0.5100	1.0000
0.0666	0.3900	1.0000
0.0833	0.3200	1.0000
0.1000	0.2600	1.0000
0.1166	0.2300	1.0000
0.1333	0.2000	1.0000
0.1500	0.1800	1.0000
0.1666	0.1600	1.0000
0.1833	0.1500	1.0000
0.2000	0.1400	1.0000
0.2166	0.1300	1.0000
0.2333	0.1300	1.0000
0.2500	0.1100	1.0000
0.2666	0.1100	1.0000
0.2833	0.1000	1.0000
0.3000	0.0900	1.0000
0.3166	0.0900	1.0000
0.3333	0.0900	1.0000
0.4167	0.0700	1.0000
0.5000	0.0500	1.0000
0.5833	0.0400	1.0000
0.6667	0.0300	1.0000
0.7500	0.0300	1.0000
0.8333	0.0200	1.0000
0.9167	0.0200	1.0000
1.0000	0.0200	1.0000
1.0833	0.0200	1.0000
1.1667	0.0100	1.0000
1.2500	0.0100	1.0000
1.3333	0.0100	1.0000
1.4166	0.0100	1.0000
1.5000	0.0100	1.0000
1.5833	0.0100	1.0000



AQTESOLV

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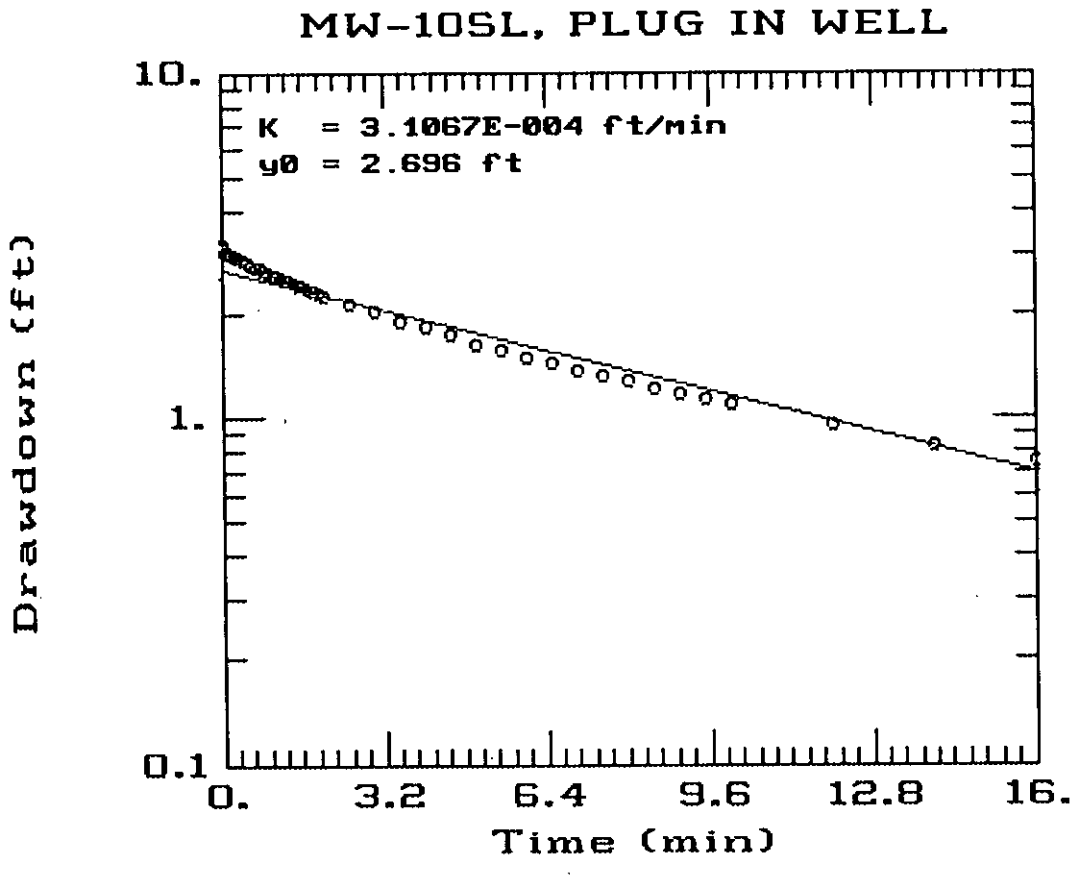
Modeling Group



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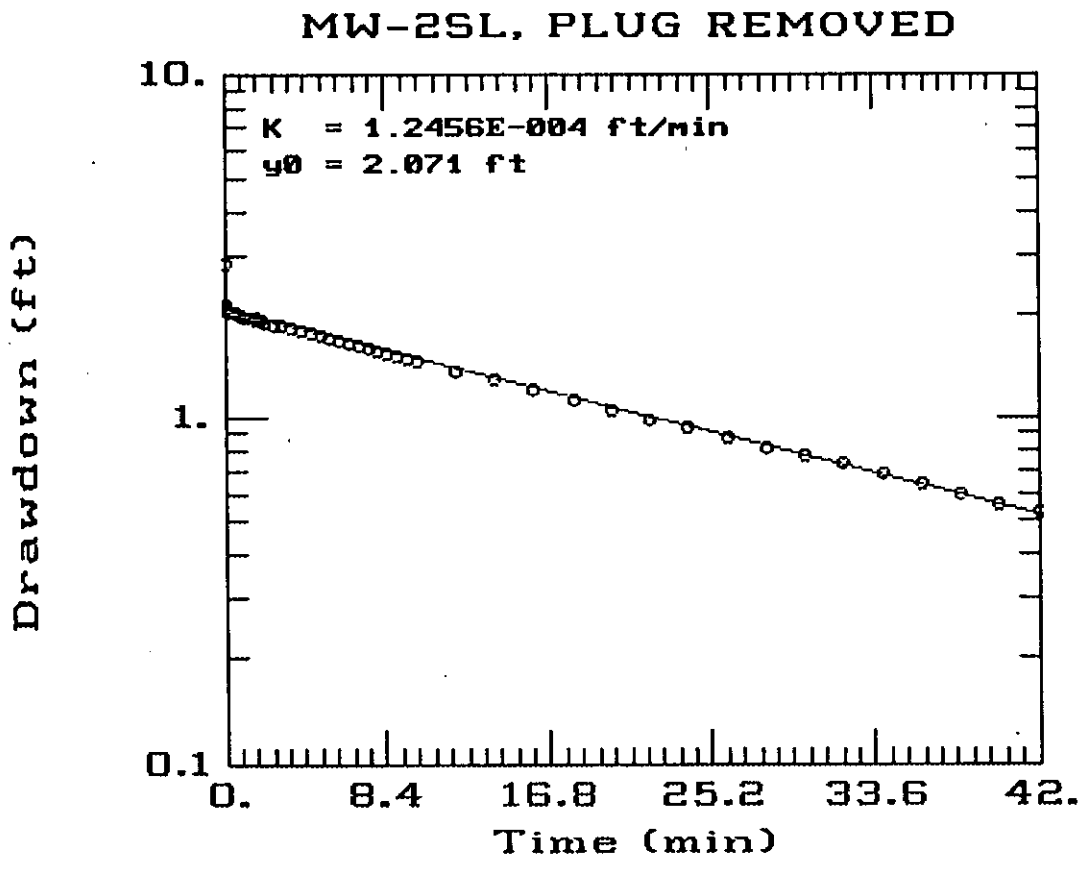

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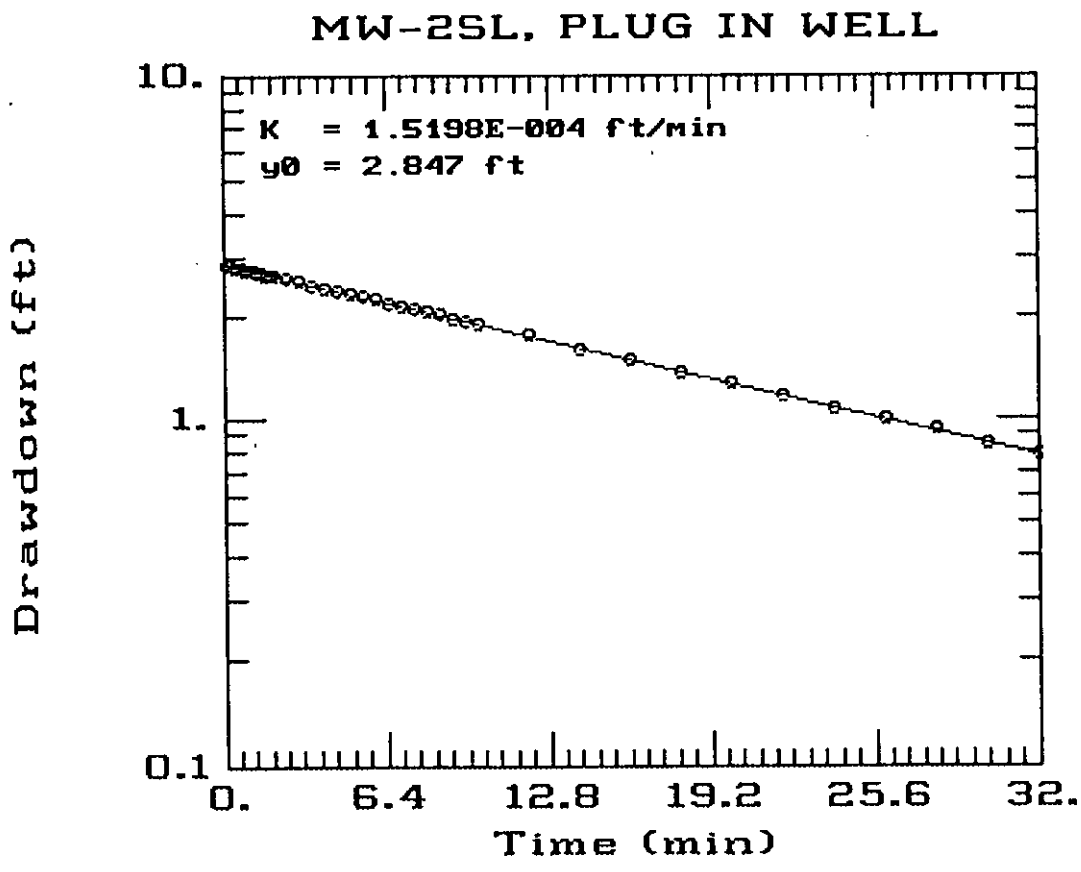
Modeling Group



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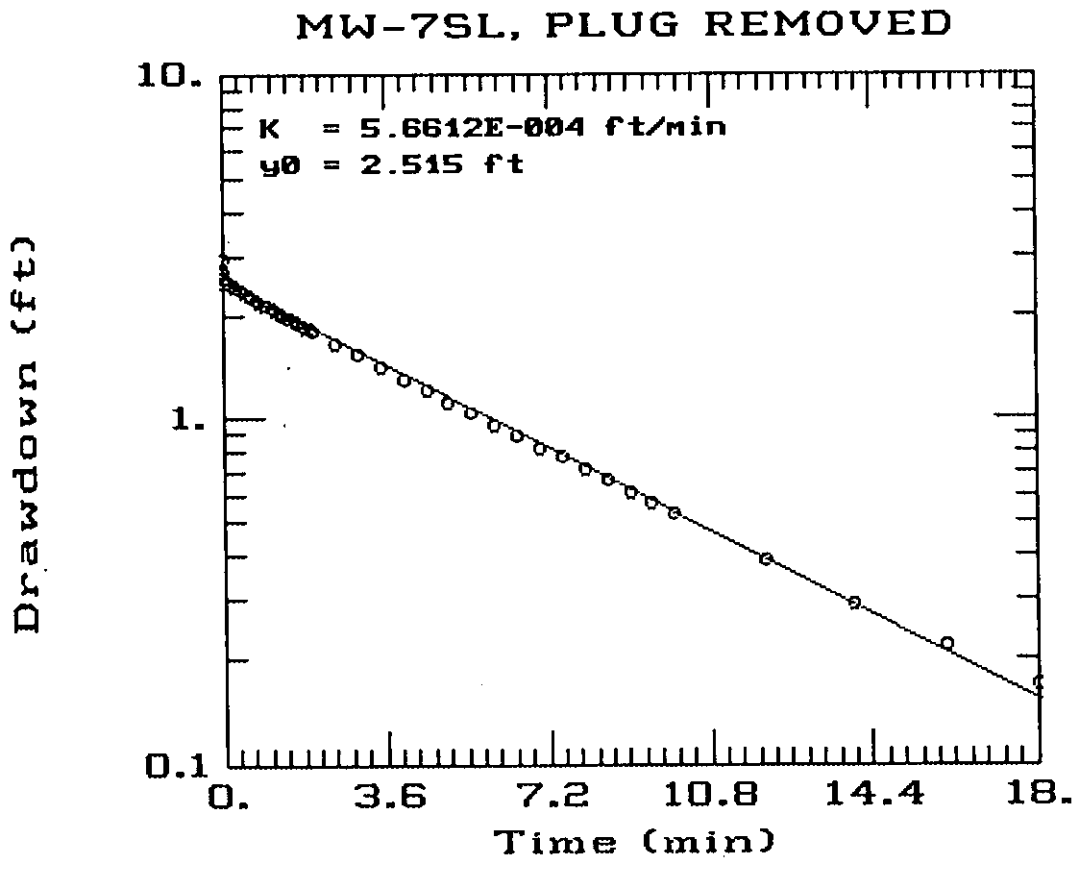

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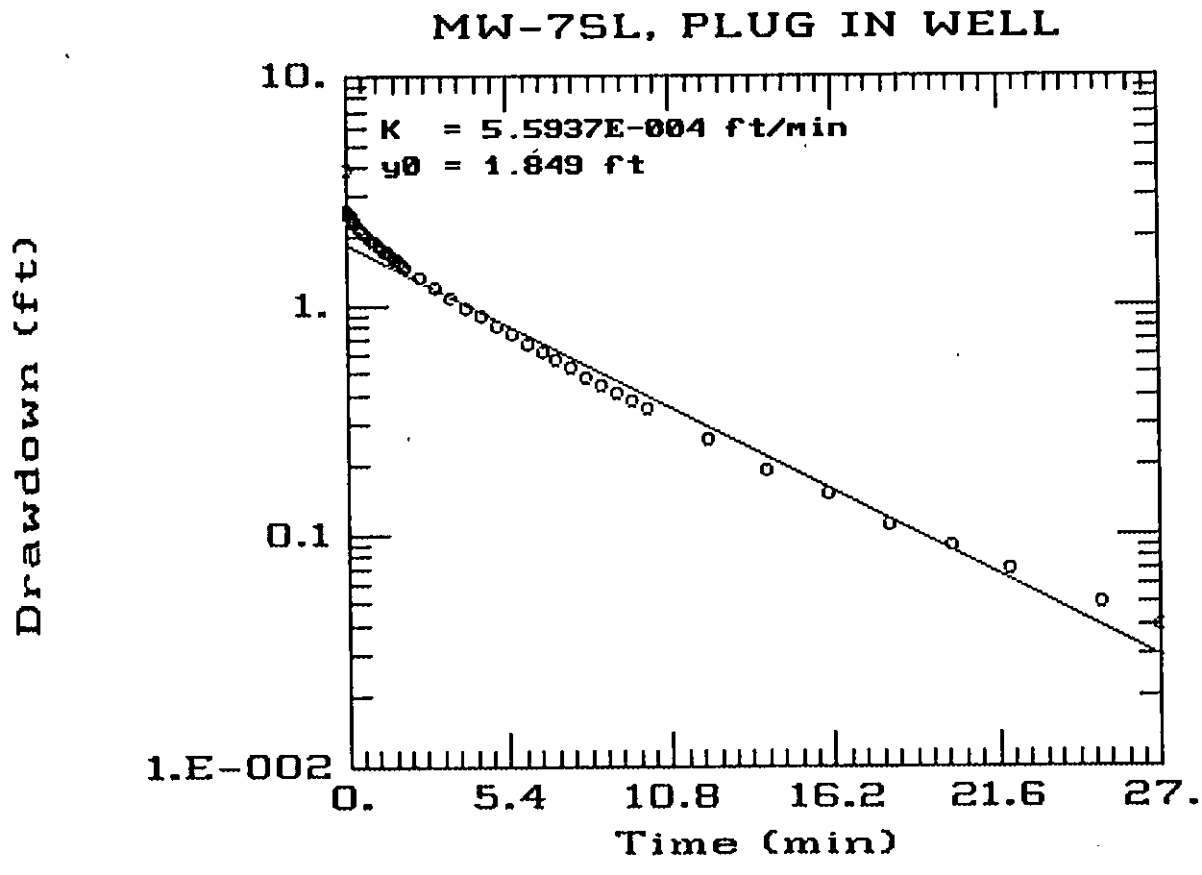

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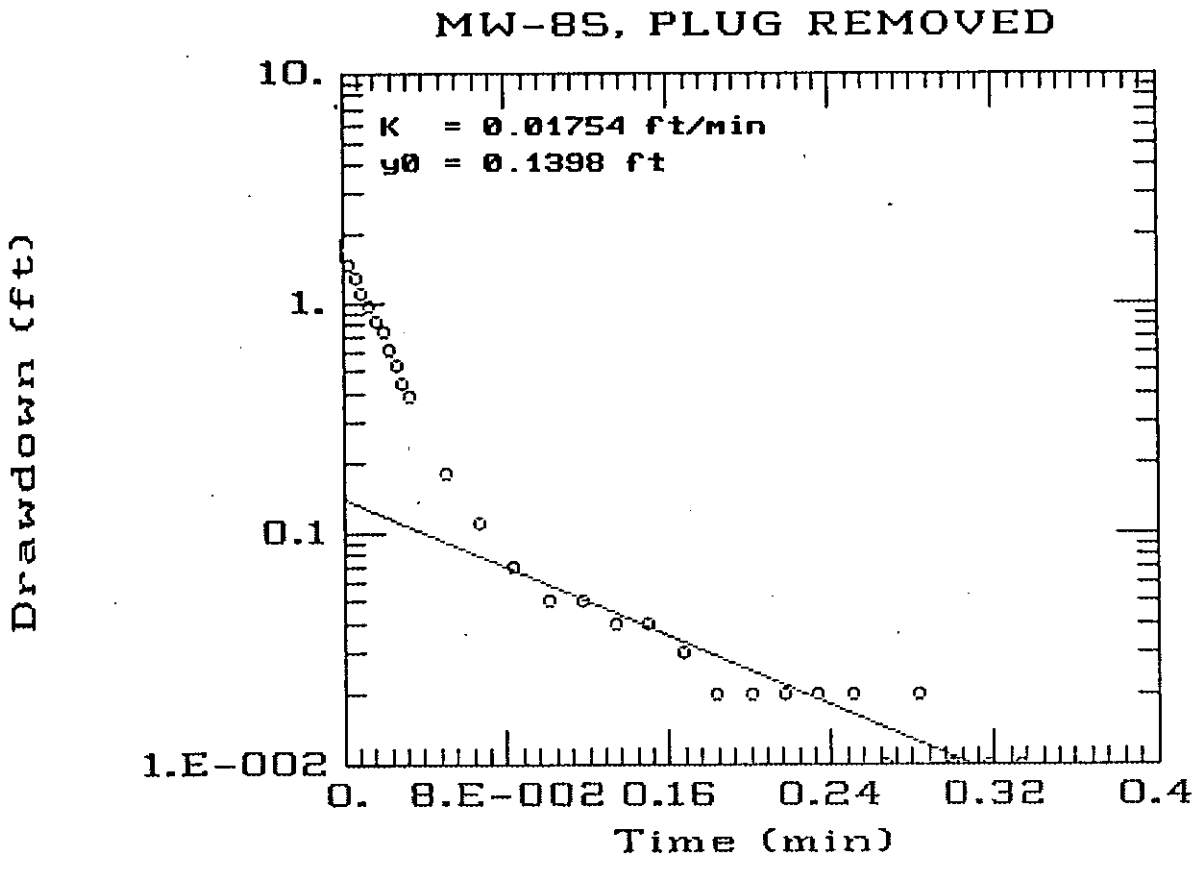

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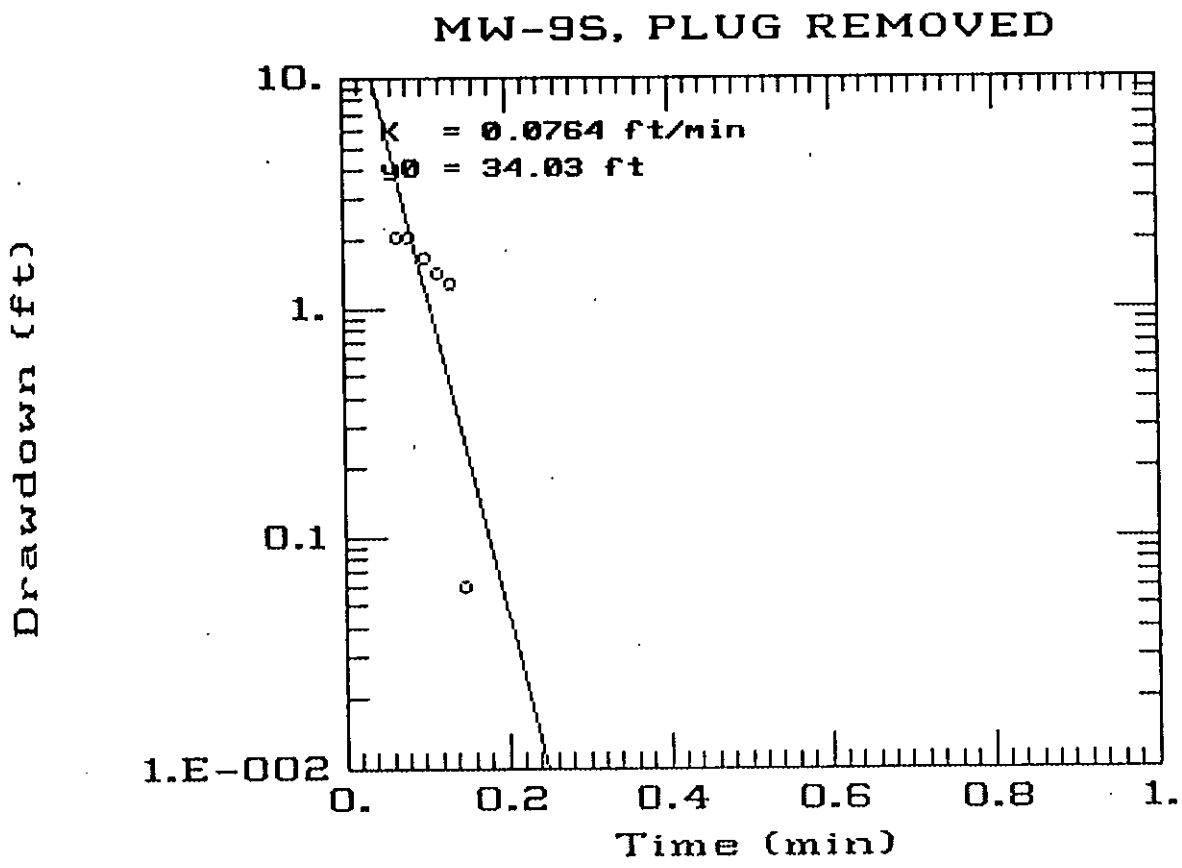

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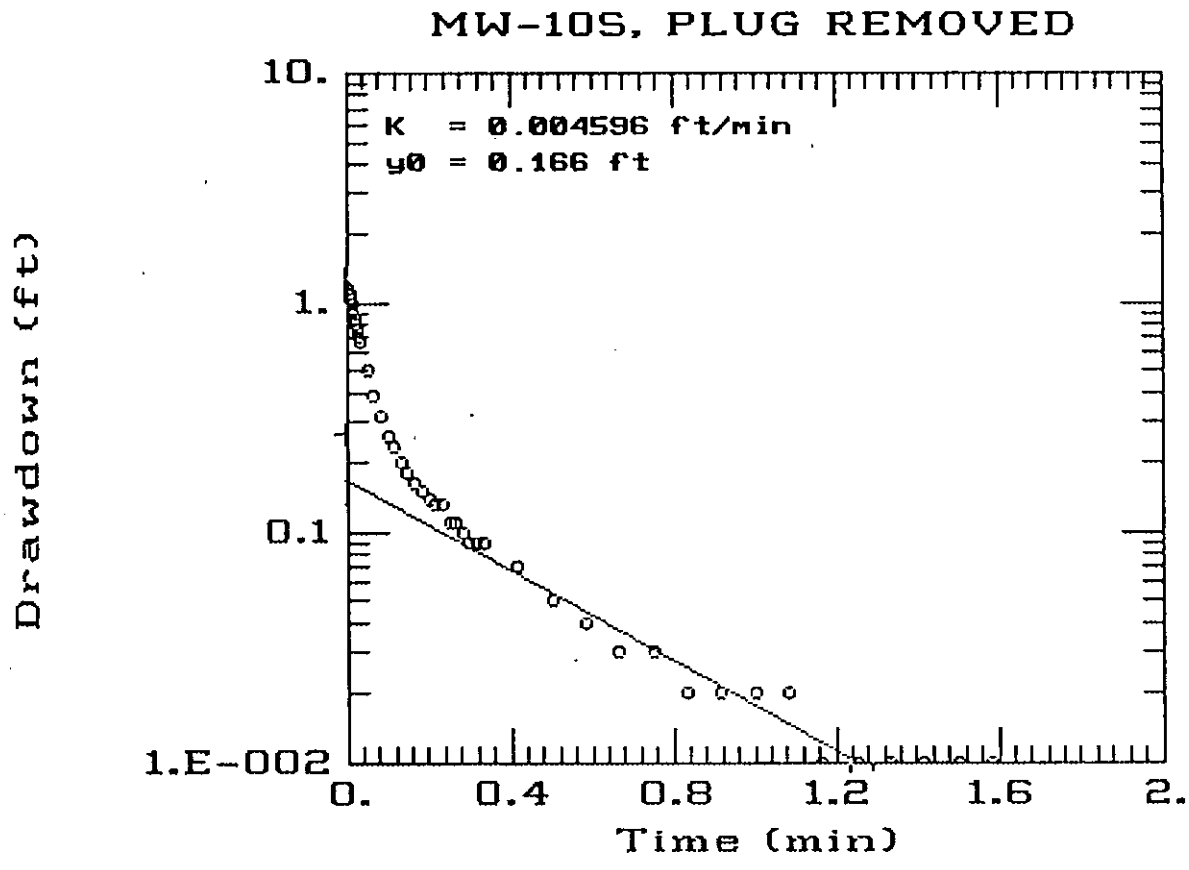

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GERAGHTY & MILLER, INC.

