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Site-Wide Groundwater Monitoring Report for 2007

General Motors Corporation
Moraine, Ohio

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DRAFT

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1. Introduction

This Site-Wide Groundwater Monitoring Report presents the groundwater monitoring activities completed in 2007 at the following General Motors Corporation (GM) facilities located in Moraine, Ohio (Figure 1): former Delphi Harrison Thermal Systems Moraine Plant (former Delphi Thermal Moraine [leased to Delphi Corporation between January 1999 and September 2003]), former General Motors Powertrain Group, Moraine Engine Plant (former Moraine Engine), and General Motors Truck Group, Moraine Assembly Plant (Moraine Assembly). A multi-phased Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed for these facilities and approved by the United States Environmental Protection Agency (U.S. EPA) in June 2000 (ARCADIS Geraghty & Miller, Inc. 2000a and b, ENVIRON 2000a and b). The RFI identified that the primary source area of volatile organic compounds (VOCs) in shallow groundwater at the three facilities is located at the Area of Interest (AOI) 7 - Former Oil House Area, in the northern portion of the former Moraine Engine facility (Figure 2). The Baseline Risk Assessment (BRA) concluded that, under current conditions, there was no unacceptable risk associated with constituents detected in soil/waste at the AOIs and Solid Waste Management Units (SWMUs) investigated in the RFI. However, the BRA also concluded that constituents detected in groundwater at the Former Oil House Area may migrate to the extent that reasonably expected future uses of groundwater might be affected. Therefore, the focus of the Interim Measures/Corrective Measures Report (ARCADIS Geraghty & Miller, Inc. 2001) was a site-wide remedy that addressed the source of the VOCs in groundwater and the downgradient plume. The proposed final corrective measures incorporate:

- The Former Oil House Area corrective measures (in-situ remediation of groundwater in the Oil House Area and downgradient of the Oil House Area, Figure 2);
- The capture zone corrective measures (hydraulic control with a pump and treat system for the upper aquifer and hydraulic control for the lower aquifer, Figure 2);
- Institutional actions (the site will remain industrial and groundwater use will be restricted to non-potable purposes); and
- A site-wide groundwater monitoring program.

This report addresses several components of the proposed final remedy, including the site-wide groundwater monitoring program and the performance of the corrective

measures (Table 1). In addition, analytical results from the 2007 supplemental groundwater investigation are presented in this report. All groundwater monitoring for the facilities was conducted in accordance with the approved Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002) and as modified in the Site-Wide Groundwater Monitoring Report for 2005 (ARCADIS G&M, Inc. 2006).

In 2007, GM conducted several phases of supplemental data collection to further refine the available information on the hydrogeology, groundwater flow and groundwater quality to support evaluation of ongoing corrective measures. The upper and lower aquifer wells installed in 2007, as part of this investigation, include GM-65 through GM-81 (Figure 2). The scope of these supplemental field data collection activities were presented in several work plans that were submitted to the U.S. EPA (BOW Environmental Solutions, Inc. 2007a, 2007b, 2007c). These supplemental data will be used to refine the conceptual site model and provide an updated assessment of corrective measures performance. Based on this assessment, GM will propose modifications, if warranted, to the ongoing corrective measures to optimize the overall performance and duration of the final corrective measures. This information will be presented in the Revised Corrective Measures Proposal (CMP) to be submitted later this year.

1.1 Site Description

The GM site has been used for industrial purposes since the property was acquired in the mid-1920's. The former Moraine Engine and Moraine Assembly facilities occupy approximately 300 acres, while the adjacent former Delphi Thermal Moraine facility occupies approximately 165 acres. The facilities are located in the City of Moraine in Montgomery County in southwestern Ohio. A small portion of the Moraine Assembly facility is located in the City of Kettering. Figure 1 presents the location of each facility, property boundaries, and site features.

Frigidaire (a former division of GM) produced appliances from the late 1920's until 1979. GM announced the shut down of all Frigidaire operations in January 1979. During 1980 and 1981, the majority of the former Frigidaire Plant 2 was converted to the former Moraine Engine facility, and the former Frigidaire Plant 3 and the northeast corner of former Frigidaire Plant 2 were converted to the Moraine Assembly facility. Since 1981, former Moraine Engine operations have included the machining, painting (this operation was discontinued in September 1995), and assembly of diesel truck engines. Former Moraine Engine operations ceased in the fall of 2000. The plant building has undergone decommissioning and demolition, and the majority of this site

has been covered with a parking surface. GM operates a regional haulaway at the location of the former Moraine Engine plant, which is now referred to as the Vehicle Distribution Center.

Since 1981, Moraine Assembly operations included the manufacture, assembly, and painting of small trucks. Currently Chevrolet TrailBlazers, GM Envoys, Isuzu Ascenders, and SAAB 9-7x's are produced at this facility.

Former Delphi Thermal Moraine's major operations, which began in 1941, included the machining and assembly of automotive air conditioning compressors, accumulator dehydrators, and miscellaneous air conditioning valves. Delphi Corporation leased the property from GM from January 1999 through October 2003. Operations at the former Delphi Thermal Moraine Building 14 ceased in September 2003 and the building was decommissioned. As of October 1, 2003, management of the property has reverted to GM and GM remains the property owner. Demolition of Building 14 was completed in 2005.

1.2 Groundwater Monitoring Program Objectives

The objectives of groundwater monitoring at the GM Moraine Facilities are as follows:

1. Monitor groundwater quality upgradient and downgradient of the closed North and South Settling Lagoons;

2. Monitor groundwater quality upgradient and downgradient of Landfills L1, L2, and L3;

3. Monitor the effectiveness of and the need for current groundwater capture systems in the upper and lower aquifers at the southern, downgradient property boundary;

4. Monitor the effectiveness of corrective measures activities in In-Situ Reactive Zones (RZ) RZ-1, former RZ-2 (inactive since 2002), RZ-3, and RZ-4 (installed in 2006), to address VOCs related to the Former Oil House Area; and

5. Monitor an appropriate list of wells once corrective measures objectives (defined in the Draft Interim Measures/Corrective Measures Report [ARCADIS Geraghty & Miller, Inc. 2001]) have been met to verify that these objectives continue to be met without the active measures.

1.3 Baseline Groundwater Monitoring Program Sampling Event

To provide a basis for evaluating the performance of the Corrective Measures, a comprehensive site-wide groundwater sampling event for VOCs was conducted in September 1999 to establish a baseline data set. The next site-wide groundwater sampling event was completed between September and October 2000. During the 2000 sampling event, at the request of U.S. EPA, groundwater samples were analyzed for Appendix IX VOCs by Method 8260 and cis-1,2-dichloroethene (cis-1,2-DCE), semi-volatile organic compounds (SVOCs) and metals to verify that current groundwater conditions were consistent with previous site conditions. The results of this one-time sampling event confirmed that VOCs were the only constituents of potential concern in groundwater at the site. SVOCs were not detected and metals were not detected above levels of concern during the 2000 sampling event. The analytical results from the 1999 baseline event and the 2000 site-wide event are presented in the Draft Interim Measures/Corrective Measures Report (ARCADIS Geraghty & Miller, Inc. 2001).