Modeling Group

Appendix 5

Soil Quality Laboratory Reports and Chain of Custody Forms

CH2M HILL
Engineers
Planners
Economists
Scientists

RECEIVED
DEC 12 91
BARR ENGINEERING CO.

MTH

December 11, 1991

LRD294.10

BARR ENGINEERING
8300 Norman Center Drive
Minneapolis, MN 55437-1026

Attention: Mary Mackey

RE: Laboratory Reference Number - 31428

Dear Ms. Mackey:

The results are enclosed for your samples that were received by our laboratory on November 16, 1991.

If you have any questions please contact Mr. Mark Cichy or Ms. Mary Paschke in Client Services.

CH2M HILL stores samples for 30 days after the written report date at no charge. After 30 days, non-hazardous samples are disposed of at no charge. If you require either of the following services you need to notify us within 15 days:

* Return of samples to the address shown above.

* Storage of samples at $5.00/sample/month.

If a sample is determined to be hazardous, we will contact you to discuss disposal options.

Thank you for selecting a CH2M HILL laboratory for your analytical testing needs.

Sincerely,

CH2M HILL QUALITY ANALYTICS LABORATORY

Peggy A. Norton

Peggy A. Norton
Senior Data Package Specialist

Encl.

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR VOLATILE GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL

CLIENT : Barr Engineering 23/27-540MTH50

CASE NO : N/A

CONTRACT NO.: N/A

LAB ID : 31428

SDG # : N/A

I. RECEIPT

A. Date: November 16, 1991

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSI DATE
Method Blk	N/A	Soil	N/A	N/A	11/22/91
Method Blk	N/A	Water	N/A	N/A	11/25/9
Method Blk	N/A	Soil	N/A	N/A	11/25/91
MeOH Blank	N/A	MeOH	N/A	11/25/91	11/25/91
Method Blk	N/A	Soil	N/A	N/A	11/27/9
MeOH Blank	N/A	MeOH	N/A	11/25/91	11/27/9
31428001	SB1 0.0	Soil	11/13/91	N/A	11/22/91
31428001-RE	SB1 0.0_RE	Soil	11/13/91	11/25/91	11/27/9
31428002	SB1 9.5	Soil	11/13/91	N/A	11/22/9
31428002-RE	SB1 9.5_RE	Soil	11/13/91	11/25/91	11/25/91
31428003	SB2 0.0	Soil	11/13/91	N/A	11/22/91
31428003-RE	SB2 0.0_RE	Soil	11/13/91	11/25/91	11/25/9
31428004	SB2 9.5	Soil	11/13/91	N/A	11/27/91
31428005	SB3 0.0	Soil	11/13/91	N/A	11/22/91
31428006	SB3 9.5	Soil	11/13/91	N/A	11/22/9
31428007	SB4 2.0	Soil	11/12/91	N/A	11/22/9
31428008	SB4 15.5	Soil	11/12/91	N/A	11/22/91
31428009	SB5 0.0	Soil	11/14/91	N/A	11/22/91
31428010	SB5 9.5	Soil	11/14/91	N/A	11/22/9
31428011	SB7 2.0	Soil	11/15/91	N/A	11/25/91
31428012	SB7 9.5	Soil	11/15/91	N/A	11/25/91
31428013	SB8 2.0	Soil	11/15/91	N/A	11/25/9
31428014	SB8 9.5	Soil	11/15/91	N/A	11/25/91
31428015	SB9 2.0	Soil	11/15/91	N/A	11/25/91
31428016	SB9 9.5	Soil	11/15/91	N/A	11/25/9
31428017	Blank	Water	11/13/91	N/A	11/25/9
31428018	SB10 4.5	Soil	11/14/91	N/A	11/25/91
31428019	SB10 8.5	Soil	11/14/91	N/A	11/25/91

C. Documentation Exceptions : None encountered.

jas37

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

II. EXTRACTION

A. Holding Times: Holding times were met.

B. Extraction Exceptions : None encountered.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Please note that due to the concentration of Tetrachloroethene in samples 31428-1 (SB1 0.0), 31428-2 (SB1 9.5) and 31428-3 (SB2 0.0), these samples were reanalyzed by medium level protocol to obtain detector responses within the linear calibration range of the instrument. The reanalysis of sample 31428-1 (SB1 0.0) required an additional 20x dilution and reporting limits have been adjusted accordingly. The results of both analyses are included for your information.

IV. QUALITY CONTROL

A. Method Blank : The method blanks associated with these samples met QC criteria.

B. Surrogate Recoveries : Met acceptable QC limits.

C. Matrix Spike Results: Met acceptable QC criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have been provided for this data package.

Brian Geers 12-7-91

Brian Geers **Date**
Acting Organics Division Manager

Engineers
Planners
Economists
Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 31428-18
Client ID: SB10 4.5
Date Tested: 11/25/91

Analysis: 8010
Matrix: Soil

Compound	Concentration Spiked (ug/kg)	Sample Result (ug/kg)	Spike Result (ug/kg)	Spike Percent Recovery
Chloromethane	20.4	< 1.0	19.9	98
Bromomethane	20.4	< 1.0	23.4	115
Vinyl chloride	20.4	< 1.0	19.9	98
Chloroethane	20.4	< 1.0	20.6	101
Dichloromethane	20.4	< 5.1	23.8	117
Trichlorofluoromethane	20.4	< 1.0	21.3	104
1,1-Dichloroethene	20.4	< 1.0	21.4	105
1,1-Dichloroethane	20.4	< 1.0	21.7	106
trans-1,2-Dichloroethene	20.4	< 1.0	22.1	108
Chloroform	20.4	< 1.0	22.2	109
1,2-Dichloroethane	20.4	< 1.0	22.7	111
1,1,1-Trichloroethane	20.4	< 1.0	23.0	113
Carbon Tetrachloride	20.4	< 1.0	23.2	114
Bromodichloromethane	20.4	< 1.0	22.8	112
1,2-Dichloropropane	20.4	< 1.0	22.9	112
cis-1,3-Dichloropropene	20.4	< 1.0	21.4	105
Trichloroethene	20.4	< 1.0	22.8	112
Dibromochloromethane	20.4	< 1.0	23.3	114
1,1,2-Trichloroethane	20.4	< 1.0	22.3	109
trans-1,3-Dichloropropene	20.4	< 1.0	22.1	108
Bromoform	20.4	< 1.0	26.9	132
1,1,2,2-Tetrachloroethane	20.4	< 1.0	21.5	105
Tetrachloroethene	20.4	9.2	41.8	160
Chlorobenzene	20.4	< 1.0	19.9	98
1,3-Dichlorobenzene	20.4	< 1.0	19.1	94
1,2-Dichlorobenzene	20.4	< 1.0	20.1	99
1,4-Dichlorobenzene	20.4	< 1.0	19.8	97
1,2-Dibromoethane	20.4	< 1.0	25.3	124

Comments: Results reported on a dry-weight basis.

Approved by:

jas37
000004

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE DUPLICATE RESULTS

Laboratory No.: 31428-18
Client ID: SB10 4.5
Date Tested: 11/25/91

Analysis: 8010
Matrix: Soil

Compound	Concentration Spiked (ug/kg)	Sample Result (ug/kg)	Spike Duplicate Result (ug/kg)	Spike Percent Recovery	RPD
Chloromethane	20.4	< 1.0	20.9	102	4.9
Bromomethane	20.4	< 1.0	23.6	116	0.9
Vinyl chloride	20.4	< 1.0	20.4	100	2.5
Chloroethane	20.4	< 1.0	21.3	104	3.3
Dichloromethane	20.4	< 5.1	23.8	117	0.0
Trichlorofluoromethane	20.4	< 1.0	21.9	107	2.8
1,1-Dichloroethene	20.4	< 1.0	21.4	105	0.0
1,1-Dichloroethane	20.4	< 1.0	21.4	105	1.4
trans-1,2-Dichloroethene	20.4	< 1.0	22.3	109	0.9
Chloroform	20.4	< 1.0	22.3	109	0.4
1,2-Dichloroethane	20.4	< 1.0	24.3	119	6.8
1,1,1-Trichloroethane	20.4	< 1.0	22.6	111	1.8
Carbon Tetrachloride	20.4	< 1.0	23.0	113	0.9
Bromodichloromethane	20.4	< 1.0	23.5	115	3.0
1,2-Dichloropropane	20.4	< 1.0	23.2	114	1.3
cis-1,3-Dichloropropene	20.4	< 1.0	22.8	112	6.3
Trichloroethene	20.4	< 1.0	22.5	110	1.3
Dibromochloromethane	20.4	< 1.0	26.3	129	12
1,1,2-Trichloroethane	20.4	< 1.0	24.9	122	11
trans-1,3-Dichloropropene	20.4	< 1.0	23.6	116	6.6
Bromoform	20.4	< 1.0	31.3	153	15
1,1,2,2-Tetrachloroethane	20.4	< 1.0	25.4	125	17
Tetrachloroethene	20.4	9.2	31.4	109	28
Chlorobenzene	20.4	< 1.0	22.1	108	10
1,3-Dichlorobenzene	20.4	< 1.0	19.2	94	0.5
1,2-Dichlorobenzene	20.4	< 1.0	19.8	97	1.5
1,4-Dichlorobenzene	20.4	< 1.0	20.7	101	4.4
1,2-Dibromoethane	20.4	< 1.0	28.0	137	10

Comments: Results reported on a dry-weight basis.

Approved by:

000005

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	NA	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/09/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.0	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	U	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		100		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/09/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		101		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian [illegible]

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	NA	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/09/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.0	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	U	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		97		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Ellis

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Methanol Blank	Date Received:	NA
Proj No:	NA	% Moisture:	NA	Date Extracted:	11/25/91
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	MeOH Extract	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/09/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	50	U	NR	ug/kg
74-83-9	Bromomethane	50	U	NR	ug/kg
75-01-4	Vinyl chloride	50	U	NR	ug/kg
75-00-3	Chloroethane	50	U	NR	ug/kg
75-09-2	Dichloromethane	250	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	50	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	50	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	50	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	50	U	NR	ug/kg
67-66-3	Chloroform	50	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	50	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	50	U	NR	ug/kg
56-23-5	Carbon tetrachloride	50	U	NR	ug/kg
75-27-4	Bromodichloromethane	50	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	50	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	50	U	NR	ug/kg
79-01-6	Trichloroethene	50	U	NR	ug/kg
124-48-1	Dibromochloromethane	50	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	50	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	50	U	NR	ug/kg
75-25-2	Bromoform	50	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	50	U	NR	ug/kg
127-18-4	Tetrachloroethene	50	U	NR	ug/kg
108-90-7	Chlorobenzene	50	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	50	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	50	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	50	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	50	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		107		% rec
540-36-3	1,4-Difluorobenzene-SS		100		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	NA	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/27/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/09/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.0	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	U	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		106		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: [signature]

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Methanol Blank	Date Received:	NA
Proj No:	NA	% Moisture:	NA	Date Extracted:	11/25/91
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/27/91
Matrix:	MeOH Extract	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/09/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	50	U	NR	ug/kg
74-83-9	Bromomethane	50	U	NR	ug/kg
75-01-4	Vinyl chloride	50	U	NR	ug/kg
75-00-3	Chloroethane	50	U	NR	ug/kg
75-09-2	Dichloromethane	250	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	50	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	50	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	50	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	50	U	NR	ug/kg
67-66-3	Chloroform	50	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	50	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	50	U	NR	ug/kg
56-23-5	Carbon tetrachloride	50	U	NR	ug/kg
75-27-4	Bromodichloromethane	50	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	50	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	50	U	NR	ug/kg
79-01-6	Trichloroethene	50	U	NR	ug/kg
124-48-1	Dibromochloromethane	50	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	50	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	50	U	NR	ug/kg
75-25-2	Bromoform	50	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	50	U	NR	ug/kg
127-18-4	Tetrachloroethene	50	U	NR	ug/kg
108-90-7	Chlorobenzene	50	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	50	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	50	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	50	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	50	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		101		% rec
540-36-3	1,4-Difluorobenzene-SS		100		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by:

Form I

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jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-1	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	15.6	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB1 0.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.2	U	NR	ug/kg
74-83-9	Bromomethane	1.2	U	NR	ug/kg
75-01-4	Vinyl chloride	1.2	U	NR	ug/kg
75-00-3	Chloroethane	1.2	U	NR	ug/kg
75-09-2	Dichloromethane	5.9	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.2	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.2	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.2	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.2	U	NR	ug/kg
67-66-3	Chloroform	1.2	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.2	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.2	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.2	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.2	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.2	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.2	U	NR	ug/kg
79-01-6	Trichloroethene	1.2	6.0	NR	ug/kg
124-48-1	Dibromochloromethane	1.2	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.2	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.2	U	NR	ug/kg
75-25-2	Bromoform	1.2	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.2	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.2	1400 *	NR	ug/kg
108-90-7	Chlorobenzene	1.2	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.2	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.2	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.2	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.2	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		121		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.
* Sample result exceeded calibration range of instrument.

Reviewed by: Brian Gold

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-1-RE	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	15.6	Date Extracted:	11/25/91
Method:	EPA 8010	Dilution Factor:	20	Date Analyzed:	11/27/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB1 0.0_RE

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1200	U	NR	ug/kg
74-83-9	Bromomethane	1200	U	NR	ug/kg
75-01-4	Vinyl chloride	1200	U	NR	ug/kg
75-00-3	Chloroethane	1200	U	NR	ug/kg
75-09-2	Dichloromethane	5900	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1200	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1200	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1200	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1200	U	NR	ug/kg
67-66-3	Chloroform	1200	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1200	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1200	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1200	U	NR	ug/kg
75-27-4	Bromodichloromethane	1200	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1200	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1200	U	NR	ug/kg
79-01-6	Trichloroethene	1200	U	NR	ug/kg
124-48-1	Dibromochloromethane	1200	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1200	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1200	U	NR	ug/kg
75-25-2	Bromoform	1200	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1200	U	NR	ug/kg
127-18-4	Tetrachloroethene	1200	54000	NR	ug/kg
108-90-7	Chlorobenzene	1200	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1200	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1200	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1200	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1200	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		96		% rec
540-36-3	1,4-Difluorobenzene-SS		104		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: [signature]

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-2	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	3.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB1 9.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.2	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	320 *	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		120		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.
* Sample result exceeded calibration range of instrument.

Reviewed by: Brian Ford

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-2-RE	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	3.0	Date Extracted:	11/25/91
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB1 9.5_RE

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	52	U	NR	ug/kg
74-83-9	Bromomethane	52	U	NR	ug/kg
75-01-4	Vinyl chloride	52	U	NR	ug/kg
75-00-3	Chloroethane	52	U	NR	ug/kg
75-09-2	Dichloromethane	260	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	52	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	52	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	52	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	52	U	NR	ug/kg
67-66-3	Chloroform	52	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	52	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	52	U	NR	ug/kg
56-23-5	Carbon tetrachloride	52	U	NR	ug/kg
75-27-4	Bromodichloromethane	52	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	52	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	52	U	NR	ug/kg
79-01-6	Trichloroethene	52	U	NR	ug/kg
124-48-1	Dibromochloromethane	52	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	52	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	52	U	NR	ug/kg
75-25-2	Bromoform	52	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	52	U	NR	ug/kg
127-18-4	Tetrachloroethene	52	180	NR	ug/kg
108-90-7	Chlorobenzene	52	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	52	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	52	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	52	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	52	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		99		% rec
540-36-3	1,4-Difluorobenzene-SS		85		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian [illegible]

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jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-3	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	7.3	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB2 0.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.4	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	360 *	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		129		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.
* Sample result exceeded calibration range of instrument.

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-3-RE	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	7.3	Date Extracted:	11/25/91
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB2 0.0_RE

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	54	U	NR	ug/kg
74-83-9	Bromomethane	54	U	NR	ug/kg
75-01-4	Vinyl chloride	54	U	NR	ug/kg
75-00-3	Chloroethane	54	U	NR	ug/kg
75-09-2	Dichloromethane	270	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	54	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	54	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	54	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	54	U	NR	ug/kg
67-66-3	Chloroform	54	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	54	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	54	U	NR	ug/kg
56-23-5	Carbon tetrachloride	54	U	NR	ug/kg
75-27-4	Bromodichloromethane	54	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	54	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	54	U	NR	ug/kg
79-01-6	Trichloroethene	54	U	NR	ug/kg
124-48-1	Dibromochloromethane	54	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	54	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	54	U	NR	ug/kg
75-25-2	Bromoform	54	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	54	U	NR	ug/kg
127-18-4	Tetrachloroethene	54	150	NR	ug/kg
108-90-7	Chlorobenzene	54	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	54	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	54	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	54	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	54	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		107		% rec
540-36-3	1,4-Difluorobenzene-SS		83		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian Gross

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-4	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	3.3	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/27/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB2 9.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.2	8.9	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	32	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		116		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: [signature]

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jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-5	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	9.8	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB3 0.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.5	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	11	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		120		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian Ellis

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-6	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	13.9	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB3 9.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.2	U	NR	ug/kg
74-83-9	Bromomethane	1.2	U	NR	ug/kg
75-01-4	Vinyl chloride	1.2	U	NR	ug/kg
75-00-3	Chloroethane	1.2	U	NR	ug/kg
75-09-2	Dichloromethane	5.8	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.2	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.2	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.2	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.2	U	NR	ug/kg
67-66-3	Chloroform	1.2	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.2	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.2	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.2	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.2	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.2	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.2	U	NR	ug/kg
79-01-6	Trichloroethene	1.2	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.2	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.2	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.2	U	NR	ug/kg
75-25-2	Bromoform	1.2	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.2	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.2	20	NR	ug/kg
108-90-7	Chlorobenzene	1.2	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.2	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.2	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.2	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.2	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		111		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/12/91
Project:	NA	Lab Sample ID:	31428-7	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	10.5	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB4 2.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.6	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	15	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		113		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian Good

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/12/91
Project:	NA	Lab Sample ID:	31428-8	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	6.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB4 15.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.3	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	12	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		111		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/14/91
Project:	NA	Lab Sample ID:	31428-9	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	6.6	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB5 0.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.4	5.7	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	7.1	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		129		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian Fox

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/14/91
Project:	NA	Lab Sample ID:	31428-10	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	7.8	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/22/91
Matrix:	Soil	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB5 9.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.4	5.5	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	1.8	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		121		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/15/91
Project:	NA	Lab Sample ID:	31428-11	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	56.3	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB7 2.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	2.3	U	NR	ug/kg
74-83-9	Bromomethane	2.3	U	NR	ug/kg
75-01-4	Vinyl chloride	2.3	U	NR	ug/kg
75-00-3	Chloroethane	2.3	U	NR	ug/kg
75-09-2	Dichloromethane	11	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	2.3	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	2.3	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	2.3	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	2.3	U	NR	ug/kg
67-66-3	Chloroform	2.3	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	2.3	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	2.3	U	NR	ug/kg
56-23-5	Carbon tetrachloride	2.3	U	NR	ug/kg
75-27-4	Bromodichloromethane	2.3	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	2.3	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	2.3	U	NR	ug/kg
79-01-6	Trichloroethene	2.3	U	NR	ug/kg
124-48-1	Dibromochloromethane	2.3	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	2.3	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	2.3	U	NR	ug/kg
75-25-2	Bromoform	2.3	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	2.3	U	NR	ug/kg
127-18-4	Tetrachloroethene	2.3	U	NR	ug/kg
108-90-7	Chlorobenzene	2.3	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	2.3	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	2.3	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	2.3	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	2.3	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		109		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian D. [illegible]

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/15/91
Project:	NA	Lab Sample ID:	31428-12	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	11.5	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB7 9.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.6	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	U	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		114		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: [signature]

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/15/91
Project:	NA	Lab Sample ID:	31428-13	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	6.6	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB8 2.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.4	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	U	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		121		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/15/91
Project:	NA	Lab Sample ID:	31428-14	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	52.5	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB8 9.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	2.1	U	NR	ug/kg
74-83-9	Bromomethane	2.1	U	NR	ug/kg
75-01-4	Vinyl chloride	2.1	U	NR	ug/kg
75-00-3	Chloroethane	2.1	U	NR	ug/kg
75-09-2	Dichloromethane	11	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	2.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	2.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	2.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	2.1	U	NR	ug/kg
67-66-3	Chloroform	2.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	2.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	2.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	2.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	2.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	2.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	2.1	U	NR	ug/kg
79-01-6	Trichloroethene	2.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	2.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	2.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	2.1	U	NR	ug/kg
75-25-2	Bromoform	2.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	2.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	2.1	U	NR	ug/kg
108-90-7	Chlorobenzene	2.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	2.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	2.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	2.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	2.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		118		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/15/91
Project:	NA	Lab Sample ID:	31428-15	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	10.6	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB9 2.0

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.6	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	U	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		109		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: [signature]

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/15/91
Project:	NA	Lab Sample ID:	31428-16	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	6.7	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB9 9.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.4	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	U	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		114		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian [illegible]

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/13/91
Project:	NA	Lab Sample ID:	31428-17	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: Blank

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		103		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gold

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/14/91
Project:	NA	Lab Sample ID:	31428-18	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	2.2	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB10 4.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.1	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	9.2	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		103		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/14/91
Project:	NA	Lab Sample ID:	31428-19	Date Received:	11/16/91
Proj No:	23/27-540MTH50	% Moisture:	2.9	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	11/25/91
Matrix:	Soil	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	J.M.F.			Date Reported:	12/09/91

Client Sample ID/Description: SB10 8.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.1	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	8.3	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		98		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian [illegible]

Form I

jas37

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

31428
Ref.# 31426 SI 11-16-91

PROJECT NUMBER № 00519
23/27-526MTH
NO:

PROJECT MANAGER: MARK HAGLEY
PROJECT CONTACT: MARY MACKEY
LABORATORY: CH2M HILL

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	BRASS LINER	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED: VOC EPA METHOD 8010
SB1 0.0	11/13/91	PM	X														1	1	1
SB1 9.5	11/13/91	PM	X														1	1	2
SB2 0.0	11/13/91	PM	X														1	1	3
SB2 9.5	11/13/91	PM	X														1	1	4
SB3 0.0	11/13/91	AM	X														1	1	5
SB3 9.5	11/13/91	AM	X														1	1	6
SB4 2.0	11/12/91	PM	X														1	1	7
SB4 15.5	11/12/91	PM	X														1	1	8
SB5 0.0	11/14/91	AM	X														1	1	9
SB5 9.5	11/14/91	PM	X														1	1	10
SB7 2.0	11/15/91	AM	X														1	1	11
SB7 9.5	11/15/91	AM	X														1	1	12

HAZWRAP/NEESA Y N
QC LEVEL (1) 2 3
COC Y ICE Y
ANALYSIS Y TEMP 5.2°C
CUSTODY SEAL N
SAMPLE COND. Good
BUS UPS FED EX OTHER

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF) John Fo	(JMF) John Fo	11/15/91	PM	Chip Jones	11/16/91	10:00
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER

AIR BILL NUMBER: 3495866345

000034

CHAIN OF CUSTODY
BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

Ref.# ~~31426~~ 31428 SI 11-16-91

PROJECT NUMBER № 00520 23/27-526 MTH

NO:

PROJECT MANAGER: MARK HAGLEY

PROJECT CONTACT: MARY MACKEY

LABORATORY: CH2M HILL

REMARKS/ ANALYSIS REQUIRED: VOC EPA METHOD 8010

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	BRASS LINER	TOTAL NO. OF CONTAINERS	REMARKS
SB 82.0	11/15	AM	X														X	1	13
SB 89.5	11/15	AM	X														X	1	14
SB 92.0	11/15	PM	X														X	1	15
SB 99.5	11/15	PM	X														X	1	16
BLANK	11/13	AM			X	X												1	FIELD BLANK 17
SB 104.5	11/14																		18 NOT INCLU. ON COC
SB 108.5	11/14																		19 NOT INCLU. ON COC

HAZWRAP/NEESA Y N
QC LEVEL 1 2 3
COC Y ICE Y
ANA P Y 5.2°C
CUST. N
SAMPLE COND. Good
BUS UPS FED-EX OTHER

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
(JMF) [signature]	(JMF) [signature]	11/15/91	PM	Chip Ives	11/16/91	10:00
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3495866345

000035

CH2M HILL
Engineers
Planners
Economists
Scientists

MTH

RECEIVED
DEC 23

December 18, 1991

LRD294.10

BARR ENGINEERING
8300 Norman Center Drive
Minneapolis, MN 55437-1026

Attention: Mary Mackey

RE: Laboratory Reference Number - 31597

Dear Ms. Mackey:

The results are enclosed for your samples that were received by our laboratory on December 7, 1991.