1.4 Corrective Measures Supplemental Investigations

In addition to conducting the annual groundwater monitoring program, GM has implemented supplemental investigations of localized groundwater conditions within the existing contaminant plume and within the plume boundary in order to gather additional data for use in assessing the performance of active corrective measures. These supplemental investigations have consisted of the following activities:

- Installation and sampling of upper and lower aquifer wells (BOW Environmental Solutions, Inc. 2007a, 2007b, 2007c);
- Completion of an additional water level gauging event in April/May 2007;
- Completion of an off-site well survey; and
- Completion of a transducer study.

The results and conclusions of these activities will be presented in the Revised CMP which will be submitted later this year.

2. Groundwater Monitoring Summary

In accordance with the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), annual groundwater sampling was conducted in 2001 through 2006. The analytical results from these sampling events are presented in the Site-Wide Groundwater Monitoring Report for 2006 (ARCADIS, Inc. 2007). The 1999 baseline through 2006 groundwater quality data for the site-specific VOC parameter list are reproduced in tables in Appendix A of this report to support the evaluation of the on-going remedial activities.

The latest groundwater monitoring was conducted in September 2007 to evaluate groundwater quality upgradient and downgradient of the closed lagoons, performance of the RZs and the performance of the capture zones (as discussed in Section 3.2). A summary of the activities and methodologies that were completed in 2007 are presented in Section 2.1 and the groundwater monitoring results are presented in Section 2.2.

2.1 Groundwater Monitoring Activities/Methodologies

In order to meet the objectives of the groundwater monitoring program, the scope of work presented in Section 3.0 of the Site-Wide Groundwater Monitoring Plan and Section 5.0 of the Site-Wide Groundwater Monitoring Report for 2006, was implemented during 2007. The following sections summarize the collection of water-level measurements, the monthly groundwater monitoring, and the annual site-wide groundwater monitoring.

2.1.1 Water-Level Measurements

Water-level elevations were measured twice in 2007. The first well gauging event occurred on April 30 and May 1 and the second event occurred on October 24 and 25. The measured wells included all on-site and off-site monitoring wells at the three facilities as shown on Figure 3 (upper aquifer wells) and Figure 4 (lower aquifer wells). Water-level elevations were also measured in Moraine Assembly production wells (where accessible), Moraine Assembly fire wells, two lower aquifer wells (MT596M, and MT576M) located east of the Moraine Assembly and the former Moraine Engine plants, one lower aquifer well (MT69) located south of the Dryden Road North Wellfield, four City of Moraine upper aquifer wells located west of the Great Miami River, and four stream gauges along the Great Miami River and two stream gauges along Holes Creek. In February and March, 2007, the DN-13 well screen was cleaned

and the pump was replaced. During the time period that DN-13 was not in operation, a stilling well was installed to allow for future collection of water level measurements from DN-13 while it is pumping. Water-level measurements were collected in accordance with procedures defined in the RFI Sampling and Analysis Plan, Standard Operating Procedure (SOP) #4 (Geraghty & Miller, Inc. 1997a) and recorded on a field data sheet.

2.1.2 Monthly Groundwater Recovery System Monitoring

The National Pollution Discharge Elimination System (NPDES) Permit issued to GM for the groundwater recovery and treatment system requires periodic monitoring and reporting of water quality in the effluent stream and pumping flow rates. Samples of groundwater being pumped through the air stripping treatment tower were collected and analyzed monthly for the parameters required in the permit. GM's air permit for the air stripper tower expired on June 20, 2003 and the Regional Air Pollution Control Agency approved renewal of this permit through June 20, 2008 as a registration status permit due to the negligible organic compound emissions from the tower. GM continued to collect influent samples during the 2007 sampling events to evaluate the air stripper tower performance. Table 2 summarizes the VOC results for the monthly air stripper tower influent stream during 2007. The monthly air stripper influent data are also presented in Figure 5, for the period from the initial start-up in January 1996 through December 2007. Table 3 summarizes the VOC results for the monthly air stripper tower effluent stream during 2007. Table 4 summarizes the VOC results for the monthly DN-13 sampling during 2007. All analyses were conducted in accordance with methods specified in the Final Interim Measures Design Plans (Geraghty & Miller, Inc. 1995).

2.1.3 Site-Wide Groundwater Monitoring

In accordance with the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), monitoring wells were sampled in September 2007. A summary of the 2007 sampling events, including number of wells and analytical parameters are presented on Table 1. Well construction and survey data for the wells used in the site-wide program are presented in Table 5.

Groundwater samples were collected from specified wells using low-flow or bailing sampling procedures. Field parameters including pH, specific conductance, temperature, oxidation/reduction potential, and dissolved oxygen were measured during purging of each well using a multi-parameter flow-through cell. SOP #21 was

followed when sampling monitoring wells (ARCADIS G&M, Inc., 2002). One groundwater sample from well DN-13 was collected through the sampling valve according to SOP #28 (ARCADIS G&M, Inc., 2002).

All groundwater samples were collected and managed under standard chain-of-custody procedures, and validated in accordance with the approved Supplemental RFI Work Plan and the RFI Quality Assurance Project Plan (Geraghty & Miller, Inc., 1997a). The Supplemental RFI Quality Assurance Project Plan will be followed until the Draft Quality Assurance Project Plan for RCRA Corrective Action is approved by the U.S. EPA (draft report was submitted to the U.S. EPA on December 23, 2003). All pertinent field data were recorded on groundwater sampling logs. A field parameter data table is presented in Appendix B. Analytical results are presented and discussed in Section 2.2.3.

2.1.4 Laboratory Analytical Methods

Groundwater samples were analyzed for the site-specific parameter list using SW 846 Method 8260. This parameter list was developed after evaluating data from the September 1999 baseline groundwater sampling event and the one-time sampling event conducted in September/October 2000 (which included analysis of Appendix IX VOCs and cis-1,2-DCE, SVOCs, and metals), conducted as part of the Former Oil House Area corrective measures. The site-specific parameter list is: benzene, 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, trans-1,2-dichloroethene (trans-1,2-DCE), ethylbenzene, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), vinyl chloride, and xylenes. Select groundwater samples from upper aquifer monitoring wells were also analyzed for the following biogeochemical indicator parameters: manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon (TOC), chlorides, light hydrocarbons (ethane and ethene), and methane. Table 1 lists specific field, laboratory, biogeochemical indicator parameters, and field and laboratory analytical methods. All samples were submitted to TestAmerica in North Canton, Ohio or Microseeps in Pittsburgh, Pennsylvania. Only ethene, ethane, and methane samples were submitted to and analyzed by Microseeps. The complete set of groundwater results, including quality assurance/quality control (QA/QC) samples, is presented in Appendix C.

2.2 Groundwater Monitoring Program Results

2.2.1 Groundwater Elevation Monitoring

As part of the site-wide assessment of current groundwater conditions, water-level elevations were measured to determine groundwater flow directions in the upper and lower aquifers and to determine vertical gradients between the two aquifers. Water-level measurements from 2007 are presented on Tables 6 and 7.