If you have any questions please contact Mr. Mark Cichy or Ms. Mary Paschke in Client Services.

CH2M HILL stores samples for 30 days after the written report date at no charge. After 30 days, non-hazardous samples are disposed of at no charge. If you require either of the following services you need to notify us within 15 days:

* Return of samples to the address shown above.

* Storage of samples at $5.00/sample/month.

If a sample is determined to be hazardous, we will contact you to discuss disposal options.

Thank you for selecting a CH2M HILL laboratory for your analytical testing needs.

Sincerely,

CH2M HILL QUALITY ANALYTICS LABORATORY

Peggy A. Norton

Peggy A. Norton
Senior Data Package Specialist

Encl.

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR VOLATILE GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL
CLIENT : Barr Engineering
CASE NO : N/A
CONTRACT NO.: N/A
LAB ID : 31597
SDG # : N/A

I. RECEIPT

A. Date: December 07 ,1991

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
Method Blk	N/A	Soil	N/A	N/A	12/12/91
31597001	HAA 2.5	Soil	12/04/91	N/A	12/12/91
31597M01	HAA 2.5MS	Soil	12/04/91	N/A	12/12/91
31597D01	HAA 2.5MSD	Soil	12/04/91	N/A	12/12/91
31597002	HAB 2.5	Soil	12/04/91	N/A	12/12/91

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Results reported on a dry-weight basis.

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

BC

IV. QUALITY CONTROL

A. Method Blank : The method blank met QC criteria.

B. Surrogate Recoveries : All met QC advisory limits.

C. Matrix Spike Results: The MS/MSDs associated with this contract was performed on sample 31597-1 (HAA 2.5) and will be reported with this package.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have been provided for this data package.

Brian Geers 12-18-91

Brian Geers **Date**
Acting Organics Division Manager

kdh.U

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 31597-1
Client ID: HAA 2.5
Date Tested: 12/12/91

Analysis: 8010
Matrix: Soil

Compound	Concentration Spiked (ug/kg)	Sample Result (ug/kg)	Spike Result (ug/kg)	Spike Percent Recovery
Chloromethane	23	< 1.1	19	83
Bromomethane	23	< 1.1	22	96
Vinyl chloride	23	< 1.1	22	96
Chloroethane	23	< 1.1	22	96
Dichloromethane	23	< 5.7	22	96
Trichlorofluoromethane	23	< 1.1	20	87
1,1-Dichloroethene	23	< 1.1	22	96
1,1-Dichloroethane	23	< 1.1	23	100
trans-1,2-Dichloroethene	23	< 1.1	22	96
Chloroform	23	< 1.1	22	96
1,2-Dichloroethane	23	< 1.1	22	96
1,1,1-Trichloroethane	23	< 1.1	21	91
Carbon Tetrachloride	23	< 1.1	22	96
Bromodichloromethane	23	< 1.1	22	96
1,2-Dichloropropane	23	< 1.1	22	96
cis-1,3-Dichloropropene	23	< 1.1	22	96
Trichloroethene	23	< 1.1	21	91
Dibromochloromethane	23	< 1.1	23	100
1,1,2-Trichloroethane	23	< 1.1	23	100
trans-1,3-Dichloropropene	23	< 1.1	23	100
Bromoform	23	< 1.1	24	104
1,1,2,2-Tetrachloroethane	23	< 1.1	24	104
Tetrachloroethene	23	11	30	130
Chlorobenzene	23	< 1.1	22	96
1,3-Dichlorobenzene	23	< 1.1	20	87
1,2-Dichlorobenzene	23	< 1.1	20	87
1,4-Dichlorobenzene	23	< 1.1	21	91
1,2-Dibromoethane	23	< 1.1	25	109

Comments: Results reported on a dry-weight basis.

Approved by: Brian Gates

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE DUPLICATE RESULTS

Laboratory No.: 31597-1
Client ID: HAA 2.5
Date Tested: 12/12/91

Analysis: 8010
Matrix: Soil

Compound	Concentration Spiked (ug/kg)	Sample Result (ug/kg)	Spike Duplicate Result (ug/kg)	Spike Percent Recovery	RPD
Chloromethane	23	< 1.1	27	117	34.8
Bromomethane	23	< 1.1	25	109	12.8
Vinyl chloride	23	< 1.1	25	109	12.8
Chloroethane	23	< 1.1	26	113	16.7
Dichloromethane	23	< 5.7	26	113	16.7
Trichlorofluoromethane	23	< 1.1	25	109	22.2
1,1-Dichloroethene	23	< 1.1	26	113	16.7
1,1-Dichloroethane	23	< 1.1	26	113	12.2
trans-1,2-Dichloroethene	23	< 1.1	25	109	12.8
Chloroform	23	< 1.1	26	113	16.7
1,2-Dichloroethane	23	< 1.1	27	117	20.4
1,1,1-Trichloroethane	23	< 1.1	26	113	21.3
Carbon Tetrachloride	23	< 1.1	25	109	12.8
Bromodichloromethane	23	< 1.1	25	109	12.8
1,2-Dichloropropane	23	< 1.1	27	115	18.6
cis-1,3-Dichloropropene	23	< 1.1	24	104	8.7
Trichloroethene	23	< 1.1	25	109	17.4
Dibromochloromethane	23	< 1.1	26	113	12.2
1,1,2-Trichloroethane	23	< 1.1	26	113	12.2
trans-1,3-Dichloropropene	23	< 1.1	26	113	12.2
Bromoform	23	< 1.1	25	109	4.1
1,1,2,2-Tetrachloroethane	23	< 1.1	26	113	8.0
Tetrachloroethene	23	11	42	135	33.3
Chlorobenzene	23	< 1.1	34	148	42.9
1,3-Dichlorobenzene	23	< 1.1	21	91	4.9
1,2-Dichlorobenzene	23	< 1.1	22	96	9.5
1,4-Dichlorobenzene	23	< 1.1	22	96	4.7
1,2-Dibromoethane	23	< 1.1	27	117	7.7

Comments: Results reported on a dry-weight basis.

Approved by: Brian Hill

kdh.U

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	NA	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/12/91
Matrix:	Soil	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/16/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/kg
74-83-9	Bromomethane	1.0	U	NR	ug/kg
75-01-4	Vinyl chloride	1.0	U	NR	ug/kg
75-00-3	Chloroethane	1.0	U	NR	ug/kg
75-09-2	Dichloromethane	5.0	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/kg
67-66-3	Chloroform	1.0	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.0	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/kg
79-01-6	Trichloroethene	1.0	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.0	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/kg
75-25-2	Bromoform	1.0	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.0	U	NR	ug/kg
108-90-7	Chlorobenzene	1.0	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		107		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Ellis

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	12/04/91
Project:	N/A	Lab Sample ID:	31597-1	Date Received:	12/07/91
Proj No:	23/27-540MTH60	% Moisture:	12.1	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/12/91
Matrix:	Soil	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	John Fox			Date Reported:	12/16/91

Client Sample ID/Description: HAA 2.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.1	U	NR	ug/kg
74-83-9	Bromomethane	1.1	U	NR	ug/kg
75-01-4	Vinyl chloride	1.1	U	NR	ug/kg
75-00-3	Chloroethane	1.1	U	NR	ug/kg
75-09-2	Dichloromethane	5.7	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.1	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.1	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.1	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.1	U	NR	ug/kg
67-66-3	Chloroform	1.1	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.1	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.1	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.1	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.1	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.1	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.1	U	NR	ug/kg
79-01-6	Trichloroethene	1.1	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.1	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.1	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.1	U	NR	ug/kg
75-25-2	Bromoform	1.1	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.1	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.1	11	NR	ug/kg
108-90-7	Chlorobenzene	1.1	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.1	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.1	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.1	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.1	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		105		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian Gelus

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	12/04/91
Project:	N/A	Lab Sample ID:	31597-2	Date Received:	12/07/91
Proj No:	23/27-540MTH60	% Moisture:	19.2	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/12/91
Matrix:	Soil	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	John Fox			Date Reported:	12/16/91

Client Sample ID/Description: HAB 2.5

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.2	U	NR	ug/kg
74-83-9	Bromomethane	1.2	U	NR	ug/kg
75-01-4	Vinyl chloride	1.2	U	NR	ug/kg
75-00-3	Chloroethane	1.2	U	NR	ug/kg
75-09-2	Dichloromethane	6.2	U	NR	ug/kg
75-69-4	Trichlorofluoromethane	1.2	U	NR	ug/kg
75-35-4	1,1-Dichloroethene	1.2	U	NR	ug/kg
75-34-3	1,1-Dichloroethane	1.2	U	NR	ug/kg
156-60-5	trans-1,2-Dichloroethene	1.2	U	NR	ug/kg
67-66-3	Chloroform	1.2	U	NR	ug/kg
107-06-2	1,2-Dichloroethane	1.2	U	NR	ug/kg
71-55-6	1,1,1-Trichloroethane	1.2	U	NR	ug/kg
56-23-5	Carbon tetrachloride	1.2	U	NR	ug/kg
75-27-4	Bromodichloromethane	1.2	U	NR	ug/kg
78-87-5	1,2-Dichloropropane	1.2	U	NR	ug/kg
10061-01-5	cis-1,3-Dichloropropene	1.2	U	NR	ug/kg
79-01-6	Trichloroethene	1.2	U	NR	ug/kg
124-48-1	Dibromochloromethane	1.2	U	NR	ug/kg
79-00-5	1,1,2-Trichloroethane	1.2	U	NR	ug/kg
10061-02-6	trans-1,3-Dichloropropene	1.2	U	NR	ug/kg
75-25-2	Bromoform	1.2	U	NR	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	1.2	U	NR	ug/kg
127-18-4	Tetrachloroethene	1.2	19	NR	ug/kg
108-90-7	Chlorobenzene	1.2	U	NR	ug/kg
541-73-1	1,3-Dichlorobenzene	1.2	U	NR	ug/kg
95-50-1	1,2-Dichlorobenzene	1.2	U	NR	ug/kg
106-46-7	1,4-Dichlorobenzene	1.2	U	NR	ug/kg
106-93-4	1,2-Dibromoethane	1.2	U	NR	ug/kg
110-56-5	1,4-Dichlorobutane-SS		106		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments: Results reported on a dry-weight basis.

Reviewed by: Brian Gen

Form I

CHAIN OF CUSTODY
BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439 31597

PROJECT NUMBER Nº 00837
213/127-540MTH60
NO:

PROJECT MANAGER: MARK HAGEN
PROJECT CONTACT: MARY MACKEY
LABORATORY: CH2M HILL

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED:
HAA 2.5	12/4/91	PM	X			1											1	8010
HAB 2.5	12/4/91	PM	X			1											1	2

HAZWRAP/NEESA	Y N
QC LEVEL	1 2 3
COC	Y
ANA REQ	Y
CUST SEAL	N
SAMPLE COND.	GOOD
BUS UPS FED-EX OTHER	

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
John Fox (JMF)	(JMF) John Fox	12/6	PM			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB: Allen Smith	12/9/91	1100

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER

AIR BILL NUMBER:

800008

Appendix 6

Water Quality Laboratory Reports

CH2M HILL
Engineers
Planners
Economists
Scientists

MTK

DEC 23

December 17, 1991

LRD294.10

BARR ENGINEERING
8300 Norman Center Drive
Minneapolis, MN 55437-1026

Attention: Mary Mackey

RE: Laboratory Reference Number - 31517

Dear Ms. Mackey:

The results are enclosed for your samples that were received by our laboratory on November 27, 1991.

If you have any questions please contact Mr. Mark Cichy or Ms. Mary Paschke in Client Services.

CH2M HILL stores samples for 30 days after the written report date at no charge. After 30 days, non-hazardous samples are disposed of at no charge. If you require either of the following services you need to notify us within 15 days:

* Return of samples to the address shown above.
* Storage of samples at $5.00/sample/month.

If a sample is determined to be hazardous, we will contact you to discuss disposal options.

Thank you for selecting a CH2M HILL laboratory for your analytical testing needs.

Sincerely,

CH2M HILL QUALITY ANALYTICS LABORATORY

Peggy A. Norton

Peggy A. Norton
Senior Data Package Specialist

Encl.

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR VOLATILE GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL

CLIENT : Barr Engineering 23/27-540MTH40

CASE NO : N/A

CONTRACT NO.: N/A

LAB ID : 31517

SDG # : N/A

I. RECEIPT

A. Date: November 27, 1991

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
Method Blk	N/A	Water	N/A	N/A	12/2/91
Method Blk	N/A	Water	N/A	N/A	12/3/91
Method Blk	N/A	Water	N/A	N/A	12/3/91
Method Blk	N/A	Water	N/A	N/A	12/4/91
31517001	MW3S	Water	11/26/91	N/A	12/3/91
31517002	MW9S	Water	11/26/91	N/A	12/3/91
31517003	MW4S	Water	11/26/91	N/A	12/3/91
31517003-DL	MW4S_DL	Water	11/26/91	N/A	12/4/91
31517004	MW2S	Water	11/26/91	N/A	12/3/91
31517004-DL	MW2S_DL	Water	11/26/91	N/A	12/4/91
31517005	PW1	Water	11/26/91	N/A	12/3/91
31517006	MWBL	Water	11/26/91	N/A	12/3/91
31517007	MWB	Water	11/26/91	N/A	12/3/91
31517008	MWD	Water	11/26/91	N/A	12/3/91
31517009	MWDBR	Water	11/26/91	N/A	12/3/91
31517010	MW8S	Water	11/26/91	N/A	12/3/91
31517M10	MW8S MS	Water	11/26/91	N/A	12/3/91
31517D10	MW8S MSD	Water	11/26/91	N/A	12/3/91
31517011	M-2	Water	11/26/91	N/A	12/3/91
31517012	TB-2	Water	11/26/91	N/A	12/3/91
31517013	MW7S	Water	11/25/91	N/A	12/2/91
31517014	MW6S	Water	11/25/91	N/A	12/2/91
31517015	MW5S	Water	11/25/91	N/A	12/3/91
31517016	MW1S	Water	11/25/91	N/A	12/2/91
31517017	SW1D	Water	11/25/91	N/A	12/2/91
31517018	SW2D	Water	11/25/91	N/A	12/2/91
31517019	SW3D	Water	11/25/91	N/A	12/2/91
31517020	SW4D	Water	11/25/91	N/A	12/2/91
31517021	M-1	Water	11/25/91	N/A	12/3/91
31517022	TB-1	Water	11/25/91	N/A	12/3/91

C. Documentation Exceptions : None encountered.

jas37

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

B

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Please note that due to the concentration of Tetrachloroethene in samples 31517-3 (MW4S) and 31517-4 (MW2S), these samples were reanalyzed on a diluted basis to obtain detector responses within the linear calibration range of the instrument. The results of both analyses are included for your information.

IV. QUALITY CONTROL

A. Method Blank : The method blanks associated with these samples met QC criteria.

B. Surrogate Recoveries : Met acceptable QC limits.

C. Matrix Spike Results: Met acceptable QC criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have been provided for this data package.

Brian Geers 12-19-91

Brian Geers Date
Acting Organics Division Manager

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 31517-10
Client ID: MW8S
Date Tested: 12/3/91

Analysis: 8010
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	Spike Percent Recovery
Chloromethane	20	< 1.0	16.3	82
Bromomethane	20	< 1.0	19.2	96
Vinyl chloride	20	< 1.0	15.1	76
Chloroethane	20	< 1.0	16.7	84
Dichloromethane	20	< 5.0	23.5	118
Trichlorofluoromethane	20	< 1.0	18.2	91
1,1-Dichloroethene	20	< 1.0	17.4	87
1,1-Dichloroethane	20	< 1.0	19.9	100
trans-1,2-Dichloroethene	20	< 1.0	18.4	92
Chloroform	20	< 1.0	19.1	96
1,2-Dichloroethane	20	< 1.0	22.0	110
1,1,1-Trichloroethane	20	< 1.0	19.9	100
Carbon Tetrachloride	20	< 1.0	20.5	103
Bromodichloromethane	20	< 1.0	22.3	112
1,2-Dichloropropane	20	< 1.0	21.3	107
cis-1,3-Dichloropropene	20	< 1.0	21.1	106
Trichloroethene	20	< 1.0	18.7	94
Dibromochloromethane	20	< 1.0	23.3	117
1,1,2-Trichloroethane	20	< 1.0	22.0	110
trans-1,3-Dichloropropene	20	< 1.0	21.3	107
Bromoform	20	< 1.0	28.2	141
1,1,2,2-Tetrachloroethane	20	< 1.0	23.4	117
Tetrachloroethene	20	< 1.0	19.4	97
Chlorobenzene	20	< 1.0	19.8	99
1,3-Dichlorobenzene	20	< 1.0	18.4	92
1,2-Dichlorobenzene	20	< 1.0	19.7	99
1,4-Dichlorobenzene	20	< 1.0	20.0	100
1,2-Dibromoethane	20	< 1.0	25.4	127

Comments:

Approved by:

jas37

000004

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE DUPLICATE RESULTS

Laboratory No.: 31517-10
Client ID: MW8S
Date Tested: 12/3/91

Analysis: 8010
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Duplicate Result (ug/L)	Spike Percent Recovery	RPD
Chloromethane	20	< 1.0	19.8	99	19
Bromomethane	20	< 1.0	22.6	113	16
Vinyl chloride	20	< 1.0	18.1	91	18
Chloroethane	20	< 1.0	19.2	96	14
Dichloromethane	20	< 5.0	23.8	119	1.3
Trichlorofluoromethane	20	< 1.0	21.2	106	15
1,1-Dichloroethene	20	< 1.0	19.5	98	11
1,1-Dichloroethane	20	< 1.0	21.8	109	9.1
trans-1,2-Dichloroethene	20	< 1.0	21.1	106	14
Chloroform	20	< 1.0	20.4	102	6.6
1,2-Dichloroethane	20	< 1.0	23.3	117	5.7
1,1,1-Trichloroethane	20	< 1.0	21.9	110	9.6
Carbon Tetrachloride	20	< 1.0	22.0	110	7.1
Bromodichloromethane	20	< 1.0	22.8	114	2.2
1,2-Dichloropropane	20	< 1.0	21.9	110	2.8
cis-1,3-Dichloropropene	20	< 1.0	20.7	104	1.9
Trichloroethene	20	< 1.0	21.6	108	14
Dibromochloromethane	20	< 1.0	23.9	120	2.5
1,1,2-Trichloroethane	20	< 1.0	22.4	112	1.8
trans-1,3-Dichloropropene	20	< 1.0	21.9	110	2.8
Bromoform	20	< 1.0	26.8	134	5.1
1,1,2,2-Tetrachloroethane	20	< 1.0	22.0	110	6.2
Tetrachloroethene	20	< 1.0	20.8	104	7.0
Chlorobenzene	20	< 1.0	20.8	104	4.9
1,3-Dichlorobenzene	20	< 1.0	18.4	92	0.0
1,2-Dichlorobenzene	20	< 1.0	19.2	96	2.6
1,4-Dichlorobenzene	20	< 1.0	18.7	94	6.7
1,2-Dibromoethane	20	< 1.0	25.1	126	1.2

Comments:

Approved by: [signature]

jas37

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/12/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		93		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: [signature]

Form I

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jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/12/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		91		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/12/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		99		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Ellis

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/12/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		88		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Good

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-1	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW3S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	9.5	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		99		%-rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-2	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW9S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	6.6	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		91		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gillis

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-3	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW4S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	830 *	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		103		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: * Sample result exceeded calibration range of instrument.

Reviewed by: Brian Gore

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-3-DL	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	50	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW4S_DL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	50	U	NR	ug/L
74-83-9	Bromomethane	50	U	NR	ug/L
75-01-4	Vinyl chloride	50	U	NR	ug/L
75-00-3	Chloroethane	50	U	NR	ug/L
75-09-2	Dichloromethane	250	U	NR	ug/L
75-69-4	Trichlorofluoromethane	50	U	NR	ug/L
75-35-4	1,1-Dichloroethene	50	U	NR	ug/L
75-34-3	1,1-Dichloroethane	50	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	50	U	NR	ug/L
67-66-3	Chloroform	50	U	NR	ug/L
107-06-2	1,2-Dichloroethane	50	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	50	U	NR	ug/L
56-23-5	Carbon tetrachloride	50	U	NR	ug/L
75-27-4	Bromodichloromethane	50	U	NR	ug/L
78-87-5	1,2-Dichloropropane	50	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	50	U	NR	ug/L
79-01-6	Trichloroethene	50	U	NR	ug/L
124-48-1	Dibromochloromethane	50	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	50	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	50	U	NR	ug/L
75-25-2	Bromoform	50	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	50	U	NR	ug/L
127-18-4	Tetrachloroethene	50	780	NR	ug/L
108-90-7	Chlorobenzene	50	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	50	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	50	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	50	U	NR	ug/L
106-93-4	1,2-Dibromoethane	50	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		96		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: [signature]

Form I

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-4	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW2S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	890 *	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		107		%rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: * Sample result exceeded calibration range of instrument.