2.2.1.1 Upper Aquifer

The upper aquifer potentiometric surfaces on April 30 and May 1, 2007 (Figure 6) and on October 24 and 25, 2007 (Figure 8) show that flow in the upper aquifer is generally from northeast to southwest. Figure 8 includes additional wells installed during the supplemental groundwater investigation and City of Moraine wells west of the Great Miami River, resulting in improved resolution of the groundwater levels near the river. TW-2 was not measured during the April event, but was operational. The October measurements show that the TW-2 water level was lower than the water levels in nearby wells (GM-16, GM-17, 4S, and WSU-24) indicating capture in the vicinity of well TW-2. A comparison of the October 2007 groundwater flow conditions to the September 2006 groundwater flow map for the upper aquifer (ARCADIS U.S., Inc. 2007) indicates a slightly steeper gradient across the site in 2007 than in 2006. The 2007 upper aquifer flow patterns are generally consistent with groundwater flow conditions since TW-2 operation was initiated in January 1996.

Table 8 presents the 2007 monthly precipitation totals, recorded by the National Weather Service, and the deviation from calculated average amounts. The 2007 annual total precipitation recorded at the Dayton, Ohio monitoring station was 40.89 inches, which was 1.31 inches above average. Precipitation for the months of January, February, March, April, July, September, October and December was above normal, while precipitation for all other months was below normal.

The average hydraulic gradient of the upper aquifer, calculated from site-wide groundwater elevation measurements in April/May and October 2007 were 0.0006 and 0.0006 foot/foot (ft/ft), respectively. The groundwater flow velocity for the upper aquifer was calculated using the following equation:

$$V_w = Ki/N_e$$

where

V_w = groundwater flow velocity (feet per day [ft/day])

K = hydraulic conductivity (ft/day)

i = hydraulic gradient (ft/ft)

N_e = effective porosity

Hydraulic characteristics of the upper aquifer were determined by evaluation of data from pumping tests conducted in 1985 and in 1989. The median hydraulic conductivity value estimated from pumping test data was 1,650 ft/day, and effective porosity was assumed to be 0.3 to 0.5. Using hydraulic gradients for April/May and October 2007 (calculated to be the same), groundwater flow velocities in the upper aquifer ranged from 2.0 ft/day to 3.3 ft/day. Assuming the most extreme condition (i.e., no retardation or retardation factor [R_d] equal to 0), the rate of VOC migration could equal the rate of groundwater flow. However, soil-VOC interaction does occur, and, therefore, the actual VOC migration rates are slower than that of groundwater flow. Most of the VOCs detected in the upper aquifer at the GM facilities are likely to have a R_d ranging from 2 to 10 (Walton 1985), so the rate of migration of the VOCs in the upper aquifer in both April/May and October 2007 could be as low as 0.2 ft/day.

During the Supplemental RFI, conducted in August 1998 at the Former Oil House Area, slug tests were conducted on three monitor wells (GM-23, GM-27 and GM-28) to assess aquifer characteristics in this area of the site. These slug tests determined that hydraulic conductivity in the upper aquifer in this area is lower than the hydraulic conductivity calculated on a site-wide basis. Hydraulic conductivity of the portion of the aquifer above the upper clay till at the Former Oil House Area was determined to be approximately 43 ft/day. Below the upper clay till, the hydraulic conductivity was determined to be 54 ft/day. Using hydraulic gradients from October 2007, the groundwater flow velocities in the upper aquifer above the upper clay till ranged from 0.05 ft/day to 0.1 ft/day.

2.2.1.2 Lower Aquifer

The lower aquifer potentiometric surfaces April 30 and May 1, 2007 (Figure 7) and on October 24-25, 2007 (Figure 9) show groundwater flow in the lower aquifer to be generally from northeast to southwest. County Well DN-13, located south of the former Delphi Thermal facility in the Dryden Road North Wellfield, was in operation during

both water-level elevation measurement events in 2007. DN-13 was shut down and repaired in February and March 2007. During this time a stilling well was installed in DN-13 and water levels were obtained from the spring and fall events indicating over 50 feet of drawdown (the depth to water was beyond the depth of the stilling well). During start-up of DN-13, monitoring wells in the vicinity of DN-13 (GM-13, GM-14, and GM-15) showed approximately 1 foot of drawdown at distances ranging from 164 feet to 382 feet from DN-13. This localized cone of depression around DN-13 is shown on Figures 7 and 9.

No significant change in the overall flow conditions across the northern to central portion of the site were noted in the 2007 lower aquifer groundwater elevation data. It should be noted that GM was using production wells for Moraine Assembly in 2007 (production wells 11B and 12A). During the April/May 2007 gauging event, production well 11B was off and 12A was in operation; however there was not enough data to interpret a localized cone-of-depression associated with this well, but it was likely present. During the October 2007 gauging event, production well 12A was off and 11B was in operation; however, again, there was not enough data to interpret a localized cone-of-depression associated with this well, but it was likely present.

The average hydraulic gradients of the potentiometric surface in the lower aquifer, calculated from groundwater elevation measurements in April/May and October 2007 were 0.0006 ft/ft and 0.0007 ft/ft, respectively. Using a hydraulic conductivity of 400 ft/day, assuming a porosity of 0.3 to 0.5, and using the equation presented earlier ($V_w = Ki/N_e$), groundwater flow velocity in the lower aquifer for April/May 2007 ranged between 0.48 ft/day and 0.80 ft/day. For October 2007, the groundwater flow velocity in the lower aquifer ranged from 0.56 ft/day to 0.93 ft/day. As discussed above, most of the VOCs detected in the lower aquifer groundwater at the GM facilities are likely to have an R_d ranging from 2 to 10 (Walton 1985), so the rate of migration of the VOCs in the lower aquifer in April/May could be as low as 0.05 ft/day and in October as low as 0.06 ft/day.

2.2.2 Vertical Gradients

The water-level measurements collected on April 30/ May 1 and on October 24-25, 2007 were used to determine the direction and magnitude of vertical gradients between the upper and lower aquifers (Table 9). The vertical gradients were calculated using the following equation:

$$i = h_2\text{-}h_1/d$$

where

h_2 = hydraulic head of lower well A (ft)

h_1 = hydraulic head of upper well B (ft)

d = distance between midpoint of screen for well A and B (ft)

i = vertical gradient

The magnitude and direction of vertical gradients indicate whether the potential exists for groundwater to move from one aquifer to another through a confining unit, and which direction it may move (positive for an upward gradient and negative for a downward gradient). Calculated vertical gradients ranged from 0.033 ft/ft upward (GM-23/GM-27 in October 2007) to 0.032 ft/ft downward (GM-16/GM-15 in October 2007).

At the northern (upgradient) end of the site, no vertical gradients were present in upper/lower monitoring well pair HR- 9/HR-10 and vertical gradients were downward in upper/lower monitoring well pair HR-11/HR-12 during both gauging events.

During the two gauging events in 2007, the well pairs immediately downgradient (south) of the closed North Settling Lagoon (W-3-N/HR-15 and W-4-N/HR-14) had downward vertical gradients. The vertical gradient at well pair HR-3/HR-13 (side gradient to the closed North Settling Lagoon) was also downward in April/May and but upward in October. Well pairs in the vicinity of Landfill L1 (GM-16/GM-15, GM-2/GM-1, GM-18/GM-13, GM-17/GM-11, GM-6/GM-3, 4S/GM-5) all had downward vertical gradients on both dates, with the exception of well pair GM-16/GM-15 which had an upward gradient in April/May and a downward gradient in October; and GM-8/GM-7R which had upward gradients (since June 1995 the vertical gradient in this well pair was upward 50 percent of the time and downward 50 percent of the time). The downward vertical gradient at the other five well pairs near Landfill L1 was likely due to the proximity of these well pairs to lower aquifer extraction well DN-13. Downgradient of the site, the vertical gradient was downward for all events in well pair GM-10/GM-9 and for all events in well pair GM-26/MT-69.

At the Former Oil House Area, water-level measurements in upper aquifer well pair GM-23/GM-27 (above the upper clay till/beneath the upper clay till) were used to evaluate the vertical gradient in the upper aquifer. An upward vertical gradient was present in the upper aquifer across the upper clay till present at the Former Oil House Area in April/May and October 2007. Well pair GM-23/GM-39 was used to evaluate

the vertical gradient in the lower aquifer compared to the upper aquifer. An upward vertical gradient was present across both the upper clay till and regional clay till in April/May and October 2007.

Downgradient of the site near Holes Creek where the till is not present, evaluation of vertical gradients in well pairs GM-65S/GM-65D and GM-55/GM-56 show a downward vertical gradient for both events in April/May and October 2007.

2.2.3 Groundwater Monitoring Analytical Results

As described in Section 2.1.4, groundwater at the site was evaluated for the presence of the site-specific list of VOCs. Tables 10 through 15 present the VOC results upgradient and downgradient of the RZs. Tables 16 through 21 present the bioattenuation parameter results upgradient and downgradient of the RZs. These results are discussed in Section 3.2.1 as they pertain to the performance of the RZ corrective measures. Table 22 presents the VOC results for the site-wide groundwater sampling event completed in September 2007 for the upper and lower aquifer wells. Data for 1999 through 2007 groundwater sampling events are presented on Figures 10 and 11 for the upper and lower aquifer wells, respectively. The groundwater results are presented in this section and evaluated based on groundwater quality upgradient of the site, on site, and downgradient of the site. The complete set of groundwater results, including QA/QC samples, is presented in Appendix C. The 1999 baseline sampling data, used as a point of comparison for the September 2007 groundwater results, are presented in Appendix A.

2.2.3.1 Upper Aquifer Groundwater Quality

The following sections include a discussion of the groundwater quality in upper aquifer monitoring wells shown on Figure 3 that are part of the site-wide program.

2.2.3.1.1 Upgradient Groundwater Quality

In 2007, two upgradient upper aquifer monitoring wells exhibited the presence of VOCs:

- HR-9, total VOCs were 112.82 micrograms per liter (ug/L) in 2007, compared to a 1999 baseline total VOC concentration of 116 ug/L.

- HR-11, total VOCs were 7.1 ug/L in 2007, compared to a 1999 baseline total VOC concentration of 17.3 ug/L.

Two key observations can be made relative to upgradient groundwater quality. First, the detected VOCs are consistent with historical values for upgradient groundwater quality as indicated in the Description of Current Conditions (DOCC) (Geraghty & Miller, Inc. 1991 and 1997b) and RFI Reports (ARCADIS Geraghty & Miller, Inc. 2000a and 2000b) for the GM Moraine facilities (including the 1999 baseline sampling results). This confirms that upgradient sources of VOCs not related to GM operations continue to exist in the local area. The highest VOC concentrations upgradient to the site are 1,1,1-TCA, TCE and the breakdown products 1,1-DCA, cis-1,2-DCE, and trans-1,2-DCE, suggesting that the upgradient releases have been migrating long enough to allow for degradation of the chlorinated VOCs 1,1,1-TCA and PCE and/or TCE to occur. Second, the types of VOCs detected upgradient are similar to those detected further downgradient beneath the site, indicating that total VOC concentrations detected beneath the site include both upgradient (off-site) and on-site contributions.

2.2.3.1.2 On-Site Groundwater Quality

To evaluate the primary source area of VOCs at the site (Former Oil House Area), five upper aquifer monitoring wells (GM-23, GM-27, GM-28, GM-29, and GM-30) were sampled in 2007. With the exception of GM-27, all of these wells are screened above the upper clay till present at the Former Oil House Area.

- GM-30 (northern most Former Oil House Area well, located next to the former tank farm) - total VOC concentrations decreased from 37,350 ug/L in the 1999 baseline to 1,696 ug/L in 2007. This well predominantly contained ethylbenzene, xylenes, and 1,1-DCA.

- GM-23 (located next to the Former Oil House building) - total VOC concentrations decreased from 17,853.3 ug/L in the 1999 baseline sampling to 7,792 ug/L in 2007. TCE and PCE concentrations have decreased while concentrations for daughter products cis-1,2-DCE and vinyl chloride have increased. This well predominantly contained PCE, TCE, cis-1,2-DCE, and vinyl chloride. This well is upgradient to the original RZ-1 barrier and is within the zone of influence of carbon introductions conducted in the Former Oil House Area which results in solubilizing previously adsorbed VOCs to be treated by RZ-1.

- GM-27 (paired with GM-23 and screened below the upper clay till) - exhibited a decrease of total VOCs between the 1999 baseline (145.7 ug/L) and 2007 (85.61 ug/L). GM-27 predominantly contains TCE, cis-1,2-DCE, and 1,1-DCA. This well is upgradient to RZ-1.

- GM-29 (serves as an upgradient well for RZ-1) - total VOC concentrations increased from 1,256.3 ug/L in the 1999 baseline to 1,907 ug/L in 2007 primarily due to an increase in daughter products (cis-1,2-DCE and vinyl chloride); however, TCE concentrations have decreased since the baseline sampling event. This well is upgradient to the original RZ-1 barrier and is within the zone of influence of carbon introductions conducted in the Former Oil House Area after RZ-1 was expanded in 2002, which results in solubilizing previously adsorbed VOCs to be treated by RZ-1.

- GM-28 (serves as the downgradient well for RZ-1; the VOC and bioattenuation parameter results for this well are discussed in greater detail in Section 3.3) - total VOC concentrations decreased from 1,292.4 ug/L in 1999 to 7.61 ug/L in 2007.

Based on historical and current groundwater flow directions, on-site wells located south of the Former Oil House Area, including wells ME-6, ME-3, GM-22, EAST, GM-21 and GM-2, are potentially hydraulically downgradient of GM-23. In addition, historical flow could have had a southwesterly trend under the influence of Montgomery County pumping which may make impacts to HR-1, W-1-S and HR-17 from the Former Oil House Area possible. Of the wells identified as downgradient from the Former Oil House Area in the southerly direction toward the property boundary, the total VOC concentrations have decreased, as discussed below.

- GM-66, total VOCs were 130.7 ug/L in 2007. This well was installed as part of the supplemental groundwater investigation which was after the 1999 baseline sampling event.

- ME-6, total VOCs were 944.9 ug/L in the 1999 baseline sampling event, decreasing to 37.72 ug/L in 2007.