Reviewed by: Brian Gibbs

Form I

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-4-DL	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	250	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW2S_DL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	250	U	NR	ug/L
74-83-9	Bromomethane	250	U	NR	ug/L
75-01-4	Vinyl chloride	250	U	NR	ug/L
75-00-3	Chloroethane	250	U	NR	ug/L
75-09-2	Dichloromethane	1200	U	NR	ug/L
75-69-4	Trichlorofluoromethane	250	U	NR	ug/L
75-35-4	1,1-Dichloroethene	250	U	NR	ug/L
75-34-3	1,1-Dichloroethane	250	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	250	U	NR	ug/L
67-66-3	Chloroform	250	U	NR	ug/L
107-06-2	1,2-Dichloroethane	250	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	250	U	NR	ug/L
56-23-5	Carbon tetrachloride	250	U	NR	ug/L
75-27-4	Bromodichloromethane	250	U	NR	ug/L
78-87-5	1,2-Dichloropropane	250	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	250	U	NR	ug/L
79-01-6	Trichloroethene	250	U	NR	ug/L
124-48-1	Dibromochloromethane	250	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	250	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	250	U	NR	ug/L
75-25-2	Bromoform	250	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	250	U	NR	ug/L
127-18-4	Tetrachloroethene	250	3300	NR	ug/L
108-90-7	Chlorobenzene	250	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	250	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	250	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	250	U	NR	ug/L
106-93-4	1,2-Dibromoethane	250	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		95		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

Form I

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-5	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3700	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: PW1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	1.1	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		106		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-6	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MWBL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		101		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: [signature]

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-7	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MWB

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	1.7	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	1.0	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		100		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: [signature]

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-8	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MWD

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		90		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gill

Form I

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-9	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MWDBR

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		97		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-10	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW8S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		92		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

Form I

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-11	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: M-2

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	1.6	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	1.0	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		85		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gellis

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/26/91
Project:	NA	Lab Sample ID:	31517-12	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: TB-2

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		93		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gore

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-13	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW7S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	9.7	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		94		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gma

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-14	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW6S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		102		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-15	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW5S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	1.2	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		84		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gohs

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-16	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: MW1S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		94		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-17	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: SW1D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		107		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-18	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: SW2D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		97		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Ellis

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-19	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: SW3D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		105		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-20	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/02/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: SW4D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		99		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-21	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: M-1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		96		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/25/91
Project:	NA	Lab Sample ID:	31517-22	Date Received:	11/27/91
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/03/91
Matrix:	Water	Instrument ID:	GC 3600	Analyst:	B.J.
Sampler:	Steve Iverson			Date Reported:	12/12/91

Client Sample ID/Description: TB-1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		82		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gallo

Form I

jas37

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER Nº 00604
23/27-540MTH40

NO:

PROJECT MANAGER: MTH

PROJECT CONTACT: SD1

LABORATORY: CH2M Hill Redding

REMARKS/ ANALYSIS REQUIRED: pg 1 of 2
31517

CONTAINER TYPE AND NUMBER

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	Dash #	TOTAL NO. OF CONTAINERS	
MW3S	11-26-91		X			3											1	3	JOC'S 8010
MW9S	↓		X			3											2	3	
MW4S			X			3											3	3	
MW2S			X			3											4	3	
PW1			X			3											5	3	
MW BL			X			3											6	3	
MW B			X			3											7	3	
MW D			X			3											8	3	
MWDBR			X			3											9	3	
MW8S			X			3											10	3	
M-2			X			3											11	3	
TB-2	↓				X	3											12	3	

HAZWRAP/NEESA	Y	N	
QC LEVEL (S) 2 3			
COC Y	ICE Y	TEMP 5°C	
ANA REQ Y	PH N/A		
CUST SEAL NO	SAMPLE COND. good		
BUS UPS	FED-EX OTHER		

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Larson [signature]	[signature]	11/26		Cindy Barba	11/27/91	1030
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3495876112

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS: YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000034

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER № 00603
23/27-540 MTH40

NO:

PROJECT MANAGER: MTH

PROJECT CONTACT: SDI

LABORATORY: CH2MHILL - REDDING

REMARKS/ ANALYSIS REQUIRED: pg 2 of 2
31517
VOC'S 8010

CONTAINER TYPE AND NUMBER

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	Dash #	TOTAL NO. OF CONTAINERS
MW7S	11-25-91		X			3											13	3
MW6S	↓		X			3											14	3
MW5S			X			3											15	3
MW1S			X			3											16	3
SW1D			X			3											17	3
SW2D			X			3											18	3
SW3D			X			3											19	3
SW4D			X			3											20	3
M-1			X			3											21	3
TB-1	↓				X	3											22	3

HAZWRAP/NEESA Y N
QC LEVEL 1 2 3
COC
ANA REQ
CUST SEAL No
SAMPLE COND. 800d
BUS UPS FED-EX OTHER
ICE
TEMP 5°C
PH NA

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Iverson for [illegible]	Steve Iverson	11/26/91		Cindy Barba	11/27/91	1030
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 3495876112

000035

[redacted]ISTR[redacted]ION: [redacted]TE-O[redacted]NAL [redacted]OMPA[redacted] SH[redacted]IT T[redacted] RE[redacted]NS T[redacted]RR [redacted] RES[redacted]; YE[redacted]-LA[redacted]PY; [redacted]AB [redacted]RDIN[redacted]R; G[redacted]FIEL[redacted]PY

Engineers
Planners
CH2M HILL Economists
Scientists

MTH

RECEIVED DEC 27

December 24, 1991

LMG27317.XY

Ms. Mary Mackey
Barr Engineering Company
8300 Norman Center Drive
Minneapolis, Minnesota 55437-1026

RE: Analytical Data for LMG Laboratory No. 20298

Dear Ms. Mackey:

On December 2, 1991, the CH2M HILL Montgomery Laboratory received seven samples with a request for analysis of selected organic parameters.

The analytical results and associated quality control data are enclosed. The Purgeable Halocarbons analysis was performed at our Redding, California Laboratory. Their report is enclosed.

If you should have any questions concerning the data, please inquire.

The CH2M HILL policy is to store samples for up to 30 days after reporting. If you desire, our laboratory will maintain your samples for a longer period at a cost of $5.00 per sample per month. Samples determined to be hazardous can either be returned to you or disposed of at a cost of $25.00 per sample.

Sincerely,

Angie Smith
for Wanda L. Hall
Data Package Supervisor

Enclosures

cc: Ms. ~~Marti Harding-Smith~~
Mark Hagley

Engineers
Planners
Economists
Scientists

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ANALYTICAL METHODS

Organic Analysis

Priority Pollutants: Water, soil and waste sample are analyzed in accordance with procedures described in Methods 608, 624, and 625, EPA-600/4-82-057 (1982); Methods 8080, 8240, and 8270, Test Methods for Evaluating Solid Waste, 1986, SW-846, Third Edition; and methods outlined in the USEPA Contract Laboratory Program Statement of Work for Organics Analysis, February, 1988.

Volatile Analysis (Safe Drinking Water Act): Water samples are analyzed in accordance with procedures described in Method 524.2, Federal Register (50 FR 46902), November 13, 1985.

Chlorinated Phenoxyacid Herbicides: Samples are analyzed in accordance with procedures described in Method 8150, Test Methods for Evaluating Solid Waste, 1986, SW-846, Third Edition.

Organophosphorous Pesticides: Samples are analyzed in accordance with procedures described in Methods 614 and 622, EPA-600/4-79-019 (1979) and in Method 8140, Test Methods for Evaluating Solid Waste, 1986, SW-846, Third Edition.

Phenolic Acid Analysis by GC: Samples are analyzed in accordance with procedures described in Method 604, Federal Register, 40 CFR, Part 136 (July 1, 1987) and in Method 8040, Test Methods for Evaluating Solid Waste, 1986, SW-846, Third Edition.

Polynuclear Aromatic Hydrocarbons (GC analysis): Samples are analyzed in accordance with procedures described in Method 610, Federal Register, 40 CFR, Part 136 (July 1, 1987) and in Method 8100, Test Methods for Evaluating Solid Waste, 1986, SW-846, Third Edition.

Ethylene Dibromide: Water samples are analyzed in accordance with procedures described in Method 504, Federal Register, (50 FR 46902), November 13, 1985.

Trihalomethanes: Water samples are analyzed in accordance with procedures described in Method 501.2, Federal Register, Vol. 44, No. 231, Part II, November 29, 1979.

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EPA - DEFINED QUALIFIERS

ORGANICS

Definitions for the EPA-defined qualifiers:

U -- Indicates the compound was analyzed for but not detected. The number adjacent to the "U" qualifier indicates the quantitation limit for that compound. The detection limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.

J -- Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound below the stated quantitation limit. The "J" qualifier is not used with pesticide results.

C -- This flag applies to pesticide results only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.

B -- This flag is used when the analyte is found in the associated blank as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.

E -- This flag applies to GC/MS only. The "E" qualifier indicates a compound may be above or below the linear range of the instrument. If the particular compound level is deemed above the linear calibration range, then the sample should be reanalyzed at an appropriate dilution. Therefore, the "E" qualified amount is an estimated concentration. The results for the dilution will be reported on a separate Form I and will be flagged with a "D" if the dilution brings the concentration within proper calibration.

D -- This flag identifies compounds which have been run at a dilution to bring the concentration of that compound within the linear range of the instrument. "D" qualifiers are only used for samples that have been run initially with results above acceptable ranges. For secondary dilutions the "DL" suffix is appended to the sample number on the Form I.

A -- Indicates the Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

X -- Indicates the compound concentration has been manually modified or the EPA qualifier has been manually modified or added.

JX -- The compound was detected and quantitated below the Contract Required Quantitation Limit.

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CLIENT SAMPLE ID QUALIFIERS

LEVEL 1

The qualifiers that GC/MS and GC use with the client sample ID are defined below:

DL -- Dilution Run

R -- Rerun (may be followed by a digit to indicate multiple reruns)

RD -- Diluted Rerun

RX -- Re-extraction Analysis

MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)

MSD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

QC_BLANK -- Method Blank (may be followed by a "W" for waters, "S" for soils run at a low level, or "SM" for soils run at a medium level -- these letters may be followed by a digit to indicate multiple blanks of that type; if there are no letters, the digit indicates multiple blanks).

These qualifiers allow GC/MS and GC to have unique client sample ID's so that the client can get more accurate information from the data reported.

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TABLE 1

SAMPLE CROSS-REFERENCE SUMMARY

CH2M HILL Laboratory No. 20298

CH2M HILL Sample No.	Sample Description				
20298001	MW 10S	11/27/91	GRAB	23/27-540MTH40	PO#00602
20298002	MW 10SL	11/27/91	GRAB	23/27-540MTH40	PO#00602
20298003	MW 2SL	11/27/91	GRAB	23/27-540MTH40	PO#00602
20298004	MW 7SL	11/27/91	GRAB	23/27-540MTH40	PO#00602
20298005	M-3	11/27/91	GRAB	23/27-540MTH40	PO#00602
20298006	TB-3	11/27/91		23/27-540MTH40	PO#00602
20298007	FB-1	11/27/91		23/27-540MTH40	PO#00602

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CASE NARRATIVE FOR VOLATILE GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL

CLIENT : Barr Engineering 23/27-540MTH40

CASE NO : N/A

CONTRACT NO.: N/A

LAB ID : 31540

SDG # : N/A

I. RECEIPT

A. Date: December 3, 1991

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
Method Blk	N/A	Water	N/A	N/A	12/4/91
Method Blk	N/A	Water	N/A	N/A	12/5/91
31540001	MW 10S	Water	11/27/91	N/A	12/4/91
31540002	MW 10SL	Water	11/27/91	N/A	12/4/91
31540003	MW 2SL	Water	11/27/91	N/A	12/4/91
31540004	MW 7SL	Water	11/27/91	N/A	12/4/91
31540004-DL1	MW 7SL_DL1	Water	11/27/91	N/A	12/5/91
31540004-DL2	MW 7SL_DL2	Water	11/27/91	N/A	12/5/91
31540005	M-3	Water	11/27/91	N/A	12/4/91
31540006	TB-3	Water	11/27/91	N/A	12/4/91
31540007	FB-1	Water	11/27/91	N/A	12/4/91

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

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III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Please note that due to the concentration of Trichloroethene and Tetrachloroethene in sample 31540-4 (MW 7SL), this sample was reanalyzed at a 50x dilution and a 100x dilution to obtain detector responses within the linear calibration range of the instrument. The results of all analyses are included for your information.

IV. QUALITY CONTROL

A. Method Blank : The method blanks associated with these samples met QC criteria.

B. Surrogate Recoveries : Met acceptable QC limits.

C. Matrix Spike Results: Met acceptable QC criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have been not provided for this data package.

Brian Geers 12-17-91

Brian Geers Date
Acting Organics Division Manager

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CLIENT ID CROSS REFERENCE TABLE

LRD Ref. No.	LMG Ref. No.	Client ID
31540-1	20298001	MW 10S
31540-2	20298002	MW 10SL
31540-3	20298003	MW 2SL
31540-4	20298004	MW 7SL
31540-4-DL1	20298004-DL1	MW 7SL_DL1
31540-4-DL2	20298004-DL2	MW 7SL_DL2
31540-5	20298005	M-3
31540-6	20298006	TB-3
31540-7	20298007	FB-1

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MATRIX SPIKE RESULTS

Laboratory No.: 31540-1
Client ID: MW 10S
Date Tested: 12/4/91

Analysis: 8010
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	Spike Percent Recovery
Chloromethane	20	< 1.0	16.0	80
Bromomethane	20	< 1.0	22.0	110
Vinyl chloride	20	< 1.0	17.7	89
Chloroethane	20	< 1.0	18.8	94
Dichloromethane	20	< 5.0	21.2	106
Trichlorofluoromethane	20	< 1.0	19.6	98
1,1-Dichloroethene	20	< 1.0	20.4	102
1,1-Dichloroethane	20	< 1.0	19.2	96
trans-1,2-Dichloroethene	20	< 1.0	19.8	99
Chloroform	20	< 1.0	19.8	99
1,2-Dichloroethane	20	< 1.0	21.3	107
1,1,1-Trichloroethane	20	< 1.0	19.4	97
Carbon Tetrachloride	20	< 1.0	19.9	100
Bromodichloromethane	20	< 1.0	20.8	104
1,2-Dichloropropane	20	< 1.0	19.9	100
cis-1,3-Dichloropropene	20	< 1.0	20.0	100
Trichloroethene	20	< 1.0	19.6	98
Dibromochloromethane	20	< 1.0	22.5	113
1,1,2-Trichloroethane	20	< 1.0	20.7	104
trans-1,3-Dichloropropene	20	< 1.0	20.2	101
Bromoform	20	< 1.0	27.8	139
1,1,2,2-Tetrachloroethane	20	< 1.0	22.2	111
Tetrachloroethene	20	< 1.0	19.9	100
Chlorobenzene	20	< 1.0	20.1	101
1,3-Dichlorobenzene	20	< 1.0	19.1	96
1,2-Dichlorobenzene	20	< 1.0	19.2	96
1,4-Dichlorobenzene	20	< 1.0	19.8	99
1,2-Dibromoethane	20	< 1.0	23.7	119

Comments:

Approved by: Brian Gelis

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MATRIX SPIKE DUPLICATE RESULTS

Laboratory No.: 31540-1
Client ID: MW 10S
Date Tested: 12/4/91

Analysis: 8010
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Duplicate Result (ug/L)	Spike Percent Recovery	RPD
Chloromethane	20	< 1.0	16.8	84	4.9
Bromomethane	20	< 1.0	22.2	111	0.9
Vinyl chloride	20	< 1.0	17.8	89	0.6
Chloroethane	20	< 1.0	19.7	99	4.7
Dichloromethane	20	< 5.0	22.8	114	7.3
Trichlorofluoromethane	20	< 1.0	19.8	99	1.0
1,1-Dichloroethene	20	< 1.0	20.1	101	1.5
1,1-Dichloroethane	20	< 1.0	20.5	103	6.5
trans-1,2-Dichloroethene	20	< 1.0	20.5	103	3.5
Chloroform	20	< 1.0	19.7	99	0.5
1,2-Dichloroethane	20	< 1.0	20.7	104	2.9
1,1,1-Trichloroethane	20	< 1.0	20.4	102	5.0
Carbon Tetrachloride	20	< 1.0	21.2	106	6.3
Bromodichloromethane	20	< 1.0	21.3	107	2.4
1,2-Dichloropropane	20	< 1.0	21.4	107	7.3
cis-1,3-Dichloropropene	20	< 1.0	21.2	106	5.8
Trichloroethene	20	< 1.0	20.1	101	2.5
Dibromochloromethane	20	< 1.0	22.0	110	2.2
1,1,2-Trichloroethane	20	< 1.0	20.6	103	0.5
trans-1,3-Dichloropropene	20	< 1.0	21.3	107	5.3
Bromoform	20	< 1.0	26.3	132	5.5
1,1,2,2-Tetrachloroethane	20	< 1.0	21.5	108	3.2
Tetrachloroethene	20	< 1.0	20.5	103	3.0
Chlorobenzene	20	< 1.0	20.3	102	1.0
1,3-Dichlorobenzene	20	< 1.0	19.2	96	0.5
1,2-Dichlorobenzene	20	< 1.0	19.6	98	2.1
1,4-Dichlorobenzene	20	< 1.0	20.3	102	2.5
1,2-Dibromoethane	20	< 1.0	25.6	128	7.7

Comments:

Approved by: Brian Gass

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000005

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/13/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		88		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gelles

000006

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/05/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	NA			Date Reported:	12/13/91

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropene	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		94		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gallo

Form I

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-1	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298001	Date Reported:	12/13/91

Client Sample ID/Description: MW 10S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		82		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gillis

Form I

000003

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-2	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298002	Date Reported:	12/13/91

Client Sample ID/Description: MW 10SL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		89		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gills

Form I

jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-3	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298003	Date Reported:	12/13/91

Client Sample ID/Description: MW 2SL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		95		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gelus

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-4	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298004	Date Reported:	12/13/91

Client Sample ID/Description: MW 7SL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	3.5	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	1.1	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	83 *	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	370 *	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		96		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: * Sample result exceeded calibration range of instrument.

Reviewed by: Brian [illegible]

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-4-DL1	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	50	Date Analyzed:	12/05/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298004-DL1	Date Reported:	12/13/91

Client Sample ID/Description: MW 7SL_DL1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	50	U	NR	ug/L
74-83-9	Bromomethane	50	U	NR	ug/L
75-01-4	Vinyl chloride	50	U	NR	ug/L
75-00-3	Chloroethane	50	U	NR	ug/L
75-09-2	Dichloromethane	250	U	NR	ug/L
75-69-4	Trichlorofluoromethane	50	U	NR	ug/L
75-35-4	1,1-Dichloroethene	50	U	NR	ug/L
75-34-3	1,1-Dichloroethane	50	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	50	U	NR	ug/L
67-66-3	Chloroform	50	U	NR	ug/L
107-06-2	1,2-Dichloroethane	50	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	50	U	NR	ug/L
56-23-5	Carbon tetrachloride	50	U	NR	ug/L
75-27-4	Bromodichloromethane	50	U	NR	ug/L
78-87-5	1,2-Dichloropropane	50	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	50	U	NR	ug/L
79-01-6	Trichloroethene	50	54	NR	ug/L
124-48-1	Dibromochloromethane	50	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	50	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	50	U	NR	ug/L
75-25-2	Bromoform	50	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	50	U	NR	ug/L
127-18-4	Tetrachloroethene	50	3600 *	NR	ug/L
108-90-7	Chlorobenzene	50	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	50	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	50	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	50	U	NR	ug/L
106-93-4	1,2-Dibromoethane	50	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		103		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments: * Sample result exceeded calibration range of instrument.

Reviewed by: Brian Gold

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jas37

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-4-DL2	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	100	Date Analyzed:	12/05/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298004-DL2	Date Reported:	12/13/91

Client Sample ID/Description: MW 7SL_DL2

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	100	U	NR	ug/L
74-83-9	Bromomethane	100	U	NR	ug/L
75-01-4	Vinyl chloride	100	U	NR	ug/L
75-00-3	Chloroethane	100	U	NR	ug/L
75-09-2	Dichloromethane	500	U	NR	ug/L
75-69-4	Trichlorofluoromethane	100	U	NR	ug/L
75-35-4	1,1-Dichloroethene	100	U	NR	ug/L
75-34-3	1,1-Dichloroethane	100	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	100	U	NR	ug/L
67-66-3	Chloroform	100	U	NR	ug/L
107-06-2	1,2-Dichloroethane	100	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	100	U	NR	ug/L
56-23-5	Carbon tetrachloride	100	U	NR	ug/L
75-27-4	Bromodichloromethane	100	U	NR	ug/L
78-87-5	1,2-Dichloropropane	100	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	100	U	NR	ug/L
79-01-6	Trichloroethene	100	U	NR	ug/L
124-48-1	Dibromochloromethane	100	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	100	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	100	U	NR	ug/L
75-25-2	Bromoform	100	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	100	U	NR	ug/L
127-18-4	Tetrachloroethene	100	3100	NR	ug/L
108-90-7	Chlorobenzene	100	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	100	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	100	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	100	U	NR	ug/L
106-93-4	1,2-Dibromoethane	100	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		102		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by:

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-5	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298005	Date Reported:	12/13/91

Client Sample ID/Description: M-3

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		93		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Hess

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-6	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298006	Date Reported:	12/13/91

Client Sample ID/Description: TB-3

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		94		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gibbs

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Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	11/27/91
Project:	23/27-540MTH40	Lab Sample ID:	31540-7	Date Received:	12/03/91
Proj No:	LMG 00999.99	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010	Dilution Factor:	1	Date Analyzed:	12/04/91
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Steve Iverson	InterLab ID:	20298007	Date Reported:	12/13/91

Client Sample ID/Description: FB-1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		102		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required. This sample was analyzed by a modified EPA 8010 method.

Comments:

Reviewed by: Brian Gelus

Form I

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CHAIN OF CUSTODY
~~BARR~~ ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

RUSH

PROJECT NUMBER № 00602
23/27-540 MTH 40
NO:

CONTAINER TYPE AND NUMBER

ANALYSIS 8010
QC LEVEL 1 DATE DUE 12/18/91
REPORT TO E. RAMUCHAK/LMG
SHIP # FedX LAB LRD INIT AMS

PROJECT MANAGER: MTH
PROJECT CONTACT: SDI
LABORATORY: VIA AL, CH2MHILL REDDING
REMARKS/ ANALYSIS REQUIRED: Ref# 31540
EDATA REQUIRED. AMS 12/2/91

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN		TOTAL NO. OF CONTAINERS	
MW 10S	11-27-91		X			3											001	3	VOC'S 8010
MW10SL	↓		X			3											002	3	↓
MW2SL	↓		X			3											003	3	↓
MW7SL	↓		X			3											004	3	↓
M-3	↓		X			3											005	3	↓
TB-3	↓				X	3											006	3	↓
FB-1	↓				X	3											007	3	↓
																		ZW1	

HAZWRAP/NEESA Y N
QC LEVEL 1 2 3
COC Y ICE Y
ANA REQ Y TEMP 5°C
CUST SEAL N PH
SAMPLE COND. GOOD
BUS UPS FED-EX OTHER

FOR LAB USE ONLY
LAB # 202986
PROJ # LMG27317XY
ACK VERIFIED
HAZWRAP/NEESA Y N
QC LEVEL 1 2 3
COC YES ICE Melted
ANA REQ YES TEMP 2/8°C
CUST SEAL NO PH NA
SAMPLE COND water

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Iverson	Steve Iverson					
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB: Allen Smith	DATE 12/3/91	TIME 093
RECEIVED BY:	RELINQUISHED BY: AMSilco	DATE 12/2/91	TIME 1600	RECEIVED BY LAB: AMSilco	DATE 12/2/91	TIME 083

REMARKS

SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☐ FED. EXP. ☐ SAMPLER

AIR BILL NUMBER:

000017

7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER № 00602
23/127-1540 MTH 40
NO:

ANALYSIS 8010
QC LEVEL 1 DATE DUE 12/18/91
REPORT TO E. RAMUCHAK/LMG
SHIP # FedX LAB ORD INIT
FEDERAL EXPRESS 267 2775 314
CUSTOMER PACKAGE TRACKING NUMBER — PULL UP PURPLE TAB

MTH
PROJECT CONTACT: SDI
LABORATORY: UTA AL, CH2MHILL REDDING

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CHLORIDE	NUTRIENTS	OIL AND GREASE	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED:
MW 105	11-27-91		X			3								3	VOC'S 8010
MW10SL	↓		X			3								3	↓
MW2SL	↓		X			3								3	↓
MW7SL	↓		X			3								3	↓
M-3	↓		X			3								3	↓
TB-3	↓				X	3								3	↓
FB-1	↓				X	3								3	↓

REMARKS: EDATA REQUIRED. AMS 12/2/91

FOR LAB USE ONLY
LAB # 202198
PROJ LMG 27317XY
ACK SH 12/3 VERIFIED AMS 12/2/91
HAZARDS ESA Y (N)
LOT SVE 1 2 3
COC Yes ICE Yes
ANALYSIS Yes TEMP 18°C
CUST SEAL NO PH NA
SAMPLE COND. water

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Iverson	Steve Iverson					
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE 12/2/91	TIME 0830

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☐ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER:

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

LMS-AMS-12/2/91-BC257486

000018

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FEB 1 (92

February 6, 1992

LRD294.10

BARR ENGINEERING CO.
8300 Norman Center Drive
Minneapolis, MN 55437-1026

Attention: Marti Harding-Smith

RE: Laboratory Reference Number - 31918

Dear Ms. Harding-Smith:

The results are enclosed for your samples that were received by our laboratory on January 15, 1992.