- ME-3, total VOCs were 159.7 ug/L in the 1999 baseline sampling event, decreasing to 16.62 ug/L in 2007.

- GM-33, total VOCs were 292.1 ug/L in 2001 (this well was installed after the 1999 baseline sampling event), decreasing to 107.42 ug/L in 2007.

- GM-35, total VOCs were 732.8 ug/L in 2001 (this well was installed after the 1999 baseline sampling event), decreasing to 323.8 ug/L in 2007.

- GM-8, total VOCs were 150.3 ug/L in the 1999 baseline sampling event, decreasing to 15 ug/L in 2007.

- GM-6, total VOCs were 275.1 ug/L in the 1999 baseline sampling event, decreasing to 52.06 ug/L in 2007.

- GM-2, total VOCs were 82.9 ug/L in the 1999 baseline sampling event, decreasing to 11.58 ug/L in 2007.

These data indicate that VOC concentrations in monitoring wells hydraulically downgradient of the Former Oil House Area and RZ-1 decreased from the 1999 baseline to 2007. Wells GM-21 and GM-22, located south of and sidegradient to the Former Oil House Area, exhibited a decrease and slight increase in total VOC concentrations, respectively. In well GM-22, total VOCs were 7.6 ug/L in 1999 baseline and slightly increased to 8.22 ug/L in 2007. In well GM-21, total VOCs were 168.9 ug/L in the 1999 baseline and decreased to 69.8 ug/L in 2007. The significance of these concentrations is further discussed in Section 4.0 and Appendix E.

The following total VOC concentrations are noted in monitor wells hydraulically downgradient of the Former Oil House Area to the southwest and upgradient of the closed South Settling Lagoon:

- HR-1, total VOCs were 114 ug/L in the 1999 baseline event, decreasing to 74.26 ug/L in 2007.

- HR-17, total VOCs were 29.1 ug/L in the 1999 baseline event, increasing to 70.79 ug/L in 2007.

The following total VOC concentrations are noted in monitor wells hydraulically side-gradient of the Former Oil House Area to the west and east of the closed North Settling Lagoon:

- HR-2, total VOC concentrations were 15 ug/L in the 1999 baseline event and 11.51 ug/L in 2007.

- HR-4, total VOC concentrations were 2.6 ug/L in the 1999 baseline event and 4.24 ug/L in 2007.

Wells downgradient of the closed North (W-2-N, W-3-N, W-4-N) and South (W-2-S, W-3-S, W-4-S) Settling Lagoons (closed through in-situ solidification and installation of a cover system in 2001, after the 1999 baseline sampling event) were sampled for both the site-wide groundwater monitoring and post-closure monitoring programs. Total VOC concentrations in wells downgradient of the closed North Settling Lagoon, ranged from 3.3 ug/L to 308.9 ug/L in the 1999 baseline event and ranged from 2.98 ug/L to 117 ug/L in 2007. The detected VOCs included 1,1-DCA, cis-1,2-DCE, trans-1,2-DCE, toluene, 1,1,1-TCA, TCE, PCE, and vinyl chloride. Total VOC concentrations in wells downgradient of the closed South Settling Lagoon, ranged from 6.5 ug/L to 52.9 ug/L in the 1999 baseline event and 4.12 ug/L to 52.5 ug/L in 2007. The detected VOCs included 1,1-DCA, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, TCE, and PCE. The significance of these concentrations is further discussed in Section 4.0.

2.2.3.1.3 Downgradient Groundwater Quality

On-site downgradient wells (GM-6, TW-2, GM-2) and off-site downgradient wells (GM-47, GM-50, GM-51, GM-52, GM-16, GM-17, GM-18, WSU-24, GM-10) in the upper aquifer exhibited concentrations of PCE, TCE, 1,1,1-TCA and their associated daughter products. In the 1999 baseline event, total VOC concentrations in these wells ranged from 16.5 ug/L to 266.3 ug/L (excluding wells GM-47, GM-50, GM-51, GM-52 which were installed in 2006). In 2007, total VOC concentrations in these downgradient wells ranged from 9.45 ug/L to 303.2 ug/L (including wells GM-47, GM-50, GM-51, GM-52 which were installed in 2006). At the off-site downgradient well GM-26, which was defined for the site-wide groundwater monitoring program as the point of compliance (POC) well for the upper aquifer, no VOCs were detected in the 1999 baseline event, while PCE was detected below the MCL at 1.2 ug/L in 2007. The decreasing concentrations in the wells downgradient of the site (GM-6, TW-2, GM-2, GM-17, GM-18, GM-10, and WSU-24) compared to the RFI data (ARCADIS Geraghty & Miller, Inc. 2000a) and the 1999 baseline conditions, is likely attributable to the effects of corrective measures pumping at TW-2 which began in January 1996, pumping at DN-13, the effects of the RZs and on-going natural attenuation of the VOCs. PCE and TCE concentrations in GM-16 decreased in 2007 but are still greater than the 1999 baseline concentrations. RZ-4 was installed in July 2006 to address the increased concentrations observed at GM-16.

2.2.3.2 Lower Aquifer Groundwater Quality

This section includes a discussion of the groundwater quality in lower aquifer monitoring wells shown on Figure 4 that are part of the site-wide program. In 1999 and 2007, the upgradient lower aquifer monitor well HR-12 exhibited the presence of VOCs (total VOCs of 7.4 ug/L and 3.5 ug/L, respectively). The detected VOCs included 1,1-DCA and cis-1,2-DCE, suggesting that degradation of the chlorinated VOCs from upgradient releases has occurred. The detected VOCs in HR-12 are consistent with historical values for upgradient groundwater quality as indicated in the DOCC (Geraghty & Miller, Inc. 1991 and 1997b) and RFI Reports (ARCADIS Geraghty & Miller, Inc. 2000a and 2000b) for the GM Moraine facilities. This confirms that upgradient sources of VOCs, not related to GM operations, continue to exist in the lower aquifer in the local area. Additionally, the types of VOCs detected upgradient are similar to those detected further downgradient beneath the site, indicating that total VOC concentrations detected beneath the site include both upgradient (off-site) and on-site contributions. VOCs were not detected in upgradient lower aquifer well HR-10 in 2007.

On-site lower-aquifer monitor wells that were part of the site-wide monitoring program in September 2007 included HR-15, GM-39, GM-40, GM-41, GM-42, GM-19D, GM-54, GM-58, and GM-61. Wells GM-39, GM-40, GM-41, and GM-42 were installed in 2003 and wells GM-54, GM-58, and GM-61 were installed in 2006, after the 1999 baseline sampling event. Detected VOCs included PCE, TCE, 1,1,1-TCA and their associated daughter products. In 1999 (baseline conditions) the total VOC concentrations in these wells ranged from 13.5 ug/L to 70.3 ug/L. In 2007, total VOC concentrations in these wells ranged from 4 ug/L to 250.3 ug/L. The increase in the concentration range in 2007 compared to the baseline conditions is due to the sampling data from GM-41, which was installed after the baseline sampling event. In 2007, as part of the supplemental groundwater investigation, additional on-site lower aquifer wells were installed. The analytical results for these wells (GM-73, GM-74D, GM-75D, GM-76D) are presented on Figure 11. The significance of these results will be presented in the Revised CMP.

On-site downgradient wells (GM-3, GM-1) and off-site downgradient wells (GM-15, GM-11, GM-20D, DN-13, GM-9) exhibited similar concentrations of total VOCs when compared to the on-site groundwater quality. In 1999 (baseline conditions) the total VOC concentrations in these wells ranged from non-detect to 115 ug/L. In 2007, total VOC concentrations in these wells decreased (total VOCs ranged from 7.7 ug/L to 37.1 ug/L). VOCs were not detected in off-site, downgradient well MT-69 in 1999 and 2007.

The off-site downgradient wells GM-15, GM-11, and GM-20D were defined for the site-wide groundwater monitoring program as the POC wells for the lower aquifer. The MCL for TCE was exceeded in wells GM-15, GM-11, and GM-20D in 2007. However, groundwater downgradient of these wells is captured in the lower aquifer capture zone well, DN-13. All other detected VOCs in these POC wells were below MCLs.

3. Corrective Measures Implementation and Performance

To address the source of VOCs in groundwater (Former Oil House Area Source Area) and the associated downgradient plume, GM continued to operate the corrective measures systems in 2007. This involved operation of the RZs and capture zones, as presented in Section 3.1. To meet the objectives defined in Section 4.0 of the Site-Wide Groundwater Monitoring Plan, the data collected in 2007 (described in Section 2.0 of this report) are evaluated in Sections 3.2 and 4.0 to assess the ongoing effectiveness of and the need for continuation of these corrective measures. The corrective measures performance is summarized in Section 3.2 and presented in more detail in Appendix E.

3.1 Corrective Measures Implementation

3.1.1 In-Situ Reactive Zones

The reductive dechlorination of chlorinated VOCs can be enhanced by the introduction of a carbon source that stimulates activity of indigenous microorganisms. The high carbon loading triggers a succession of microbial species. Initially, aerobic electron acceptors such as oxygen and nitrate are consumed. Then, the microbial succession leads to a consortium of species that survive by sulfate reduction, methanogenesis and other similar metabolic pathways, supporting the highly reducing conditions necessary for the dechlorination of PCE, TCE, cis-1,2-DCE, and vinyl chloride. This enhanced reductive dechlorination process (ERD) has been developed at the GM Moraine site through the use of RZs for introduction of a degradable carbon source necessary to develop the desired reducing conditions.

Enhanced reductive dechlorination was implemented in 1999 as a component of the Former Oil House Area corrective measures at three zones: 1) at the southern boundary of the Former Oil House Area (RZ-1); 2) at an intermediate downgradient location south of the Former Oil House Area in the ME well series area (RZ-2 which was operated from 1999 to 2002); and 3) at a downgradient location south of former Delphi Thermal Moraine (RZ-3 West) and the former Moraine Engine plant (RZ-3 East). Using the data obtained from the Supplemental Groundwater Investigation conducted in 2006, RZ-4 was designed and installed to address VOC impacts identified west of RZ-3 West (GM-16). The RZ locations are shown on Figure 2. The actual layouts of each RZ are shown on Figures 12 to 14, and discussed below:

- At RZ-1, molasses solution was introduced into the upper aquifer, above the upper clay till. The carbon injection wells are screened across the lower 10 ft of the upper aquifer, which is 4 ft to 12 ft thick. RZ-1 consists of 21 introduction wells, of which 12 wells (RZ-1J through RZ-1U) were added in 2002, to expand RZ-1. Several monthly carbon introductions were completed in existing wells upgradient of GM-23 (OW-1, OW-2, and OW-3) to demonstrate the ability to solubilize and biodegrade the previously adsorbed VOCs in this area.

- Former RZ-2 consisted of four monitoring wells (ME-1 [abandoned], ME-2, ME-4, ME-5 [abandoned]), located along the western edge of the former Moraine Engine Plant 3 building. The RZ-2 wells were screened within the upper 3 ft of the upper aquifer. RZ-2 was operated from 1999 to 2002. Re-establishment of or enhancement to in situ reactive zone RZ-2 will be further evaluated in 2008 as part of the CMP.

- RZ-3 consists of 46 introduction wells, 30 wells in RZ-3 West (RZ-3A through RZ-3DD) and 16 wells in RZ-3 East (RZ-3FF through RZ-3KK, and RZ-3MM through RZ-3VV). At RZ-3, the carbon injection wells were screened from approximately the aquifer surface to a depth of 46 ft to 68 ft bls, allowing carbon introduction through the lower 20 to 30 feet of the upper aquifer. Introduction wells RZ-3RR through RZ-3VV were installed in April 2005 in order to establish a reactive zone further down-gradient and closer to the property boundary. The additional introduction wells were screened from 34 ft to 54 ft bls. Wells RZ-3MM through RZ-3QQ have not been operated since the installation of RZ-3RR through RZ-3VV in 2005, therefore, of the 16 existing introduction wells in RZ-3 East, only 11 are active.

- RZ-4 consists of 15 introduction wells, 7 wells in RZ-4 West (RZ-4I through RZ-4O) and 8 wells in RZ-4 East (RZ-4A through RZ-4H) (see Figure 14). These wells were installed in July 2006. The RZ-4 West wells are located in the southeast corner of the closed South Settling Lagoon and the RZ-4 East wells are located north of Landfill L1 and west of the Waste Pile/Staging Area. At RZ-4, the carbon injection wells were screened from approximately the aquifer surface to a depth of 57 ft to 62 ft bls, allowing carbon introduction through the lower 30 feet of the upper aquifer.

To establish conditions conducive to ERD within reactive zones RZ-1, RZ-2, and RZ-3, a readily degradable carbon source (a dilute solution of molasses and potable water) was periodically delivered into the reactive zone introduction wells during a 6-month

period from December 1999 to May 2000. The molasses solution consisted of either a 10-to-1 or 20–to-1 ratio of potable water to feed-grade molasses that was pumped into each RZ well. The initial event, conducted in December 1999, consisted of two consecutive rounds of carbon source introductions in each RZ well. After the initial introduction event, the carbon source solution introductions were scheduled twice per month through May 2000. Due to the success during the first six months of implementing this technology, carbon source introduction activities continued in October, November, and December 2000, and subsequently from June 2001 through December 2007.

Introductions in RZ-1 were modified in the fall of 2003 after review of the previous site-wide groundwater analytical results. Due to the success of RZ-1, GM implemented a reduced carbon loading frequency of one introduction event every other month, and periodically monitored GM-28 to ensure that the necessary reducing conditions were being sustained to promote the dechlorination process. In May 2005, the introduction routine was changed to two injections every quarter to ensure reducing conditions are maintained and sufficient carbon is available to allow for complete degradation of the VOCs. This injection schedule of two per quarter was followed in 2007.

Introductions continued throughout 2007 on a monthly introduction schedule in Reactive Zone RZ-3. Low concentrations of chlorinated VOCs in monitoring wells GM-21, GM-6, and GM-8, which serve as the downgradient performance monitoring wells for RZ-3, have been maintained in 2007.