If you have any questions please contact Mr. Mark Cichy or Ms. Mary Paschke in Client Services.

CH2M HILL stores samples for 30 days after the written report date at no charge. After 30 days, non-hazardous samples are disposed of at no charge. If you require either of the following services you need to notify us within 15 days:

* Return of samples to the address shown above.

* Storage of samples at $5.00/sample/month.

If a sample is determined to be hazardous, we will contact you to discuss disposal options.

Thank you for selecting a CH2M HILL laboratory for your analytical testing needs.

Sincerely,

CH2M HILL QUALITY ANALYTICS LABORATORY

Peggy A. Norton

Peggy A. Norton
Senior Data Package Specialist

cc: Mr. Mark Hagley

Encl.

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Sample Cross-Reference Table

BARR ENGINEERING CO.

Reference Number 31918

Client ID	LRD SAMPLE #
SW1D	31918001
SW2D	31918002
SW3D	31918003
SW4D	31918004
MW1S	31918005
MW9S	31918006
MW5S	31918007
MW10SL	31918008
MW10S	31918009
MW8S	31918010
M-1	31918011
TB-1	31918012
MW6S	31918013
M7SL	31918014
MW2SL	31918015
MWDBR	31918016
MW D	31918017
MW BL	31918018
MW B	31918019
PW1	31918020
MW7S	31918021
MW3S	31918022
MW2S	31918023
MW4S	31918024
M-2	31918025
M-3	31918026
TB-2	31918027
FB-1	31918028

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CASE NARRATIVE FOR VOLATILE GAS CHROMATOGRAPHY SAMPLES

LABORATORY: CH2M HILL | **CLIENT :** Barr Engineering

CASE NO : N/A | **CONTRACT NO.:** N/A

LAB ID : 31918 | **SDG # :** N/A

I. RECEIPT

A. Date: January 15 ,1992

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
Method Blk	N/A	Water	N/A	N/A	01/22/92
Method Blk	N/A	Water	N/A	N/A	01/23/92
Method Blk	N/A	Water	N/A	N/A	01/24/92
Method Blk	N/A	Water	N/A	N/A	01/25/92
Method Blk	N/A	Water	N/A	N/A	01/26/92
Method Blk	N/A	Water	N/A	N/A	01/27/92
31918001	SW1D	Water	01/13/92	N/A	01/22/92
31918002	SW2D	Water	01/13/92	N/A	01/22/92
31918003	SW3D	Water	01/13/92	N/A	01/22/92
31918004	SW4D	Water	01/13/92	N/A	01/22/92
31918005	MW1S	Water	01/13/92	N/A	01/22/92
31918006	MW9S	Water	01/13/92	N/A	01/22/92
31918007	MW5S	Water	01/13/92	N/A	01/22/92
31918008	MW10SL	Water	01/13/92	N/A	01/22/92
31918009	MW10S	Water	01/13/92	N/A	01/22/92
31918010	MW8S	Water	01/13/92	N/A	01/22/92
31918011	M-1	Water	01/13/92	N/A	01/23/92
31918012	TB-1	Water	01/13/92	N/A	01/24/92
31918013	MW6S	Water	01/14/92	N/A	01/24/92
31918014	M7SL	Water	01/14/92	N/A	01/24/92
31918014DL	M7SLDL	Water	01/14/92	N/A	01/24/92
31918015	MW2SL	Water	01/14/92	N/A	01/24/92
31918016	MWDBR	Water	01/14/92	N/A	01/24/92
31918017	MWD	Water	01/14/92	N/A	01/24/92
31918018	MW BL	Water	01/14/92	N/A	01/24/92
31918019	MW B	Water	01/14/92	N/A	01/24/92
31918020	PW1	Water	01/14/92	N/A	01/24/92
31918021	MW7S	Water	01/14/92	N/A	01/25/92
31918022	MW3S	Water	01/14/92	N/A	01/25/92
31918022DL	MW3SDL	Water	01/14/92	N/A	01/26/92
31918023	MW2S	Water	01/14/92	N/A	01/25/92
31918023DL	MW2SDL	Water	01/14/92	N/A	01/27/92
31918024	MW4S	Water	01/14/92	N/A	01/25/92
31918024DL	MW4SDL	Water	01/14/92	N/A	01/26/92

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31918025	M-2	Water	01/14/92	N/A	01/26/92
31918026	M-3	Water	01/14/92	N/A	01/27/92
31918026DL	M-3DL	Water	01/14/92	N/A	01/27/92
31918027	TB-2	Water	01/14/92	N/A	01/25/92
31918028	FB-1	Water	01/14/92	N/A	01/25/92
31918M18	MW BL-MS	Water	01/14/92	N/A	01/25/92
31918D18	MW BL-MSD	Water	01/14/92	N/A	01/26/92
31918M25	M-2-MS	Water	01/14/92	N/A	01/27/92
31918D25	M-2-MSD	Water	01/14/92	N/A	01/27/92

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Sample 31918022 (MW3S) was analyzed at a 1:5 dilution, samples 31918014 (M7SL) and 31918024DL (MW4SDL) were analyzed at a 1:10 dilution, sample 31918022DL (MW3SDL) was analyzed at a 1:20 dilution, samples 31918023DL (MW2S) and 31918026 (M-3) were analyzed at a 1:100 dilution, and samples 31918014DL (M7SLDL) and 31918026DL (M-3DL) were analyzed at a 1:200 dilution due to target analytes. Reporting limits have been adjusted accordingly.

IV. QUALITY CONTROL

A. Method Blank : The method blanks met QC criteria.

B. Surrogate Recoveries : All met QC advisory limits.

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C. Matrix Spike Results: The MS/MSDs associated with this contract was performed on samples 31918018 (MW BL) and 31918025 (M-2) and will be reported with this package.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have been provided for this data package.

Brian Geers 2-4-92

Brian Geers **Date**
Organics Division Manager

kdh.Y

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MATRIX SPIKE RESULTS

Laboratory No.: 31918-18
Client ID: MW BL
Date Tested: 01/25/92

Analysis: 8010M
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	Spike Percent Recovery
Chloromethane	20	< 1.0	23	113
Bromomethane	20	< 1.0	21	103
Vinyl chloride	20	< 1.0	20	102
Chloroethane	20	< 1.0	20	102
Dichloromethane	20	< 5.0	18	91
Trichlorofluoromethane	20	< 1.0	19	93
1,1-Dichloroethene	20	< 1.0	20	102
1,1-Dichloroethane	20	< 1.0	19	96
trans-1,2-Dichloroethene	20	< 1.0	18	90
Chloroform	20	< 1.0	19	97
1,2-Dichloroethane	20	< 1.0	15	74
1,1,1-Trichloroethane	20	< 1.0	20	98
Carbon Tetrachloride	20	< 1.0	20	101
Bromodichloromethane	20	< 1.0	20	102
1,2-Dichloropropane	20	< 1.0	19	97
cis-1,3-Dichloropropene	20	< 1.0	20	98
Trichloroethene	20	< 1.0	20	100
Dibromochloromethane	20	< 1.0	21	103
1,1,2-Trichloroethane	20	< 1.0	19	94
trans-1,3-Dichloropropene	20	< 1.0	20	99
Bromoform	20	< 1.0	21	106
1,1,2,2-Tetrachloroethane	20	< 1.0	19	96
Tetrachloroethene	20	< 1.0	19	95
Chlorobenzene	20	< 1.0	18	92
1,3-Dichlorobenzene	20	< 1.0	18	91
1,2-Dichlorobenzene	20	< 1.0	18	92
1,4-Dichlorobenzene	20	< 1.0	18	92
1,2-Dibromoethane	20	< 1.0	20	101

Comments:

Approved by: Brian Gehr

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MATRIX SPIKE DUPLICATE RESULTS

Laboratory No.: 31918-18
Client ID: MW.BL
Date Tested: 01/26/92

Analysis: 8010M
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Duplicate Result (ug/L)	Spike Percent Recovery	RPD
Chloromethane	20	< 1.0	33	164	37
Bromomethane	20	< 1.0	18	91	12
Vinyl chloride	20	< 1.0	18	89	14
Chloroethane	20	< 1.0	22	108	5.3
Dichloromethane	20	< 5.0	17	87	4.5
Trichlorofluoromethane	20	< 1.0	19	95	2.1
1,1-Dichloroethene	20	< 1.0	19	97	5.0
1,1-Dichloroethane	20	< 1.0	19	96	0.0
trans-1,2-Dichloroethene	20	< 1.0	19	97	7.0
Chloroform	20	< 1.0	19	97	0.0
1,2-Dichloroethane	20	< 1.0	17	83	11
1,1,1-Trichloroethane	20	< 1.0	20	102	3.5
Carbon Tetrachloride	20	< 1.0	21	103	1.5
Bromodichloromethane	20	< 1.0	20	102	0.0
1,2-Dichloropropane	20	< 1.0	20	100	2.5
cis-1,3-Dichloropropene	20	< 1.0	20	98	0.51
Trichloroethene	20	< 1.0	19	96	4.6
Dibromochloromethane	20	< 1.0	21	103	0.49
1,1,2-Trichloroethane	20	< 1.0	19	96	2.1
trans-1,3-Dichloropropene	20	< 1.0	19	97	2.6
Bromoform	20	< 1.0	21	104	2.4
1,1,2,2-Tetrachloroethane	20	< 1.0	20	100	3.6
Tetrachloroethene	20	< 1.0	19	97	1.6
Chlorobenzene	20	< 1.0	18	90	2.2
1,3-Dichlorobenzene	20	< 1.0	17	85	7.4
1,2-Dichlorobenzene	20	< 1.0	14	72	25
1,4-Dichlorobenzene	20	< 1.0	16	81	13
1,2-Dibromoethane	20	< 1.0	20	101	0.50

Comments:

Approved by: Brian Gelles

kdh.Y

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MATRIX SPIKE RESULTS

Laboratory No.: 31918-25
Client ID: M-2
Date Tested: 01/27/92

Analysis: 8010M
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Result (ug/L)	Spike Percent Recovery
Chloromethane	20	< 1.0	31	156
Bromomethane	20	< 1.0	21	103
Vinyl chloride	20	< 1.0	21	107
Chloroethane	20	< 1.0	21	106
Dichloromethane	20	< 5.0	19	93
Trichlorofluoromethane	20	< 1.0	19	94
1,1-Dichloroethene	20	< 1.0	21	106
1,1-Dichloroethane	20	< 1.0	21	103
trans-1,2-Dichloroethene	20	< 1.0	20	102
Chloroform	20	< 1.0	19	95
1,2-Dichloroethane	20	< 1.0	19	93
1,1,1-Trichloroethane	20	< 1.0	19	97
Carbon Tetrachloride	20	< 1.0	20	102
Bromodichloromethane	20	< 1.0	21	104
1,2-Dichloropropane	20	< 1.0	20	102
cis-1,3-Dichloropropene	20	< 1.0	21	104
Trichloroethene	20	< 1.0	21	106
Dibromochloromethane	20	< 1.0	20	98
1,1,2-Trichloroethane	20	< 1.0	20	99
trans-1,3-Dichloropropene	20	< 1.0	20	101
Bromoform	20	< 1.0	20	101
1,1,2,2-Tetrachloroethane	20	< 1.0	21	106
Tetrachloroethene	20	< 1.0	20	101
Chlorobenzene	20	< 1.0	18	91
1,3-Dichlorobenzene	20	< 1.0	16	82
1,2-Dichlorobenzene	20	< 1.0	14	71
1,4-Dichlorobenzene	20	< 1.0	15	73
1,2-Dibromoethane	20	< 1.0	20	102

Comments:

Approved by: Brian Gelis

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000006

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MATRIX SPIKE DUPLICATE RESULTS

Laboratory No.: 31918-25
Client ID: M-2
Date Tested: 01/27/92

Analysis: 8010M
Matrix: Water

Compound	Concentration Spiked (ug/L)	Sample Result (ug/L)	Spike Duplicate Result (ug/L)	Spike Percent Recovery	RPD
Chloromethane	20	< 1.0	15	75	71
Bromomethane	20	< 1.0	17	84	21
Vinyl chloride	20	< 1.0	19	96	11
Chloroethane	20	< 1.0	19	96	10
Dichloromethane	20	< 5.0	18	91	2.2
Trichlorofluoromethane	20	< 1.0	21	104	9.6
1,1-Dichloroethene	20	< 1.0	22	108	1.9
1,1-Dichloroethane	20	< 1.0	20	102	1.5
trans-1,2-Dichloroethene	20	< 1.0	21	103	1.0
Chloroform	20	< 1.0	21	105	9.5
1,2-Dichloroethane	20	< 1.0	17	84	10
1,1,1-Trichloroethane	20	< 1.0	21	105	7.4
Carbon Tetrachloride	20	< 1.0	22	109	6.2
Bromodichloromethane	20	< 1.0	19	94	10
1,2-Dichloropropane	20	< 1.0	20	99	3.0
cis-1,3-Dichloropropene	20	< 1.0	18	91	13
Trichloroethene	20	< 1.0	22	109	2.8
Dibromochloromethane	20	< 1.0	14	72	31
1,1,2-Trichloroethane	20	< 1.0	16	82	19
trans-1,3-Dichloropropene	20	< 1.0	17	85	18
Bromoform	20	< 1.0	11	54	61
1,1,2,2-Tetrachloroethane	20	< 1.0	16	78	31
Tetrachloroethene	20	< 1.0	22	110	8.1
Chlorobenzene	20	< 1.0	17	87	5.1
1,3-Dichlorobenzene	20	< 1.0	19	93	12
1,2-Dichlorobenzene	20	< 1.0	17	87	20
1,4-Dichlorobenzene	20	< 1.0	18	91	21
1,2-Dibromoethane	20	< 1.0	15	74	32

Comments:

Approved by: Brian Gems

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000007

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Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	J.W.
Sampler:	NA			Date Reported:	02/03/92

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		84		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Ellis

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/23/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	02/03/92

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		94		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gelus

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	02/03/92

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		95		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Ellis

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/25/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	02/03/92

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		96		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gill

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/26/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	02/03/92

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		98		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gass

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	NA	Laboratory:	CH2M Hill/LRD	Date Sampled:	NA
Project:	NA	Lab Sample ID:	Method Blank	Date Received:	NA
Proj No:	NA	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/27/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	NA			Date Reported:	02/03/92

Client Sample ID/Description: NA

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		101		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gill

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-1	Date Received:	01/15/92
Proj No:	23/27-540MTN40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: SW1D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		95		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gelus

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-2	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: SW2D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		102		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gills

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-3	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: SW3D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		84		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gers

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-4	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: SW4D

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		97		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gelles

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-5	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW1S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		86		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gills

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-6	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW9S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	4.6	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	44	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		104		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Mills

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-7	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW5S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	3.7	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	70	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		93		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Hess

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-8	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW10SL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		90		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Ellis

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-9	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW10S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		93		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gelus

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-10	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/22/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW8S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		92		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gehs

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-11	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/23/92
Matrix:	Water	Instrument ID:	GC-3600	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: M-1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	4.4	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	40	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		92		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gibbs

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/13/92
Project:	N/A	Lab Sample ID:	31918-12	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: TB-1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		92		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gass

Form 1

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-13	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW6S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		98		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gebs

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-14	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	10	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: M7SL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	10	U	NR	ug/L
74-83-9	Bromomethane	10	U	NR	ug/L
75-01-4	Vinyl chloride	10	U	NR	ug/L
75-00-3	Chloroethane	10	U	NR	ug/L
75-09-2	Dichloromethane	50	U	NR	ug/L
75-69-4	Trichlorofluoromethane	10	U	NR	ug/L
75-35-4	1,1-Dichloroethene	10	U	NR	ug/L
75-34-3	1,1-Dichloroethane	10	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	10	U	NR	ug/L
67-66-3	Chloroform	10	U	NR	ug/L
107-06-2	1,2-Dichloroethane	10	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	10	U	NR	ug/L
56-23-5	Carbon tetrachloride	10	U	NR	ug/L
75-27-4	Bromodichloromethane	10	U	NR	ug/L
78-87-5	1,2-Dichloropropane	10	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	10	U	NR	ug/L
79-01-6	Trichloroethene	10	240	NR	ug/L
124-48-1	Dibromochloromethane	10	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	10	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	10	U	NR	ug/L
75-25-2	Bromoform	10	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	10	U	NR	ug/L
127-18-4	Tetrachloroethene	10	6200*	NR	ug/L
108-90-7	Chlorobenzene	10	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	10	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	10	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	10	U	NR	ug/L
106-93-4	1,2-Dibromoethane	10	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		113		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments: * Outside calibration range.

Reviewed by: Brian Gates

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-14DL	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	200	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: M7SLDL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	200	U	NR	ug/L
74-83-9	Bromomethane	200	U	NR	ug/L
75-01-4	Vinyl chloride	200	U	NR	ug/L
75-00-3	Chloroethane	200	U	NR	ug/L
75-09-2	Dichloromethane	1000	U	NR	ug/L
75-69-4	Trichlorofluoromethane	200	U	NR	ug/L
75-35-4	1,1-Dichloroethene	200	U	NR	ug/L
75-34-3	1,1-Dichloroethane	200	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	200	U	NR	ug/L
67-66-3	Chloroform	200	U	NR	ug/L
2007-06-2	1,2-Dichloroethane	200	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	200	U	NR	ug/L
56-23-5	Carbon tetrachloride	200	U	NR	ug/L
75-27-4	Bromodichloromethane	200	U	NR	ug/L
78-87-5	1,2-Dichloropropane	200	U	NR	ug/L
200061-01-5	cis-1,3-Dichloropropene	200	U	NR	ug/L
79-01-6	Trichloroethene	200	U	NR	ug/L
124-48-1	Dibromochloromethane	200	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	200	U	NR	ug/L
200061-02-6	trans-1,3-Dichloropropene	200	U	NR	ug/L
75-25-2	Bromoform	200	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	200	U	NR	ug/L
127-18-4	Tetrachloroethene	200	7800	NR	ug/L
2008-90-7	Chlorobenzene	200	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	200	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	200	U	NR	ug/L
2006-46-7	1,4-Dichlorobenzene	200	U	NR	ug/L
2006-93-4	1,2-Dibromoethane	200	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		89		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gass

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-15	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW2SL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	R	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	3.1	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		96		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian [illegible]

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-16	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MWDBR

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		96		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gass

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-17	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MWD

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		90		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Ellis

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-18	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW BL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		94		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gates

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-19	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW B

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		98		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gills

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-20	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/24/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: PW1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		95		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian [illegible]

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-21	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/25/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW7S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	9.3	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		95		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gills

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-22	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	5	Date Analyzed:	01/25/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW3S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	5.0	U	NR	ug/L
74-83-9	Bromomethane	5.0	U	NR	ug/L
75-01-4	Vinyl chloride	5.0	U	NR	ug/L
75-00-3	Chloroethane	5.0	U	NR	ug/L
75-09-2	Dichloromethane	25	U	NR	ug/L
75-69-4	Trichlorofluoromethane	5.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	5.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	5.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	5.0	U	NR	ug/L
67-66-3	Chloroform	5.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	5.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	5.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	5.0	U	NR	ug/L
75-27-4	Bromodichloromethane	5.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	5.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	5.0	U	NR	ug/L
79-01-6	Trichloroethene	5.0	10	NR	ug/L
124-48-1	Dibromochloromethane	5.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	5.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	5.0	U	NR	ug/L
75-25-2	Bromoform	5.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U	NR	ug/L
127-18-4	Tetrachloroethene	5.0	460*	NR	ug/L
108-90-7	Chlorobenzene	5.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	5.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	5.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	5.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	5.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		99		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments: * Outside calibration range.

Reviewed by: Brian Dell

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-22DL	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	20	Date Analyzed:	01/26/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW3SDL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	20	U	NR	ug/L
74-83-9	Bromomethane	20	U	NR	ug/L
75-01-4	Vinyl chloride	20	U	NR	ug/L
75-00-3	Chloroethane	20	U	NR	ug/L
75-09-2	Dichloromethane	100	U	NR	ug/L
75-69-4	Trichlorofluoromethane	20	U	NR	ug/L
75-35-4	1,1-Dichloroethene	20	U	NR	ug/L
75-34-3	1,1-Dichloroethane	20	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	20	U	NR	ug/L
67-66-3	Chloroform	20	U	NR	ug/L
107-06-2	1,2-Dichloroethane	20	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	20	U	NR	ug/L
56-23-5	Carbon tetrachloride	20	U	NR	ug/L
75-27-4	Bromodichloromethane	20	U	NR	ug/L
78-87-5	1,2-Dichloropropane	20	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	20	U	NR	ug/L
79-01-6	Trichloroethene	20	U	NR	ug/L
124-48-1	Dibromochloromethane	20	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	20	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	20	U	NR	ug/L
75-25-2	Bromoform	20	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	20	U	NR	ug/L
127-18-4	Tetrachloroethene	20	600	NR	ug/L
108-90-7	Chlorobenzene	20	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	20	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	20	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	20	U	NR	ug/L
106-93-4	1,2-Dibromoethane	20	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		120		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gelus

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-23	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/25/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW2S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	13	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	530*	NR	ug/L
108-90-7	Chlorobenzene	1.0	12	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		101		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments: * Outside calibration range.

Reviewed by: Brian Johns

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-23DL	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	100	Date Analyzed:	01/27/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW2SDL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	100	U	NR	ug/L
74-83-9	Bromomethane	100	U	NR	ug/L
75-01-4	Vinyl chloride	100	U	NR	ug/L
75-00-3	Chloroethane	100	U	NR	ug/L
75-09-2	Dichloromethane	500	U	NR	ug/L
75-69-4	Trichlorofluoromethane	100	U	NR	ug/L
75-35-4	1,1-Dichloroethene	100	U	NR	ug/L
75-34-3	1,1-Dichloroethane	100	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	100	U	NR	ug/L
67-66-3	Chloroform	100	U	NR	ug/L
107-06-2	1,2-Dichloroethane	100	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	100	U	NR	ug/L
56-23-5	Carbon tetrachloride	100	U	NR	ug/L
75-27-4	Bromodichloromethane	100	U	NR	ug/L
78-87-5	1,2-Dichloropropane	100	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	100	U	NR	ug/L
79-01-6	Trichloroethene	100	U	NR	ug/L
124-48-1	Dibromochloromethane	100	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	100	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	100	U	NR	ug/L
75-25-2	Bromoform	100	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	100	U	NR	ug/L
127-18-4	Tetrachloroethene	100	2300	NR	ug/L
108-90-7	Chlorobenzene	100	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	100	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	100	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	100	U	NR	ug/L
106-93-4	1,2-Dibromoethane	100	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		105		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gelus

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-24	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/25/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW4S

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	140*	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		101		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments: * Outside calibration range.