Monthly carbon introductions in RZ-4 East began in August 2006 and have continued through December 2007. Monitoring Well GM-19S serves as the downgradient performance monitoring well for RZ-4 East. A significant reduction in chlorinated VOC mass has been observed at Monitoring Well GM-19S, demonstrating the effectiveness of ERD in this zone. Reactive Zone RZ-4 West was in operation from August 2006 through August 2007. Operation of RZ-4 West is currently on hold due to observations of moderate levels of dissolved methane in groundwater at performance Monitoring Well GM-64 and field observations which indicate the presence of excess gas build-up at RZ-4 West injection well-heads (likely a mixture of methane and carbon dioxide). These observations indicate the need to assess the issues associated with the continued operation of RZ-4 West. This assessment will be completed prior to continuing operation of RZ-4 West. In November 2005, a more dilute molasses solution (20:1 water to molasses ratio) was used during the introduction event. Previously a 10:1 water to molasses ratio was used in the solution. Adjustments to the introduction procedures were made based upon evaluation of monitoring results and the variability

in acceptance rates of the more concentrated solution into the formation. ARCADIS has observed at other sites utilizing ERD technology, that a lower solution concentration of molasses in the injectate is sufficient, and in many cases better, to achieve distribution of carbon in the subsurface. A more dilute molasses solution will reduce fermentation by-products, such as carbon dioxide and organic acids that cause reductions in pH, and in some instances may limit distribution of the carbon solution due to gas building up in soil pore space. By lowering the molasses concentration a reduction in fermentation by-products is achieved, which is shown to improve the delivery of organic carbon to the desired locations. The decreased concentration was coupled with an increase in the volume introduced with the intent of "pushing" the carbon solution further away radially from the introduction wells, where deemed necessary. This modification was made prior to the November 2005 event and as a result, an improvement in the delivery of the carbon solution has been noted.

ARCADIS completed the carbon introductions from January through December 2007. The molasses is stored on-site and mixed with potable water prior to injections. Details regarding the frequency and strength of carbon source introductions are provided in Table 23 for 2007. Additional discussion is presented in Appendix E.

3.1.2 Capture Zones

The capture zone corrective measure for the upper aquifer consists of groundwater extraction at the property boundary using well TW-2; treatment through an air stripper tower; and discharge through GM's NPDES permitted outfall to the Great Miami River. Groundwater recovery from TW-2 began on January 31, 1996. During the 12 years of operation (January 31, 1996 through December 31, 2007), the system has recovered and treated a total of 791,655,020 gallons of groundwater at an average flowrate of 145.1 gallons per minute (gpm). Annual total gallons recovered and average flow rate during 2007 were 62,891,681 gallons and approximately 155.4 gpm, respectively. The location of recovery well TW-2 is shown on Figure 2.

From November 1996 through the end of this reporting period, GM has monitored the water level in TW-2 and adjusted the TW-2 flow rate as recommended in the October 1996 Monthly Technical Progress Report (Geraghty & Miller, Inc. 1996) and approved by U.S. EPA (Personal Communication, 1996). This procedure was implemented to avoid excessive drawdown within the well, which could cause damage to the well screen and/or the pump. The flow rate from TW-2 is adjusted as necessary to maintain the water level in TW-2 at least 0.5 feet above the top of the well screen.

Between January 1, 2007 and December 31, 2007, the TW-2 component of the remediation system was in operation except for the following shutdowns: January 3 through 4 for cleaning of the air stripper tower distributor tray; January 16 through18 for cleaning of the air stripper tower distributor tray and repairs to the influent line flowmeter; April 2 through 25 for cleaning of the air stripper tower distributor tray, TW-2 extraction pump, well screen, and influent piping; April 25 to repair a leak in the influent line; June 14 through July 11 for effluent resampling, cleaning of the air stripper tower, and replacement of the air stripper tower packing material; August 14 through 15 for air stripper tower maintenance; August 28 for cleaning of the air stripper tower distributor tray; September 8 through 10 for a power outage caused by a thunderstorm; October 7 through 9 (intermittently) because of high pressure in the air stripper tower; November 6 through 13 (intermittently) because of high pressure in the air stripper tower; November 13 for cleaning of the air stripper tower distributor tray; November 25 through 28 (intermittently) because of high pressure in the air stripper tower and a power outage caused by a thunderstorm; November 28 through December 13 to schedule and complete system maintenance activities including influent line cleaning and camera survey, cleaning of the air stripper tower distributor tray, and installation of an influent line filter system; and December 17 and 19 for influent line filter system cleaning.

Well DN-13 is a lower aquifer well that Montgomery County has been using in a Pump-to-Waste Program since March 1990. The capture zone corrective measure for the lower aquifer consists of continued pumping of DN-13 at a rate of 2.7 million gallons per day. Well DN-13 was operational throughout 2007 except for the following shutdowns: a temporary shutdown during the months of February and March when the well screen was cleaned, the pump replaced, and a stilling well was installed, DN-13 was restarted on March 28; and on November 9 and 25 . As further discussed in Section 3.2.2, these temporary shut downs did not have long-term effects on the capture zone around well DN-13. The location of well DN-13 is shown on Figure 2.

3.2 Corrective Measures Performance

3.2.1 In-Situ Reactive Zone Performance Results

As described earlier in Section 3.1.1, the carbon solution delivery network consists of four reactive zones, RZ-1, RZ-2 (in operation from 1999 to 2002), RZ-3 (West and East), and RZ-4 (West and East). Molasses was introduced in 2007 into the groundwater through introduction points shown on Figures 12 and 14 for RZ-1, RZ-3, and RZ-4, respectively. Operation of the RZs was monitored through the collection of

field parameter measurements, and laboratory analyses of biogeochemical indicator parameters and VOCs, according to the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002). A detailed assessment of the effectiveness of the In-situ Reactive Zones and the results of this monitoring are presented in Appendix E and summarized below:

- Reducing conditions favoring ERD within and downgradient of the reactive zones have been maintained through the periodic introduction of a readily available degradable carbon source (potable water and molasses), as evidenced by the changes in field and bioattenuation parameters;

- The target compounds (PCE and TCE) have been effectively reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to end products (ethene and ethane) based on a review of the VOC results;

- Levels of vinyl chloride were consistently low to non-detect in all downgradient wells, indicating degradation of cis-1,2-DCE to ethene and ethane, without production of significant vinyl chloride peaks;

- The primary and secondary operational monitoring data from former Reactive Zone RZ-2 will continue to be evaluated to determine if the carbon source introductions are necessary in this area; and

- VOC concentrations at RZ-3 East (GM-21) have remained low in response to carbon introductions, since the enhanced design of the introduction system in RZ-3 East in 2005. TOC levels, as well as other primary and secondary operational monitoring data, indicate that the effects of carbon introductions have reached the area monitored by GM-21.

- VOC concentrations within and downgradient of RZ-4 East have been significantly reduced since operation of this reactive zone began in August 2006 as indicated by the rapid decline in chlorinated VOCs observed at Monitoring Well GM-19S.

Overall, the process of enhanced reductive dechlorination at this site has been successful in achieving the desired reduction of VOC concentrations.