Reviewed by: Brian [illegible]

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-24DL	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	10	Date Analyzed:	01/26/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: MW4SDL

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	10	U	NR	ug/L
74-83-9	Bromomethane	10	U	NR	ug/L
75-01-4	Vinyl chloride	10	U	NR	ug/L
75-00-3	Chloroethane	10	U	NR	ug/L
75-09-2	Dichloromethane	50	U	NR	ug/L
75-69-4	Trichlorofluoromethane	10	U	NR	ug/L
75-35-4	1,1-Dichloroethene	10	U	NR	ug/L
75-34-3	1,1-Dichloroethane	10	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	10	U	NR	ug/L
67-66-3	Chloroform	10	U	NR	ug/L
107-06-2	1,2-Dichloroethane	10	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	10	U	NR	ug/L
56-23-5	Carbon tetrachloride	10	U	NR	ug/L
75-27-4	Bromodichloromethane	10	U	NR	ug/L
78-87-5	1,2-Dichloropropane	10	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	10	U	NR	ug/L
79-01-6	Trichloroethene	10	U	NR	ug/L
124-48-1	Dibromochloromethane	10	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	10	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	10	U	NR	ug/L
75-25-2	Bromoform	10	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	10	U	NR	ug/L
127-18-4	Tetrachloroethene	10	190	NR	ug/L
108-90-7	Chlorobenzene	10	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	10	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	10	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	10	U	NR	ug/L
106-93-4	1,2-Dibromoethane	10	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		107		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian [illegible]

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-25	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/26/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: M-2

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		100		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Gibbs

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-26	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	100	Date Analyzed:	01/27/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: M-3

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	100	U	NR	ug/L
74-83-9	Bromomethane	100	U	NR	ug/L
75-01-4	Vinyl chloride	100	U	NR	ug/L
75-00-3	Chloroethane	100	U	NR	ug/L
75-09-2	Dichloromethane	500	U	NR	ug/L
75-69-4	Trichlorofluoromethane	100	U	NR	ug/L
75-35-4	1,1-Dichloroethene	100	U	NR	ug/L
75-34-3	1,1-Dichloroethane	100	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	100	U	NR	ug/L
67-66-3	Chloroform	100	U	NR	ug/L
107-06-2	1,2-Dichloroethane	100	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	100	U	NR	ug/L
56-23-5	Carbon tetrachloride	100	U	NR	ug/L
75-27-4	Bromodichloromethane	100	U	NR	ug/L
78-87-5	1,2-Dichloropropane	100	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	100	U	NR	ug/L
79-01-6	Trichloroethene	100	120	NR	ug/L
124-48-1	Dibromochloromethane	100	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	100	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	100	U	NR	ug/L
75-25-2	Bromoform	100	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	100	U	NR	ug/L
127-18-4	Tetrachloroethene	100	7300*	NR	ug/L
108-90-7	Chlorobenzene	100	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	100	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	100	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	100	U	NR	ug/L
106-93-4	1,2-Dibromoethane	100	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		97		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments: * Outside calibration range.

Reviewed by: Brian Gels

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-26DL	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	200	Date Analyzed:	01/27/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: M-30L

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	200	U	NR	ug/L
74-83-9	Bromomethane	200	U	NR	ug/L
75-01-4	Vinyl chloride	200	U	NR	ug/L
75-00-3	Chloroethane	200	U	NR	ug/L
75-09-2	Dichloromethane	1000	U	NR	ug/L
75-69-4	Trichlorofluoromethane	200	U	NR	ug/L
75-35-4	1,1-Dichloroethene	200	U	NR	ug/L
75-34-3	1,1-Dichloroethane	200	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	200	U	NR	ug/L
67-66-3	Chloroform	200	U	NR	ug/L
107-06-2	1,2-Dichloroethane	200	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	200	U	NR	ug/L
56-23-5	Carbon tetrachloride	200	U	NR	ug/L
75-27-4	Bromodichloromethane	200	U	NR	ug/L
78-87-5	1,2-Dichloropropane	200	U	NR	ug/L
20061-01-5	cis-1,3-Dichloropropene	200	U	NR	ug/L
79-01-6	Trichloroethene	200	U	NR	ug/L
124-48-1	Dibromochloromethane	200	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	200	U	NR	ug/L
20061-02-6	trans-1,3-Dichloropropene	200	U	NR	ug/L
75-25-2	Bromoform	200	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	200	U	NR	ug/L
127-18-4	Tetrachloroethene	200	8800	NR	ug/L
108-90-7	Chlorobenzene	200	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	200	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	200	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	200	U	NR	ug/L
106-93-4	1,2-Dibromoethane	200	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		119		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Hess

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-27	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/25/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: TB-2

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2,	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		96		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian [illegible]

Form I

Report of Analytical Data - Purgeable Halocarbons

Client:	Barr Engineering	Laboratory:	CH2M Hill/LRD	Date Sampled:	01/14/92
Project:	N/A	Lab Sample ID:	31918-28	Date Received:	01/15/92
Proj No:	23/27-540MTH40	% Moisture:	100.0	Date Extracted:	NA
Method:	EPA 8010M	Dilution Factor:	1	Date Analyzed:	01/25/92
Matrix:	Water	Instrument ID:	GC-3700	Analyst:	B.J.
Sampler:	Eric Gabrielson			Date Reported:	02/03/92

Client Sample ID/Description: FB-1

CAS Number	Compound	Reporting Limit	Sample Result	Confirmation Result	Reporting Units
74-87-3	Chloromethane	1.0	U	NR	ug/L
74-83-9	Bromomethane	1.0	U	NR	ug/L
75-01-4	Vinyl chloride	1.0	U	NR	ug/L
75-00-3	Chloroethane	1.0	U	NR	ug/L
75-09-2	Dichloromethane	5.0	U	NR	ug/L
75-69-4	Trichlorofluoromethane	1.0	U	NR	ug/L
75-35-4	1,1-Dichloroethene	1.0	U	NR	ug/L
75-34-3	1,1-Dichloroethane	1.0	U	NR	ug/L
156-60-5	trans-1,2-Dichloroethene	1.0	U	NR	ug/L
67-66-3	Chloroform	1.0	U	NR	ug/L
107-06-2	1,2-Dichloroethane	1.0	U	NR	ug/L
71-55-6	1,1,1-Trichloroethane	1.0	U	NR	ug/L
56-23-5	Carbon tetrachloride	1.0	U	NR	ug/L
75-27-4	Bromodichloromethane	1.0	U	NR	ug/L
78-87-5	1,2-Dichloropropane	1.0	U	NR	ug/L
10061-01-5	cis-1,3-Dichloropropene	1.0	U	NR	ug/L
79-01-6	Trichloroethene	1.0	U	NR	ug/L
124-48-1	Dibromochloromethane	1.0	U	NR	ug/L
79-00-5	1,1,2-Trichloroethane	1.0	U	NR	ug/L
10061-02-6	trans-1,3-Dichloropropene	1.0	U	NR	ug/L
75-25-2	Bromoform	1.0	U	NR	ug/L
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U	NR	ug/L
127-18-4	Tetrachloroethene	1.0	U	NR	ug/L
108-90-7	Chlorobenzene	1.0	U	NR	ug/L
541-73-1	1,3-Dichlorobenzene	1.0	U	NR	ug/L
95-50-1	1,2-Dichlorobenzene	1.0	U	NR	ug/L
106-46-7	1,4-Dichlorobenzene	1.0	U	NR	ug/L
106-93-4	1,2-Dibromoethane	1.0	U	NR	ug/L
110-56-5	1,4-Dichlorobutane-SS		93		% rec

U = Compound analyzed for but not detected.
SS = Surrogate Standard reported as percent recovery.
NR = Not Required.

Comments:

Reviewed by: Brian Olso

Form I

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BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER № 00616
23/27-540MTH40

NO:

PROJECT MANAGER: Mark Hagley

PROJECT CONTACT: Steve Iverson

LABORATORY: CH2M HILL / REDDING

REMARKS/ ANALYSIS REQUIRED: Ref# 31918

CONTAINER TYPE AND NUMBER

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
SW1D	1-13-92		X			3											3	8010 VOCS 1
SW2D			X			3											3	2
SW3D			X			3											3	3
SW4D			X			3											3	4
MW1S			X			3											3	5
MW9S			X			3											3	6
MW5S			X			3											3	7
MW10SL			X			3											3	8
MW1DS			X			3											3	9
MW8S			X			3											3	10
M-1			X			3											3	11
TB-1					X	3											3	12

HAZWRAP NEESA Y N
QC LEVEL 1S 2 3
TOC Y ICE Y
AHA REQ Y TEMP 4°
CUS SEAL Y PH NA
SAMPLE COND. 2006
BUS UPS FED-EX OTHER

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Iverson ERIC GABRIELSON	ERIC GABRIELSON	1/14/92	1600			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB: Allen Smith	DATE 1/15/92	TIME 1430

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 0582906122

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000047

CHAIN OF CUSTODY
BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER No. 00617
23/27-540MTH40
NO:

PROJECT MANAGER: Mark Magley
PROJECT CONTACT: Steve Iverson
LABORATORY: CH2MHILL / REDDING
REMARKS/ ANALYSIS REQUIRED: Ref # 31918

CONTAINER TYPE AND NUMBER

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED	
MW6S	↑		X			3											3	8010 VOC'S	13
M7SL	1/14/92		X			3											3	marked "MW7SL"	14
MW2SL			X			3											3		15
MW DBR			X			3											3		16
MW D			X			3											3		17
MW BL			X			3											3		18
MW B			X			3											3		19
PW1			X			3											3		20
MW7S			X			3											3	marked "MW7"	21
MW3S			X			3											3		22
MW2S			X			3											3		23
MW4S	↓		X			3											3		24

HAZWRAP/NEESA Y N
QC LEVEL 1 2 3
COC Y
CE Y
ANA REQ Y
TEMP 4°C
CUST SEAL Y
PH N/A
SAMPLE COND. 500C
BUS UPS FED-EX. OTHER

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Iverson ERIC GABRIELSON	ERIC GABRIELSON	1/14/92	1600			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB: Allen Smith	1/15/92	1430

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 0582906122

[redacted]

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER No. 00618
231127-15A0 MT H410
NO:

PROJECT MANAGER: Mark Hagley
PROJECT CONTACT: Steve Iverson
LABORATORY: CH2M Hill / Redding
REMARKS/ ANALYSIS REQUIRED: Ref. # 31918

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED	
M-2	1/14/92		X			3											3	8010	25
M-3			X			3											3		26
TB-2					X	3											3		27
FB-1					X	3											3		28

HAZARD/RELEASE Y N
QC LEVEL (S) 3
TEMP 4 °C
SEAL 4
CUST SEAL 4
SAMPLE COND. GOOD
BY: UPS FED-EX OTHER

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Iverson ERIC GABRIELSON	ERIC GABRIELSON	1/14/92	1600			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB: Allen Smith	1/15/92	1435

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 0582906122

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

000049

Appendix 7

Water Sampling Field Reports and Chain of Custody Forms

FIELD DATA REPORT

PROJECT NAME SCHLOFF CHEM. RI

PROJECT NUMBER 23/27-540 [illegible] 40

SAMPLER SDI JEG

	SAMPLING LOCATION	SAMPLING DATE MONTH DAY YEAR	TEMP °C	CONDUCTIVITY @ 25°C	pH	STATIC	ELEVATION
M-1	MW1S	11-25-91	12.0	900	7.0	17.29	889.89
	MW5S		12.0	800	7.1	10.60	888.03
	SW1D		1.0	600	6.5	–	
	SW2D		2.0	600	6.5	–	
	SW3D		1.0	630	6.4	–	
	SW4D		1.0	640	6.4	–	
	MW6S		7.0	450	7.3	11.14	890.84
	MW7S		9.0	400	7.1	15.25	888.90
	MW3S	11-26-91	10.0	550	7.3	15.77	888.65
	MW2S		10.0	550	7.3	15.16	890.19
	MW4S		10.0	550	7.4	14.21	890.50
	PW1		–	770	7.2	13.51	888.47
	MWBL		–	420	7.7	12.01	886.86
M-2	MWB		–	700	7.5	10.11	888.27
	MWD		–	415	7.6	11.65	887.62
	MWDBR		–	380	8.0	13.43	885.11
	MW9S		10.0	530	7.3	11.47	887.67
	MW8S		10.0	400	7.9	13.91	889.63
	MW10S	11-27-91	10.0	680	7.4	9.85	888.83

FIELD DATA REPORT

PROJECT NAME SCHLOFF CHEM RI.

PROJECT NUMBER 213/217-5410 [redacted] 410

SAMPLER SDI JEG

SAMPLING LOCATION	SAMPLING DATE MONTH DAY YEAR	TEMP °C	CONDUCTIVITY @ 25° C	pH	STATIC	ELEVATION
M-3 MW 10SL	11-27-91	10.0	800	8.8	10.24	888.25
MW 2SL	↓	9.0	600	7.3	15.96	889.36
MW 7SL	↓	9.0	2800	11.9	16.32	887.93

FIELD LOG COVER SHEET

WATER SAMPLING

Client: SCHLOFF CHEM. R.I. Project Number 23/27-S40MTH40

Samplers: SDI JEG Sampling Period: 11/25-27/91

Weather:

Date	Temperature	Wind Speed	Wind Direction	Cloud Cover
11/25-27/91	10-20 oF	10-15 mph	S, SW	CLOUDY
/ /	___ oF	___ mph		
/ /	___ oF	___ mph		
/ /	___ oF	___ mph		

Containers received from: Pace Braun Enseco CH2M Hill EDI

Samples shipped for analysis to: Pace Braun Enseco CH2M Hill EDI REDDING

Samples dropped off at: Pace Braun

Water blank received from: Pace Braun Enseco CH2M Hill EDI

Type of blank: Trip / Field Field blank is: air / water

Mask # 1 collected at station # MW1S Mask # 2 collected at station # MW8
MASK # 3 COLLECTED AT STATION # MW10SL.

Name and affiliation of others present: _____

Comments:

ALL WELLS PURGED BY BARR ENG., HAD THEIR PURGE WATER BARRELED AND THEN PUMPED INTO THE ON SITE TREATMENT TANK. CONESTOGA-ROVERS (CRA) PURGED WELLS B, BL, D, DBR, PW1. BARR SPLIT SAMPLES WITH THEM. THESE WELLS DID NOT APPEAR TO BE STABILIZED. THEY WERE ALL PURGED FIRST, THEN SAMPLED. THE INFO. ON THESE WELLS WAS OBTAINED FROM CRA.

WATER LEVEL DATA SHEET

PROJECT NAME SCHLOFF CHEM. R.I.

SAMPLERS SDI JEG
DATE 11-25-91
PAGE 1 OF 1

WELL NUMBER	MEASURING POINT ELEVATION	WATER LEVEL DEPTH	TOTAL WELL DEPTH	WATER LEVEL ELEVATION	COMMENTS
MW 1S		17.29	27		
MW 9S		11.47	22		
MW 5S		10.60	23.5		
MW 10SL		10.24	40		11-27
MW 10S		9.85	16		11-27
MW 8S		13.91	20.5		
MW 6S		11.14	24		
MW 7SL		16.32	44		11-27
MW 2 SL		15.96	45		11-27
MW DBR		13.43	84		MEASURED BY CRA
MW D		11.65	17.5		↓
MW BL		12.01	46.5		
MW B		10.11	17.5		
PW1		13.51	33		
MW 7S		15.25	28.5		
MW 3S		15.77	25		
MW 2S		15.16	23		
MW 4S		14.21	24.5		
MC-1		17.79			R/R TRESSEL
MC-2		14.41			MEADOWBROOK BRIDGE

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW15

Client: SCHLOFF Project No. 23-27-540 MTH40

Location: Date: 11/25/91 Sample Time: 1345

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @25	pH	Eh
Barr Lock: Y (N)		1. 1338	12.0	700		6.9	
Casing Dia: (in.)	2	2. 1339	12.0	700		7.0	
Total Depth (ft.)	27	3. 1340	12.0	700	900	7.0	
Static Depth (ft.)	17.29	4.					
Water Depth:	10	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	CENT.	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:	1330	Odor:					
Stop Time:	1340	Comments: M-1 PUMPED FOR 5 min TO CLEAR WELL BEFORE STABILIZATION.					
Duration: (min.)	10						
Rate, gpm:	2						
Volume Purged:	20 gal						

Samplers: JEG SDI Others Present:

gen ____ VOC 6 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 5S

Client SCHLOFF Project No. 23-127-540MTH40

Location: Date: 11/25/91 Sample Time: 1425

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y/N		1. 1418	12.0	600		7.0	
Casing Dia: (in.)	2	2. 1419	12.0	600		7.1	
Total Depth (ft.)	23.5	3. 1420	12.0	600	800	7.1	
Static Depth (ft.)	10.60	4.					
Water Depth:	13	5.					
Well Vol. (gal.)	2	6.					
Purge Method:	CENT.	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:	1410	Odor:					
Stop Time:	1420	Comments: pumped 5 min to clear well before stabilization.					
Duration: (min.)	10						
Rate, gpm:	2						
Volume Purged:	20 gal						

Samplers: JEG SD1 Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
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FIELD LOG DATA SHEET

Station: SW1D

Client SCHLOFF Project No. 23-27-540MTH40

Location: INBETWEEN 55 & 95 Date: 11/25/91 Sample Time: 1440

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1.	1.0	370	600	6.5	
Casing Dia: (in.)		2.					
Total Depth (ft.)		3.					
Static Depth (ft.)		4.					
Water Depth:		5.					
Well Vol. (gal.)		6.					
Purge Method:		7.					
Samp. Method:	GRAB	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: STREAM SAMPLE					
Duration: (min.)							
Rate, gpm:							
Volume Purged:							

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: SW 2D

Client SCHLOFF Project No. 23-27-540MTH40

Location: UPSTREAM SIDE OF BRIDGE Date: 11/25/91 Sample Time: 1450

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1.	2.0	370	600	6.5	
Casing Dia: (in.)		2.					
Total Depth (ft.)		3.					
Static Depth (ft.)		4.					
Water Depth:		5.					
Well Vol. (gal.)		6.					
Purge Method:		7.					
Samp. Method:	GRAB	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: STREAM SAMPLE					
Duration: (min.)							
Rate, gpm:							
Volume Purged:							

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: SW 3D

Client SCHLOFF Project No. 23-27-540MTH40

Location: UPSTRAM OF FALLEN TREE Date: 11/25/91 Sample Time: 1500

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1.	1.0	370	630	6.4	
Casing Dia: (in.)		2.					
Total Depth (ft.)		3.					
Static Depth (ft.)		4.					
Water Depth:		5.					
Well Vol. (gal.)		6.					
Purge Method:		7.					
Samp. Method:	GRAB	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: STREAM SAMPLE					
Duration: (min.)							
Rate, gpm:							
Volume Purged:							

Samplers: JEG SDI Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: SW 4D

Client: SCHLOFF

Project No. 23-27-540 MTH 40

Location: UPSTREM OF CULVERT BELOW RR Bridge

Date: 11/25/91

Sample Time: 1210

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1.	4.0	375	640	6.4	
Casing Dia: (in.)		2.					
Total Depth (ft.)		3.					
Static Depth (ft.)		4.					
Water Depth:		5.					
Well Vol. (gal.)		6.					
Purge Method:		7.					
Samp. Method:	GRAB	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: SURFACE WATER SAMPLE					
Duration: (min.)							
Rate, gpm:							
Volume Purged:							

Samplers: SDI JEG

Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW6S

Client SCHLOFF Project No. 23-27-540MTH40

Location: Date: 11/25/91 Sample Time: 1520

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 1518	7.0	295		7.3	
Casing Dia: (in.)	2	2. 1519	7.0	300		7.3	
Total Depth (ft.)	24	3. 1520	7.0	300	450	7.3	
Static Depth (ft.)	11.14	4.					
Water Depth:	13	5.					
Well Vol. (gal.)	2	6.					
Purge Method:	CENT.	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:	1510	Odor:					
Stop Time:	1520	Comments: PUMPED FOR 5 min TO CLEAR WELL BEFOR STABLIZATION					
Duration: (min.)	10						
Rate, gpm:	2						
Volume Purged:	20 gal						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 7S

Client: SCHLOFF Project No. 1213-1217-5140MTH40

Location: Date: 11/25/91 Sample Time: 1545

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 1538	9.0	290		7.1	
Casing Dia: (in.)	2	2. 1539	9.0	290		7.1	
Total Depth (ft.)	28	3. 1540	9.0	290	400	7.1	
Static Depth (ft.)	15.25	4.					
Water Depth:	15.5	5.					
Well Vol. (gal.)	2.5	6.					
Purge Method:	CENT.	7.					
Samp. Method:	BAILER	Appearance: BROWN/BLACK					
Start Time:	1530	Odor:					
Stop Time:	1540	Comments: PUMPED FOR 5 MIN TO CLEAR WELL BEFOR STABILIZATION.					
Duration: (min.)	10						
Rate, gpm:	2.5						
Volume Purged:	25 gal						

Samplers: SDI JEC Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: ~~MW35~~ MW35

Client Schloff Chem Project No. 23-27-540 MT H40

Location: _____ Date: 11/24/91 Sample Time: 0958

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y/N		1. 0947	10.0	400		7.3	
Casing Dia: (in.)	2	2. 0948	10.0	400		7.3	
Total Depth (ft.)	25	3. 0950	10.0	400	550	7.3	
Static Depth (ft.)	15.77	4.					
Water Depth:	9	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	Cent	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	0940	Odor:					
Stop Time:	0950	Comments: 100% cloudy					
Duration: (min.)	10	13° F					
Rate, gpm:	2	winds 10-15 S, SW					
Volume Purged:	20 gal	well water put in Barrels to be processed Latter					

Samplers: JEG SDI Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW2S

Client Schloff Chem Project No. 23-27-540MTH40

Location: Date: 11/26/91 Sample Time: 1020

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 1010	10.0	410		7.2	
Casing Dia: (in.)	2"	2. 1011	10.0	410		7.3	
Total Depth (ft.)	23	3. 1013	10.0	410	550	7.3	
Static Depth (ft.)	15.16	4.					
Water Depth:	8	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	Cent	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	1003	Odor:					
Stop Time:	1013	Comments:					
Duration: (min.)	10						
Rate, gpm:	2						
Volume Purged:	20gal						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW4S

Client Schloff Project No. 23-77-540MH40

Location: Date: 11/29/91 Sample Time: 1036

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1. 1029	10	405		7.4	
Casing Dia: (in.)	2"	2. 1030	10	405		7.4	
Total Depth (ft.)	24.5	3. 1032	10	405	550.	7.4	
Static Depth (ft.)	14.21	4.					
Water Depth:	10.5	5.					
Well Vol. (gal.)	2	6.					
Purge Method:	Cent	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	1022	Odor:					
Stop Time:	1032	Comments:					
Duration: (min.)	10						
Rate, gpm:	2						
Volume Purged:	20 gal						

Samplers: JEG SDI Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: PW 1

Client SCHLOFF Project No. 1231-1271-5140MTH40

Location: Date: 11/26/91 Sample Time: 1140

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1.	–	770		7.2	
Casing Dia: (in.)	6	2.					
Total Depth (ft.)	33	3.					
Static Depth (ft.)	13.51	4.					
Water Depth:	19.5	5.					
Well Vol. (gal.)	2.9	6.					
Purge Method:	SUB.	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: CRA PURGED WELL					
Duration: (min.)							
Rate, gpm:							
Volume Purged:	150 gal						

Samplers: SDI JEG Others Present: BOB, CHUCK CRA

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW BL

Client SCHLOFF Project No. 23-127-540 MTH 40

Location: Date: 11/26/91 Sample Time: 1200

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1.	✓	420		7.7	
Casing Dia: (in.)	2	2.					
Total Depth (ft.)	46.5	3.					
Static Depth (ft.)	12.01	4.					
Water Depth:	34.5	5.					
Well Vol. (gal.)	5.5	6.					
Purge Method:	BAILER	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: CRA PURGED WELL					
Duration: (min.)							
Rate, gpm:							
Volume Purged:	26 gal						

Samplers: SDI JEG Others Present: BOB, CHUCK CRA

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW B

Client SCHLOFF Project No. 23-127-540 MJH 40

Location: _____ Date: 11/26/91 Sample Time: 1205

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1.	-	700		7.5	
Casing Dia: (in.)	2	2.					
Total Depth (ft.)	17.5	3.					
Static Depth (ft.)	10.11	4.					
Water Depth:	7.5	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	BAILER	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: M-2 CRA PURGED WELL					
Duration: (min.)							
Rate, gpm:							
Volume Purged:	5 gal						

Samplers: SDI JEG Others Present: BOB, CHUCK CRA

gen ____ VOC 6 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW D

Client SCHLOFF Project No. 23-27-540 MTH 40

Location: _____ Date: 11/26/91 Sample Time: 1210

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1.	✓	415		7.6	
Casing Dia: (in.)	2	2.					
Total Depth (ft.)	17.5	3.					
Static Depth (ft.)	11.65	4.					
Water Depth:	6	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	BAILER	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: CRA PURGED WELL					
Duration: (min.)							
Rate, gpm:							
Volume Purged:	4 gal						

Samplers: SDI JEG Others Present: BOB, CHUCK, CRA

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MWDBR

Client SCHLOFF Project No. 23-27-540MTH40

Location: Date: 11/26/91 Sample Time: 1215

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1.	✓	380		8.0	
Casing Dia: (in.)	4	2.					
Total Depth (ft.)	84	3.					
Static Depth (ft.)	13.43	4.					
Water Depth:	70.5	5.					
Well Vol. (gal.)	46	6.					
Purge Method:	SUB. ~~BAILER~~	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: CRA PURGED WELLS.					
Duration: (min.)							
Rate, gpm:							
Volume Purged:	250gal						

Samplers: SDI JEG Others Present: BOB, CHUCK CRA

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW9S

Client: SCHOFF Project No. 23-27-540 MT H40

Location: _____ Date: 11/26/91 Sample Time: 1405

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y/N		1. 1358	10.0	390		7.2	
Casing Dia: (in.)	2	2. 1359	10.0	390		7.2	
Total Depth (ft.)	22	3. 1400	10.0	390	530	7.3	
Static Depth (ft.)	11.47	4.					
Water Depth:	10.5	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	cent	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	1350	Odor:					
Stop Time:	1400	Comments:					
Duration: (min.)	10						
Rate, gpm:	2						
Volume Purged:	20 gal						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW8S

Client Schloff

Project No. 23-27-540MTH41

Location:

Date: 11/26/91

Sample Time: 1430

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1. 1423	10	300		7.9	
Casing Dia: (in.)	2"	2. 1224	10	300		7.9	
Total Depth (ft.)	20.0	3. 1425	10	300	400	7.9	
Static Depth (ft.)	13.91	4.					
Water Depth:	6	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	Cent	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	1415	Odor:					
Stop Time:	1425	Comments:					
Duration: (min.)	10						
Rate, gpm:	2						
Volume Purged:	20 gal						

Samplers: SDI JEG

Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 10S

Client: SCHLOFF Project No. 123-127-540MTH40

Location: _____ Date: 11/27/91 Sample Time: 1000

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: (Y) N		1. 3	10.0	500	680	7.4	
Casing Dia: (in.)	2	2. 4					
Total Depth (ft.)	16	3. 5 gal					
Static Depth (ft.)	9.85	4.					
Water Depth:	6	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	CENT. (C)	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments:					
Duration: (min.)							
Rate, gpm:							
Volume Purged:	5 gal						

Samplers: SDJ JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 10SL

Client SCHLOFF

Project No. 23-27-540MTH40

Location:

Date: 11/27/91

Sample Time: 1030

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: (Y) N		1.	10.0	600	800	8.8	
Casing Dia: (in.)	2	2.					
Total Depth (ft.)	40	3.					
Static Depth (ft.)	10.24	4.					
Water Depth:	30	5.					
Well Vol. (gal.)	5	6.					
Purge Method:	CENT.	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: M-3					
Duration: (min.)		WELL PURGED DRY.					
Rate, gpm:							
Volume Purged:	~7gal Dry						

Samplers: SDI JEG Others Present:

gen ____ VOC 6 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 25L

Client SCHLOFF Project No. 23-27-540MTH40

Location: Date: 11/27/91 Sample Time: 1110

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: (Y) N		1. 1103	9.0	430		7.4	
Casing Dia: (in.)	2	2. 1104	9.0	430		7.4	
Total Depth (ft.)	45	3. 1105	9.0	430	600	7.3	
Static Depth (ft.)	15.96	4.					
Water Depth:	29	5.					
Well Vol. (gal.)	4.5	6.					
Purge Method:	CENT.	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:	1100	Odor:					
Stop Time:	1105	Comments:					
Duration: (min.)	5						
Rate, gpm:	5						
Volume Purged:	25 gal						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 7SL

Client SCHLOFF Project No. 23-27-540MTH40

Location: Date: 11/27/91 Sample Time: 1220

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: (Y) N		1. 1213	9.0	2000		11.8	
Casing Dia: (in.)	2	2. 1214	9.0	2000		11.9	
Total Depth (ft.)	44	3. 1215	9.0	2000	2800	11.9	
Static Depth (ft.)	16.32	4.					
Water Depth:	27.5	5.					
Well Vol. (gal.)	4.5	6.					
Purge Method:	CENT.	7.					
Samp. Method:	BAILER	Appearance:					
Start Time:	1210	Odor:					
Stop Time:	1215	Comments:					
Duration: (min.)	5						
Rate, gpm:	5						
Volume Purged:	25 gal						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

GROUNDWATER SAMPLING AND ANALYSIS REQUEST

PROJECT NUMBER 23127-540 MTH40

PROJECT NAME SCHLOFF CHEM RT.

PROJECT MANAGER/DESIGNATE MTH / SDI

PROJECT TYPE:
- MONITORING ☐
- RI ☐
- OTHER ☐

PROJECT DESCRIPTION/SITE HISTORY _____

SITE LOCATION _____

TURN AROUND TIME _____

DATE OF SCHEDULED SAMPLING _____

AGENCY NOTIFICATION/SPLIT YES ☐ NO ☐

QAPP YES ☐ NO ☐

SITE SAFETY PLAN YES ☐ NO ☐

AGENCY CONTACT _____

PHONE NUMBER _____

SAMPLING LOCATION	SAMPLING ORDER	WELL DIAMETER	TOTAL DEPTH	DEPTH TO WATER	ANALYSES REQUESTED
MW 1S	1				8010
MW 9S	2				
MW 5S	3				
MW 10 SL	4				
MW 10S	5				
MW 8S	6				
MW 6S	7				
MW 7SL	8				
MW 2SL	9				
MW DBR	10				
D	11				
MW BL	12				
B	13				
PW 1	14				
MW 7S	15				
MW 3S	16				

QC REQUIRED STANDARD ☐ SPECIAL NEEDS _____

DATA MANAGEMENT NEEDS _____

LABORATORY PREFERENCE _____

MDL/METHOD REQUIREMENTS _____

COMMENTS: _____

DISTRIBUTION: WHITE– S&A COORDINATOR: YELLOW– SAMPLING TECHNICIAN: PINK– PROJECT MANAGER

GROUNDWATER SAMPLING AND ANALYSIS REQUEST

PROJECT NUMBER _____

PROJECT NAME _____

PROJECT MANAGER/DESIGNATE _____

PROJECT TYPE:
- MONITORING ☐
- RI ☐
- OTHER ☐

PROJECT DESCRIPTION/SITE HISTORY _____

SITE LOCATION _____

TURN AROUND TIME _____

DATE OF SCHEDULED SAMPLING _____

AGENCY NOTIFICATION/SPLIT YES ☐ NO ☐

QAPP YES ☐ NO ☐

SITE SAFETY PLAN YES ☐ NO ☐

AGENCY CONTACT _____

PHONE NUMBER _____

SAMPLING LOCATION	SAMPLING ORDER	WELL DIAMETER	TOTAL DEPTH	DEPTH TO WATER	ANALYSES REQUESTED
MW 2S	17				
MW 4S	18				
SW 4 D					
SW 3D					
SW 2D					
SW 1D					
3 MASK SAMPLES - CDC, SCHLOFF deep, SCHLOFF shallow.					
FB-1					
TB - ONE PER DAY					

QC REQUIRED STANDARD ☐ SPECIAL NEEDS _____

DATA MANAGEMENT NEEDS _____

LABORATORY PREFERENCE _____

MDL/METHOD REQUIREMENTS _____

COMMENTS: _____

DISTRIBUTION: WHITE– S&A COORDINATOR: YELLOW– SAMPLING TECHNICIAN: PINK– PROJECT MANAGER

PROJECT: 23127-540[redacted]40

SAMPLING REQUEST FORM

SAMPLE ORDER AND LOCATION	STABILIZE	PREVIOUS VOLUME	40ML VIAL	40ML VIAL W/HCL	125ML AMBER W/TEFLON	500ML AMBER W/TEFLON	1L AMBER W/TEFLON	2L AMBER W/TEFLON	250ML PLASTIC	500ML PLASTIC	1L PLASTIC	250ML PLASTIC W/HNO3	500ML PLASTIC W/HNO3	1L PLASTIC W/HNO3	250ML PLASTIC W/H2SO4	500ML PLASTIC W/H2SO4	1L PLASTIC W/H2SO4	1500ML GLASS W/H2SO4	1L PLASTIC W/NAOH + ASCORBIC ACID	METHANE	FLOW	EH	APPEARANCE	TEMPERATURE	CONDUCTIVITY	PH	WATER LEVEL
~~1.~~ MW1S	X			2																				X	X	X	X
2. MW9S	X			2																							
~~3.~~ MW5S	X			2																							
4. MW10SL	X			2																							
5. MW8S	X			2																							
~~6.~~ MW6S	X			2																							
7. MW7SL	X			2																							
8. MW2SL	X			2																							
~~9.~~ MWDBR	X			2																							
~~10.~~ MWD	X			2																							
~~11.~~ MWBL	X			2																							
~~12.~~ MWB	X			2																							
(1) LABORATORY				C																				F	F	F	F

(1) LABORATORY CODES: A = ASPEN P = PACE E = ENSECO F = FIELD/BARR C = CH2M HILL B = BRAUN D = EDI

BARR CONTACT SDI SPLIT _____ SCHEDULED DATE 11-25-27 COMPLETION DATE 11-27

SPECIAL INSTRUCTIONS SAVE PURGE WATER, PUT INTO TREATMENT SYSTEM.
NEED Keys

PROJECT MGR. MTH SAMPLER _____ FORM COMPLETED BY: SDI DATE: _____

PROJECT: / - [redacted]

SAMPLING REQUEST FORM

SAMPLE ORDER AND LOCATION	STABILIZE	PREVIOUS VOLUME	40ML VIAL	40ML VIAL W/HCL	125ML AMBER W/TEFLON	500ML AMBER W/TEFLON	1L AMBER W/TEFLON	2L AMBER W/TEFLON	250ML PLASTIC	500ML PLASTIC	1L PLASTIC	250ML PLASTIC W/HNO3	500ML PLASTIC W/HNO3	1L PLASTIC W/HNO3	250ML PLASTIC W/H2SO4	500ML PLASTIC W/H2SO4	1L PLASTIC W/H2SO4	1500ML GLASS W/H2SO4	1L PLASTIC W/NAOH + ASCORBIC ACID	METHANE	FLOW	EH	APPEARANCE	TEMPERATURE	CONDUCTIVITY	PH	WATER LEVEL
1. PW1	X			2																				X	X	X	X
2. MW7S	X			2																							
3. MW3S	X			2																							
4. MW2S	X			2																							
5. MW4S	X			2																							
6. SW4D	X			2																MC-1							X
7. SW3D	X			2																							
8. SW2D	X			2																MC-2							X
9. SW1D	X			2																							
10. M-1-3	ONE AT EACH CDC, SCHLOFF DEEP, SCHLOFF SHALLOW			2																							
11. FB-1				2																							
12. TB-1-3	ONE PER DAY			2																							
(1) LABORATORY				C																				F	F	F	F

(1) LABORATORY CODES: A = ASPEN P = PACE E = ENSECO F = FIELD/BARR C = CH2M HILL B = BRAUN D = EDI

BARR CONTACT _____ SPLIT _____ SCHEDULED DATE _____ COMPLETION DATE _____

SPECIAL INSTRUCTIONS _____

[redacted]RO[redacted] MC[redacted] SA[redacted]ER [redacted] FORM COMPLETED BY: [redacted] DATE: [redacted]

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: [illegible]

NO:

PROJECT MANAGER: [illegible]

PROJECT CONTACT: SDI

LABORATORY: [illegible]

REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
MW 7S	11-25-11		X			[illegible]											[illegible]	[illegible]
MW 6S			X			[illegible]											[illegible]	
MW 5S			X			[illegible]											[illegible]	
MW 1S			X			[illegible]											[illegible]	
SW 1D			X			[illegible]											[illegible]	
SW 2D			X			[illegible]											[illegible]	
SW 3D			X			[illegible]											[illegible]	
SW 4D			X			[illegible]											[illegible]	
M-1			X			[illegible]											[illegible]	
TB-1					X	[illegible]											[illegible]	

SAMPLED BY: [illegible]	RELINQUISHED BY: [illegible]	DATE [illegible]	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☐ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: [illegible]

DISTRIBUTION: WHITE ORIGINAL ACCOMPANIES SHIPMENT TO LAB. RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; COLD-FIELD COPY

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: 43/27-540 [illegible] 40

NO:

PROJECT MANAGER: [illegible]

PROJECT CONTACT: SDI

LABORATORY: [illegible]

REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
MW 3S	11-26-91		X			3												[illegible]
MW 9S			X			3											3	
MW 4S			X			3											3	
MW 2S			X			3											3	
PW 1			X			3											3	
MW BL			X			3											3	
MW B			X			3											3	
MW D			X			3											3	
MW DBR			X														3	
MW 8S			X														3	
M-2			X														3	
TB-2					X	3											3	

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☐ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: [illegible]

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER 23/27-540 MTH 40

NO:

PROJECT MANAGER: MTH

PROJECT CONTACT: SDI

LABORATORY: Un Al, CH2M Hill Redding

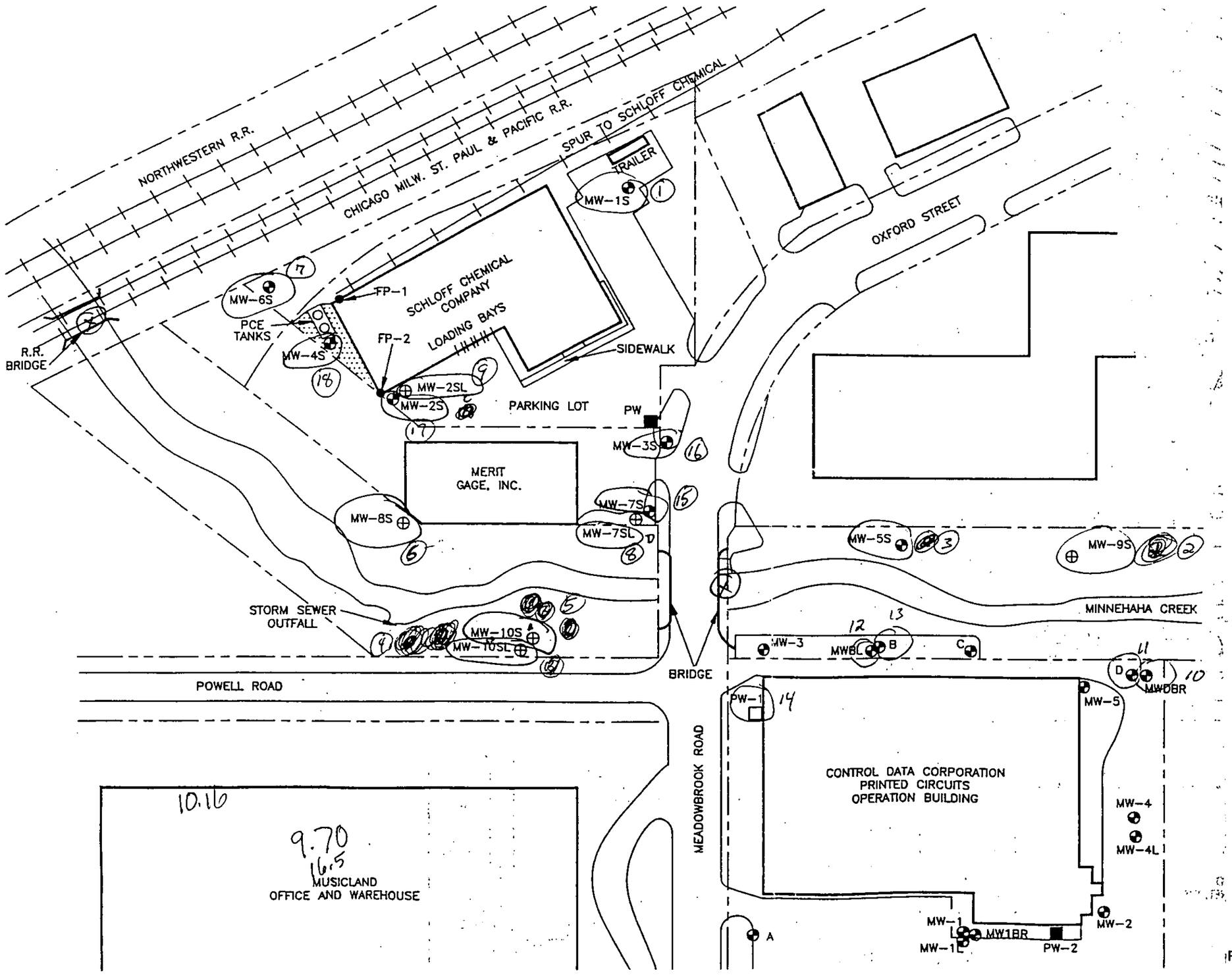
REMARKS/ ANALYSIS REQUIRED:

CONTAINER TYPE AND NUMBER

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
MW 10S	11-2791		X			3											3	VOC'S 8010
MW10SL	↓		X			3											3	↓
MW 9SL	↓		X			3											3	↓
MW 7SL	↓		X			3											3	↓
M-3	↓		X			3											3	↓
TB-3	↓				X	3											3	↓
FB-1	↓				X	3											3	↓

SAMPLED BY: [signature]	RELINQUISHED BY: [signature]	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
REMARKS:	SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☐ FED. EXP. ☐ SAMPLER ☐ OTHER			AIR BILL NUMBER:		

DISTRIBUTION: WHITE ORIGINAL ACCOMPANIES SHIPMENT TO LAB. RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY



N

0 100

SCALE IN FEET

(1) Sampling Order

LEGEND:

- PROPERTY LINE
- RAILROAD TRACKS
- GRAVEL COVERED ASPHALT
- MONITORING WELL LOCATION
- PURGE WELL (NOT IN USE)
- PURGE WELL LOCATION
- PROPOSED MONITORING WELL LOCATION

Red - CDC wells (5)

Blue - Schloff Deep wells (3)

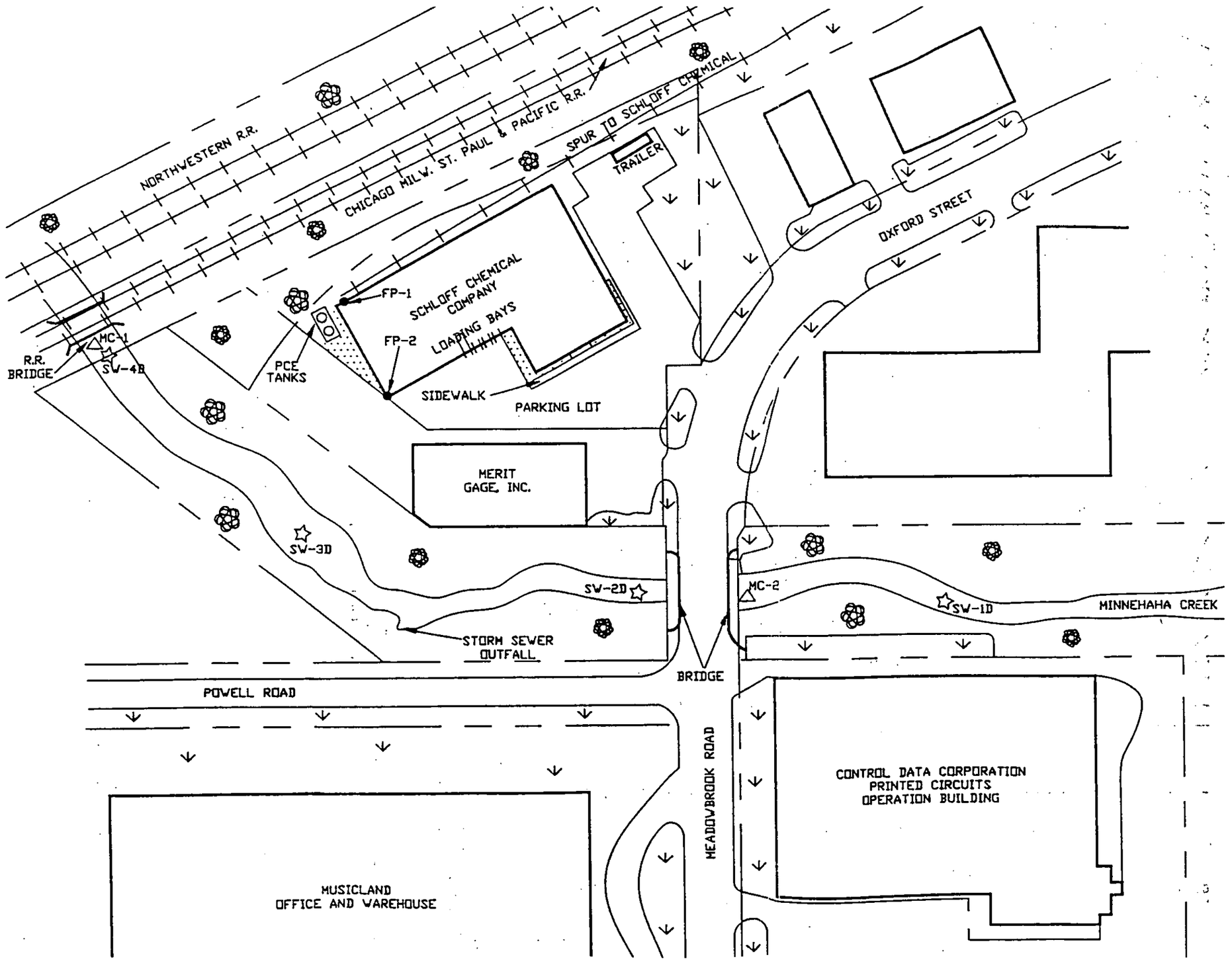
Green - Schloff Shallow wells (10)

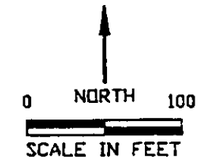
(X) Surface water elevation Measuring point

Figure 4

PROPOSED MONITORING WELL LOCATIONS
PHASE II REMEDIAL

Schloff Chemical Company
St. Louis Park, Minnesota





LEGEND:

- PROPERTY LINE
- RAILROAD TRACKS
- TREES & BRUSH
- GRASS
- GRAVEL
- STAFF GAUGE
- SURFACE WATER SAMPLING LOCATIONS-JULY 17, 1989

measure from bridge deck (drop a line to water)

Figure 5
MINNEHAHA CREEK SAMPLING POINTS
Schloff Chemical Company
St. Louis Park, Minnesota

FIELD DATA REPORT

PROJECT NAME Schloff

PROJECT NUMBER 23/27-540 [redacted] 40

SAMPLER SDI JEG

	SAMPLING LOCATION	SAMPLING DATE MONTH DAY YEAR	TEMP °C	CONDUCTIVITY @ 25°C	pH	STATIC	ELEVATION
	SW1D	1/13/92	4.0	575	7.2	—	—
	SW2D		3.0	650	7.5	—	—
	SW3D		1.0	650	7.1	—	—
	SW4D		3.0	600	7.1	—	—
	MW1S		8.0	550	7.1	17.70	889.48
M-1	MW9S		8.0	950	7.2	11.69	887.45
	MW5S		8.0	700	7.3	10.91	887.72
	MW10SL		9.0	700	8.9	10.46	888.03
	MW10S		8.0	650	7.1	9.95	888.73
	MW8S		9.0	475	8.5	14.06	889.48
M-2	PW1	1/14/92	4.0	730	6.9	13.95	888.03
	MWBL		6.0	370	7.15	12.28	886.59
	MWDBR		4.0	400	6.8	13.73	884.81
	MWD		6.0	650	6.9	12.37	886.90
	MWB		9.0	550	6.95	10.58	887.80
	MW6S		9.0	400	8.3	11.51	890.47
M-3	MW7SL		9.0	3750	12.1	16.58	887.67
	MW2SL		8.0	475	7.1	16.19	889.13
	MW7S		8.0	650	7.3	15.51	888.64

FIELD DATA REPORT

PROJECT NAME Schloff

PROJECT NUMBER 23/27-540 [illegible] 40

SAMPLER

SAMPLING LOCATION	SAMPLING DATE MONTH DAY YEAR	TEMP °C	CONDUCTIVITY @ 25°C	pH	STATIC	ELEVATION
MW3S	1/14/92	6.0	650	7.0	15.94	888.48
MW2S	↓	8.0	500	7.2	15.48	889.87
MW4S	↓	8.0	475	7.4	14.58	890.13

FIELD LOG COVER SHEET

WATER SAMPLING

Client: Schlaff Chemical Project Number 23127-540 MTH.40

Samplers: SDI, JFG Sampling Period: 1/13/92, 1/14/92, / /, / /

Weather:

Date	Temperature	Wind Speed	Wind Direction	Cloud Cover
1/13/92	10 oF	— mph	—	100°
1/14/92	4 oF	5-10 mph	N	85°
/ /	oF	mph		
/ /	oF	mph		

Containers received from: Pace (Braun) Enseco CH2M Hill EDI

Samples shipped for analysis to: Pace Braun Enseco (CH2M Hill) EDI

Samples dropped off at: Pace Braun

Water blank received from: Pace (Braun) Enseco CH2M Hill EDI

Type of blank: (Trip / Field) Field blank is: air / (water)

Mask # 1 collected at station # 9S Mask # 2 collected at station # PW1
M-3 75L

Name and affiliation of others present: CRA Chuck, Rob

Comments:

WATER LEVEL DATA SHEET

PROJECT NAME SCHLOFF CHEM RI.

SAMPLERS SDI JEG
DATE 1-13-92
PAGE ____ OF ____

WELL NUMBER	MEASURING POINT ELEVATION	WATER LEVEL DEPTH	TOTAL WELL DEPTH	WATER LEVEL ELEVATION	COMMENTS
MW15	907.18	17.70	27	889.48	
MW9S	899.14	11.69	22	887.45	
MW5S	898.63	10.91	23.5	887.72	
MW10SL	898.49	10.46	40	888.03	
MW10S	898.68	9.95	16	888.73	
MW8S	903.54	14.06	20.5	889.48	
MW6S	901.98	11.51	24	890.47	
MW7SL	904.25	16.58	44	887.67	
MW2SL	905.32	16.19	45	889.13	
MW7S	904.15	15.51	28.5	888.64	
MW3S	904.42	15.94	25	888.48	
MW2S	905.35	15.48	23	889.87	
MW4S	904.71	14.58	24.5	890.13	
MC-1	910.86	18.10		892.76	
MC-2	903.07	14.51		888.56	
MWDBR	898.54	13.73	84	884.81	
MWD	899.27	12.37	17.5	886.90	
MWBL	898.87	12.28	46.5	886.59	
MWB	898.38	10.58	17.5	887.80	
PW1	901.98	13.95	33	888.03	

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: SW1D

Client: Schloff Chemical RI Project No. 23-27-540MTH40

Location: _____ Date: 1/13/92 Sample Time: 1305

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N	—	1.	4.0	365	575	7.2	
Casing Dia: (in.)	—	2.					
Total Depth (ft.)	—	3.					
Static Depth (ft.)	—	4.					
Water Depth:	—	5.					
Well Vol. (gal.)	—	6.					
Purge Method:	—	7.					
Samp. Method:	GRAB	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: CALM 100% cloudy 10° IN Between 5S AND 9S					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	—						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: SW20

Client Schloff Project No. 23-27-540MTH40

Location: Date: 1/13/92 Sample Time: 1307

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N	—	1. 1307	3.0	390	650	7.5	
Casing Dia: (in.)	—	2.					
Total Depth (ft.)	—	3.					
Static Depth (ft.)	—	4.					
Water Depth:	—	5.					
Well Vol. (gal.)	—	6.					
Purge Method:	—	7.					
Samp. Method:	GRAB	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: up stream of Bridge					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	—						

Samplers: Others Present:

gen ___ VOC 3 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: SW30

Client Schloff Project No. 23-27-540MT440

Location: Date: 1/13/92 Sample Time: 1315

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N	—	1.	1.0	370	650	7.1	
Casing Dia: (in.)	—	2.					
Total Depth (ft.)	—	3.					
Static Depth (ft.)	—	4.					
Water Depth:	—	5.					
Well Vol. (gal.)	—	6.					
Purge Method:	—	7.					
Samp. Method:	GRAB	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: Up stream of Drain and Fallon tree					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	—						

Samplers: SDI JEG Others Present:

gen ___ VOC 3 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: SW4n

Client: Schlff Project No. 23-27-540MTH40

Location: Date: 1/13/92 Sample Time: 1317

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N	—	1.	3.0	370	600	7.1	
Casing Dia: (in.)	—	2.					
Total Depth (ft.)	—	3.					
Static Depth (ft.)	—	4.					
Water Depth:	—	5.					
Well Vol. (gal.)	—	6.					
Purge Method:	—	7.					
Samp. Method:	GRAB	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: up stream of culvert, down stream of RR Bridge					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	—						

Samplers: SDI JEG Others Present:

gen ___ VOC 3 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW15

Client: Schloff Project No. 23-27-540MT440

Location: _____ Date: 1/13/92 Sample Time: 1400

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 4.5/GAL	8.0	400		7.2	
Casing Dia: (in.)	2"	2. 6.0/GAL	8.0	400		7.2	
Total Depth (ft.)	27'	3. 7.5/GAL	8.0	400	550	7.1	
Static Depth (ft.)	17.70	4.					
Water Depth:	9	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	Bailer(H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	7.5						

Samplers: JEG SDI Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW95

Client: Schloff Project No. 2 3 1 - 2 7 - 5 4 0 M T 1 4 4 0 1

Location: _____ Date: 1 / 13 / 92 Sample Time: 1425

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 4.5	8.0	650		7.2	
Casing Dia: (in.)	2"	2. 6.0	8.0	650		7.2	
Total Depth (ft.)	22	3. 7.5	8.0	650	950	7.2	
Static Depth (ft.)	11.69	4.					
Water Depth:	10.5	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: M-1					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	7.5						

Samplers: SDI JEG Others Present:

gen ____ VOC 6 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW55

Client: Schloff Project No. 2131-2171-5410 MT 14101

Location: _____ Date: 1/13/92 Sample Time: 1440

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 6/GAL	8.0	500		7.3	
Casing Dia: (in.)	2"	2. 8/GAL	8.0	500		7.3	
Total Depth (ft.)	23.5	3. 10/GAL	8.0	500	700	7.3	
Static Depth (ft.)	10.91	4.					
Water Depth:	12.5	5.					
Well Vol. (gal.)	2	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	10 GAL						

Samplers: SOI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW10SL

Client Schloff Project No. 23-27-5410 MTH410

Location: Date: 1/13/92 Sample Time: 1455

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: (Y) N		1.	9.0	500	700	8.9	
Casing Dia: (in.)	2"	2.					
Total Depth (ft.)	40'	3.					
Static Depth (ft.)	10.46	4.					
Water Depth:	29.5	5.					
Well Vol. (gal.)	5	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: 6 Gal Dry					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	6 GAL						

Samplers: SDI JEG Others Present:

gen ___ VOC 3 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW10S

Client: Schloff Project No. 2131-2171-5140 MT 11410

Location: _____ Date: 1/13/92 Sample Time: 1505

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: (Y) N		1. 3/GAL	8.0	460		7.1	
Casing Dia: (in.)	2	2. 4/GAL	8.0	460		7.1	
Total Depth (ft.)	16	3. 5/GAL	8.0	460	650	7.1	
Static Depth (ft.)	9.95	4.					
Water Depth:	6	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	5 GAL						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 ____ COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 8S

Client: Schloff Project No. 2 3 - 2 7 - 5 4 0 M T H 4 0

Location: _____ Date: 1/13/92 Sample Time: 1530

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: (Y) N		1. 3/GAL	9.0	340		8.5	
Casing Dia: (in.)	2"	2. 4/GAL	9.0	340		8.5	
Total Depth (ft.)	20.5	3. 5/GAL	9.0	340	475	8.5.	
Static Depth (ft.)	14.06	4.					
Water Depth:	6	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	5						

Samplers: SDI. JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: PW1

Client Schloff Project No. 23-27-540MTH40

Location: Date: 1/14/92 Sample Time: 1050

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1.	4		730	6.90	
Casing Dia: (in.)	6	2.					
Total Depth (ft.)	33	3.					
Static Depth (ft.)	13.95	4.					
Water Depth:	19	5.					
Well Vol. (gal.)	28	6.					
Purge Method:	sub	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: M-2 CRA Chuck, Rob Purged well					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	140						

Samplers: Others Present: CRA Chuck, Rob

gen ___ VOC 6 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MWBC

Client Schloff Project No. 23-27-540MTH40

Location: _____ Date: 1/14/92 Sample Time: 1055

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y N		1.	6		370	7.15	
Casing Dia: (in.)	2"	2.					
Total Depth (ft.)	46.5	3.					
Static Depth (ft.)	12.28	4.					
Water Depth:	34	5.					
Well Vol. (gal.)	5.5	6.					
Purge Method:	Bailer	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:		Odor:					
Stop Time:		Comments: CRA Purged well.					
Duration: (min.)							
Rate, gpm:							
Volume Purged:	27						

Samplers: SDI JEC Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW DBR

Client: Schloff Project No. 23-27-5410MTH40

Location: _____ Date: 1/14/92 Sample Time: 1110

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)	/	1.	4		400	6.80	
Casing Dia: (in.)	4	2.					
Total Depth (ft.)	84	3.					
Static Depth (ft.)	13.73	4.					
Water Depth:	70	5.					
Well Vol. (gal.)	46	6.					
Purge Method:	SUB	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: CRA Purged well					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	230						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MWD

Client Schloff Project No. 23-27-540MT440

Location: Date: 1/14/92 Sample Time: 1115

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y/N		1.	6		650	6.90	
Casing Dia: (in.)	2	2.					
Total Depth (ft.)	17.5	3.					
Static Depth (ft.)	12.37	4.					
Water Depth:	5	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	Bailer	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: CRA Pumped well					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	4						

Samplers: SDI JFG Others Present:

gen ___ VOC 3 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MWB

Client Schloff Project No. 23-27-540MTH40

Location: Date: 1/24/92 Sample Time: 1100

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1.	9		550	6.95	
Casing Dia: (in.)	2"	2.					
Total Depth (ft.)	17.5	3.					
Static Depth (ft.)	10.58	4.					
Water Depth:	7	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	Bailer	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: CRA Pumped well					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	5.5						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MWGS

Client: Schloff Project No. 23-127-5410MT4410

Location: _____ Date: 1/14/92 Sample Time: 1235

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 6/GAL	9.0	290		8.3	
Casing Dia: (in.)	2"	2. 8/GAL	9.0	290		8.3	
Total Depth (ft.)	24'	3. 10/GAL	9.0	290	400	8.3	
Static Depth (ft.)	11.51	4.					
Water Depth:	12.5	5.					
Well Vol. (gal.)	2	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: 100 % Cloudy 4° Winds N 5-10					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	10						

Samplers: JEG SAI Others Present:

gen ____ VOC 3 ____ COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW7SL

Client Schloff Project No. 2 3 1 2 7 1 5 4 0 M T 4 4 0 1

Location: _____ Date: 1/14/92 Sample Time: 1255

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 13.5/GAL	9.0	2700		12.1	
Casing Dia: (in.)	2"	2. 18.0/GAL	9.0	2700		12.1	
Total Depth (ft.)	44	3. 22.5/GAL	9.0	2700	3750	12.1	
Static Depth (ft.)	16.58	4.					
Water Depth:	27.5	5.					
Well Vol. (gal.)	4.5	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments: M-3					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	22.5						

Samplers: SDI JEG Others Present:

gen ____ VOC 6 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW2SL

Client: Schloff Project No. 1213-1217-5140MTH401

Location: _____ Date: 1/14/92 Sample Time: 1315

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @25	pH	Eh
Barr Lock: Y (N)		1.	8.0	340	475	7.1	
Casing Dia: (in.)	2"	2.					
Total Depth (ft.)	45'	3.					
Static Depth (ft.)	16.19	4.					
Water Depth:	29	5.					
Well Vol. (gal.)	5	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—	7 GAL Dry					
Rate, gpm:	—						
Volume Purged:	7 GAL Dry						

Samplers: SDI. JEG Others Present:

gen ____ VOC 3 ____ COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 7S

Client: Schloff Project No. 2131-2171-5140 MTH 4101

Location: Date: 1/14/92 Sample Time: 1345

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 6/GAL	8.0	460		7.3	
Casing Dia: (in.)	2"	2. 8/GAL	8.0	460		7.3	
Total Depth (ft.)	28.5	3. 10/GAL	8.0	460	650	7.3	
Static Depth (ft.)	15.51	4.					
Water Depth:	13	5.					
Well Vol. (gal.)	2	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	10 GAL						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW3S

Client: Schloff Project No. 23-27-540MT-M40

Location: _____ Date: 1/14/92 Sample Time: 1400

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 4.5/GAL	6.0	440		7.0	
Casing Dia: (in.)	2	2. 6.0/GAL	6.0	440		7.0	
Total Depth (ft.)	25	3. 7.5/GAL	6.0	440	650	7.0	
Static Depth (ft.)	15.94	4.					
Water Depth:	9	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	7.5						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 7S

Client Schloff Project No. 2131-2171-5140 MT 4140

Location: _____ Date: 1/14/92 Sample Time: 1345

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 6/GAL	8.0	460		7.3	
Casing Dia: (in.)	2"	2. 8/GAL	8.0	460		7.3	
Total Depth (ft.)	28.5	3. 10/GAL	8.0	460	650	7.3	
Static Depth (ft.)	15.51	4.					
Water Depth:	13	5.					
Well Vol. (gal.)	2	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	10 GAL						

Samplers: SDI JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW3S

Client Schloff Project No. 23-127-540MT-M40

Location: Date: 1/14/92 Sample Time: 1400

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @25	pH	Eh
Barr Lock: Y (N)		1. 4.5/GAL	6.0	440		7.0	
Casing Dia: (in.)	2	2. 6.0/GAL	6.0	440		7.0	
Total Depth (ft.)	25	3. 7.5/GAL	6.0	440	650	7.0	
Static Depth (ft.)	15.94	4.					
Water Depth:	9	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	7.5						

Samplers: SDF JEG Others Present:

gen ____ VOC 3 COD ____ TOC ____ semi-volatile ____ f. metal ____ t. metal ____

nitro ____ cyanide ____ oil & grease ____ 200 ml filter ____ 500 ml filter ____

others ____

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW2S

Client Schloff Project No. 23-27-540MTH40

Location: _____ Date: 1/14/92 Sample Time: [illegible]/415

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 4.5/GAL	8.0	360		7.2	
Casing Dia: (in.)	2"	2. 6.0/GAL	8.0	360		7.2	
Total Depth (ft.)	23	3. 7.5/GAL	8.0	360	500	7.2	
Static Depth (ft.)	15.48	4.					
Water Depth:	7.5	5.					
Well Vol. (gal.)	1	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	7.5						

Samplers: SDI JEG Others Present:

gen ___ VOC 3 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

Barr
Engineering Company

FIELD LOG DATA SHEET

Station: MW 45

Client Schloff Project No. 23-27-540MT440

Location: Date: 1/14/92 Sample Time: 1435

General		Stabilization Test					
		TIME/ VOLUME	TEMP CENT.	COND. umhos	COND. @ 25	pH	Eh
Barr Lock: Y (N)		1. 4.5/GAL	8.0	340		7.4	
Casing Dia: (in.)	2"	2. 6.0/GAL	8.0	340		7.4	
Total Depth (ft.)	24.5	3. 7.5/GAL	8.0	340	475	7.4	
Static Depth (ft.)	14.58	4.					
Water Depth:	10	5.					
Well Vol. (gal.)	1.5	6.					
Purge Method:	Bailer (H)	7.					
Samp. Method:	Bailer	Appearance:					
Start Time:	—	Odor:					
Stop Time:	—	Comments:					
Duration: (min.)	—						
Rate, gpm:	—						
Volume Purged:	7.5						

Samplers: SDI JEG Others Present:

gen ___ VOC 3 COD ___ TOC ___ semi-volatile ___ f. metal ___ t. metal ___

nitro ___ cyanide ___ oil & grease ___ 200 ml filter ___ 500 ml filter ___

others ___

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: 23/27-540 MTH 40

NO:

PROJECT MANAGER: Mark Hagley

PROJECT CONTACT: Steve Iverson

LABORATORY: CH2M Hill / Redding

REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
SW1D	1-13-92		X			3											3	8010 VOCS
SW2D			X			3											3	
SW3D			X			3											3	
SW4D			X			3											3	
MW1S			X			3											3	
MW9S			X			3											3	
MW5S			X			3											3	
MW10SL			X			3											3	
MW1DS			X			3											3	
MW8S			X			3											3	
M-1			X			3											3	
TB-1					X	3											3	

CONTAINER TYPE AND NUMBER

SAMPLED BY: Steve Iverson / ERIC GABRIELSON	RELINQUISHED BY: ERIC GABRIELSON	DATE 1/14/92	TIME 1600	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
REMARKS:	SAMPLES SHIPPED VIA ☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER ☐ OTHER			AIR BILL NUMBER: 0582906122		

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

CHAIN OF CUSTODY
BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: 23/27-15A0 [illegible] 410
NO:

PROJECT MANAGER: Mark [illegible]
PROJECT CONTACT: Steve [illegible]
LABORATORY: [illegible]
REMARKS/ ANALYSIS REQUIRED:

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
M-2	1/14/92		X			3											3	8010
M-3	↓		X			3											3	↓
TB-2	↓				X	3											3	↓
FB-1	↓				X	3											3	↓

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
[illegible]	[illegible]	1/14/92	1000			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☐ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 0582-906122

PROJECT: 23127-540[redacted]40

SAMPLING REQUEST FORM

SAMPLE ORDER AND LOCATION	STABILIZE	PREVIOUS VOLUME			40ML VIAL	40ML VIAL W/HCL		125ML AMBER W/TEFLON	500ML AMBER W/TEFLON	1L AMBER W/TEFLON	2L AMBER W/TEFLON			250ML PLASTIC	500ML PLASTIC	1L PLASTIC		250ML PLASTIC W/HNO3	500ML PLASTIC W/HNO3	1L PLASTIC W/HNO3		250ML PLASTIC W/H2SO4	500ML PLASTIC W/H2SO4	1L PLASTIC W/H2SO4		1500ML GLASS W/H2SO4	1L PLASTIC W/NAOH + ASCORBIC ACID						METHANE	FLOW		EH	APPEARANCE		TEMPERATURE	CONDUCTIVITY	PH	WATER LEVEL
✓ 1. MW B						3																																				X	X	X	X
✓ 2. PW1						3																																						
✓ 3. MW 7S						3																																						
✓ 4. MW 3S						3																																						
✓ 5. MW 2S						3																																						
✓ 6. MW 4S						3																																						
✓ 7. SW 4D						3																																						
✓ 8. SW 3D						3																																						
✓ 9. SW 2D						3																																						
✓ 10. SW 1D						3																																						
11. MASK SAMPLES = 3 ✓ DEEP, ✓ SHALLOW, ✓ CDC																																												
12. FB-1 , TB ONE PER DAY																																												
(1) LABORATORY																																										F	F	F	F

(1) LABORATORY CODES: A = ASPEN P = PACE E = ENSECO F = FIELD/BARR C = CH2M HILL B = BRAUN D = EDI

BARR CONTACT _____ SPLIT _____ SCHEDULED DATE _____ COMPLETION DATE _____

SPECIAL INSTRUCTIONS _____

[redacted] PROJECT MGR. [redacted] SAMPLER [redacted] FORM COMPLETED BY: [redacted] DATE: [redacted]

CHAIN OF CUSTODY

BARR ENGINEERING CO.
7803 GLENROY ROAD
MINNEAPOLIS, MN 55439

PROJECT NUMBER: 23/27-540 M7H40

NO:

PROJECT MANAGER: Mark Mayley

PROJECT CONTACT: Steve Iverson

LABORATORY: CH2M Hill / Reading

REMARKS/ ANALYSIS REQUIRED:

CONTAINER TYPE AND NUMBER

SAMPLE IDENTIFICATION	COLLECTION DATE	COLLECTION TIME	GRAB	COMP.	BLANK	VOLATILE ORGANIC	SEMIVOLATILE ORGANIC	FILTERED METALS	UNFILTERED METALS	GENERAL	CYANIDE	NUTRIENTS	OIL AND GREASE	TOC	SULFIDE	DIOXIN	TOTAL NO. OF CONTAINERS	REMARKS/ ANALYSIS REQUIRED
MW6S	↑		X			3											3	8010 vocs
M7SL	1/14/92		X			3											3	
MW2SL			X			3											3	
MW DBR			X			3											3	
MW D			X			3											3	
MW BL			X			3											3	
MW B			X			3											3	
PW1			X			3											3	
MW7S			X			3											3	
MW3S			X			3											3	
MW2S			X			3											3	
MW4S	↓		X			3											3	↓

SAMPLED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
Steve Iverson ERIC GABRIELSON	ERIC GABRIELSON	1/14/92	1600			
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME
RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY LAB:	DATE	TIME

REMARKS:

SAMPLES SHIPPED VIA
☐ AIR FREIGHT ☒ FED. EXP. ☐ SAMPLER
☐ OTHER

AIR BILL NUMBER: 0582906122

DISTRIBUTION: WHITE-ORIGINAL ACCOMPANIES SHIPMENT TO LAB, RETURNS TO BARR WITH RESULTS; YELLOW-LAB COPY; PINK-LAB COORDINATOR; GOLD-FIELD COPY

PROJECT: 23127-540[redacted]40

SAMPLING REQUEST FORM

SAMPLE ORDER AND LOCATION	STABILIZE	PREVIOUS VOLUME			40ML VIAL	40ML VIAL W/HCL	125ML AMBER W/TEFLON	500ML AMBER W/TEFLON	1L AMBER W/TEFLON	2L AMBER W/TEFLON			250ML PLASTIC	500ML PLASTIC	1L PLASTIC		250ML PLASTIC W/HNO3	500ML PLASTIC W/HNO3	1L PLASTIC W/HNO3		250ML PLASTIC W/H2SO4	500ML PLASTIC W/H2SO4	1L PLASTIC W/H2SO4		1500ML GLASS W/H2SO4	1L PLASTIC W/NAOH + ASCORBIC ACID							METHANE	FLOW		EH	APPEARANCE		TEMPERATURE	CONDUCTIVITY	PH	WATER LEVEL
1. MW1S						3																																			X	X	X	X
2. MW 9S						3																																						
3. MW5S						3																																						
4. MW10SL						3																																						
5. MW 10S						3																																						
6. MW8S						3																																						
7. MW 6S						3																																						
8. MW 7SL						3																																						
9. MW 2SL						3																																						
10. MWDBR						3																																						
11. MWD						3																																						
12. MWBL						3																																						
(1) LABORATORY						C																																			F	F	F	F

(1) LABORATORY CODES: A = ASPEN P = PACE E = ENSECO F = FIELD/BARR C = CH2M HILL B = BRAUN D = EDI

CH2M HILL REDDING

BARR CONTACT SDI SPLIT _____ SCHEDULED DATE _____ COMPLETION DATE _____

SPECIAL INSTRUCTIONS 8010 VOC'S

PROJECT MGR. MTH SAMPLER _____ FORM COMPLETED BY: _____ DATE: _____

CONESTOGA - ROVERS & ASSOCIATES

382 West County Road D, St. Paul, Minnesota 55112

DATE: 1/15/92

TO: ERIC GABRIELSON

FROM: ROB FIELD

PROJECT NUMBER: 2072

TOTAL PAGES SENT 1

TELECOPIER TELEPHONE: 612-639-0923
OPERATOR TELEPHONE: 612-639-0913
TYPE OF MACHINE: XEROX 7033

Facsimile is Receiver's Original _____
Original Will Follow:
U.S. Mail _____
Overnight Courier _____
Hand Delivery _____

MESSAGE: SAMPLING SUMMARY FROM SAMPLING SPLITS AT CDC ON 1/14/92.

LOCATION	W.L.	pH	COND.	TEMP.	CLARITY	GALLONS REMOVED
MW-B	10.58	6.95	550	9	Clear	5.5
MW-BL	12.28	7.15	370	6	Clear	27
MW-D	12.37	6.90	650	6	Clear	4
MW-DBR	13.73	6.80	400	4	Clear	230
PW-1	13.95	6.90	730	4	Clear	140

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TO BARR ENGINEERING