3.2.2 Capture Zone Performance Results

Figures 6 through 9 indicate the location of the capture zone corrective measures at the southern end of the former Delphi Thermal Moraine site. Additionally, it should be noted that these flow maps are consistent with the flow conditions predicted by the capture zone modeling, presented on Figures 2 and 3 of the Final Interim Measures Design Plans (Geraghty & Miller, Inc. 1995). Seasonal weather conditions vary throughout the year and this variation will have an impact on the groundwater elevations observed at the site (Table 8). The observed elevation differences in 2007 are consistent with the above average precipitation in 2007. Water-level elevations in TW-2 are regularly monitored to ensure the water level does not fall below the well screen. If the water level approaches the well screen, the pumping rate is reduced for protection of the pump. Due to higher groundwater elevation in 2007, pumping rate adjustments were not necessary as discussed previously in Section 3.1. The pumping rate for DN-13 was not adjusted; therefore, only seasonal variations influence water level elevations at DN-13. Effective capture has been maintained in spite of seasonal variations in both the upper and lower aquifers.

Figure 5 presents a graph of the influent concentration of total chlorinated VOCs and benzene, toluene, ethylbenzene, and xylene (BTEX) compounds in TW-2 since start up of the recovery and treatment system in January 1996. The data shows a steady decline in total chlorinated VOCs and a significant decrease in BTEX concentrations. The data indicates that the remediation at the site is continuing to provide VOC mass reduction downgradient of RZ-3 West.

4. Corrective Action Completion Strategy

4.1 Effectiveness of Corrective Measures Activities

4.1.1 Background and Objectives

The goal of the corrective measures at this Site is to reduce existing site-related groundwater concentrations to levels that are protective of reasonably expected future uses of groundwater off site. GM's approach for achieving this goal is being met through a combination of the corrective measures that achieve plume migration control, reduce existing plume concentrations, and monitor performance of these measures. Once on-site groundwater concentrations are reduced sufficiently by active corrective measures to ensure continued protection of reasonably expected groundwater uses, some or all of the active measures will be terminated. Groundwater monitoring as described in the Site-Wide Groundwater Monitoring Plan will be undertaken to continue to verify that groundwater conditions remain acceptable, and that ultimately, groundwater concentrations at the downgradient property boundary decline below appropriately protective levels (i.e., appropriate for the protection of the groundwater resource and its reasonably expected future uses). Data have been acquired during the implementation of the site-wide groundwater monitoring program to evaluate progress towards achieving this goal.

The need for continued operation of the remedial measures described in Section 2 will be determined based on achieving and maintaining the following conditions:

1. Upper aquifer: consistent with the criterion stated in the approved RCRA Corrective Action Environmental Indicator Determination – Migration of Contaminated Groundwater Under Control (CA 750), the condition to be met in the upper aquifer is no migration of VOCs at concentrations exceeding appropriately protective levels (i.e., appropriate for the protection of the groundwater resource and its reasonably expected future uses as characterized in the RFI) beyond the existing area of contaminated groundwater. Based on the groundwater conditions established during the September 1999 baseline sampling event, the existing well GM-26 was identified as the point of compliance (POC) monitoring point for ensuring that this condition is maintained.

2. Lower aquifer: consistent with the goal to maintain a usable aquifer, including off-site drinking water use, the condition to be met in the lower aquifer is no VOC concentrations exceeding appropriate protective levels (i.e., appropriate for the

protection of the groundwater resource and its reasonably expected future uses as characterized in the RFI) beyond the existing area of contaminated groundwater. Based on the groundwater conditions established during the September 1999 baseline sampling event, the existing wells GM-15, GM-11, and GM-20D were identified as the POC monitoring points for ensuring that this condition is maintained.

Once on-site groundwater concentrations are reduced sufficiently by active measures to be protective of reasonably expected future uses, some or all of these active measures will be terminated. Following termination of any active measures, GM will continue its groundwater monitoring program to confirm that the conditions in the upper and lower aquifer continue to be met without these active measures.

4.1.2 Methodology

In accordance with the Site-Wide Groundwater Monitoring Plan, groundwater data are compared to remediation target levels (RTLs) developed to ensure compliance with the above-stated conditions without active corrective measures. As defined in the Site-Wide Groundwater Monitoring Plan, these RTLs have been calculated using the groundwater assessment methods developed in the Baseline and Supplemental Baseline Risk Assessments (ENVIRON 2000a, b) taking into consideration the current pumping conditions at and in the vicinity of the facility. Specifically, the MODFLOW groundwater flow model (Geraghty & Miller, Inc. 1994) developed for Delphi Thermal Moraine and the surrounding region (including former Moraine Engine and Moraine Assembly) is used to support estimation of RTLs which are concentrations in on-site groundwater at locations downgradient of the Former Oil House Area that would not be expected to result in exceedances of the MCL at the designated monitoring points.

As discussed in the 2005 Site-Wide Groundwater Monitoring Report (ARCADIS 2006), changes in on-site production well pumping were implemented during the 2005 monitoring period. Specifically, GM production wells 31 and 39 were taken out of continuous operation and pumping rates at the Moraine Assembly Plant wells 11B and 12A were changed; therefore, wells 31 and 39 were modeled as being "off" and wells 11B and 12A were modeled to reflect the reported operating conditions. In addition, as discussed in the 2005 Report, ARCADIS contacted the Ohio Department of Natural Resources (ODNR) regarding the current operations of the nearby well fields. Based on this information, the MODFLOW groundwater flow model was updated to reflect these changes in on-site and off-site pumping conditions.

Using this approach and considering the scope of the annual groundwater monitoring program including the addition of wells to the monitoring program (as proposed in the Annual Groundwater Monitoring Reports), GM developed RTLs for the following remediation monitoring zones in both the upper and lower aquifer at and downgradient of the Former Oil House Area:

- Upper Aquifer
  - Former Oil House Area, (AOI 7 Shallow): the Former Oil House Area source area (wells GM-23, GM-29 and GM-30),
  - Zone S1: the monitoring zone immediately downgradient of RZ-1 (well GM-28),
  - Zone S1 to Zone S2: the monitoring zone between RZ-1 and RZ-2 (wells GM-28, and ME-6),
  - Zone S2: the monitoring zone immediately downgradient of RZ-2 (wells ME-6, ME-3, GM-31),
  - Zone S2 to Zone S3: the monitoring zone between RZ-2 and RZ-3 (wells ME-6, ME-3, GM-31, GM-22, GM-19S, EAST, GM-33, GM-35),
  - Zone S3: the monitoring zone immediately downgradient of RZ-3 (wells GM-32, GM-21, W-4-S, GM-63, and GM-64),
  - Zone S3 to GM-10: the monitoring zone between RZ-3 and GM-10 (wells 4S, GM-32, GM-21, GM-8, GM-6, W-4-S, GM-2, GM-16, GM-18, WSU-24, GM-47, GM-50, GM-51, GM-63, GM-64 and GM-10),
  - GM-10/GM-52: the monitoring zone downgradient of RZ-3 (wells GM-10 and GM-52), and
  - POC Shallow: monitoring at well GM-26.

- Lower Aquifer
  - Former Oil House Area, (AOI 7 Deep): the Former Oil House Area source area (wells GM-23, GM-29, and GM-30),
  - Zone GM-40/41/54: the monitoring zone encompassing GM-40, GM-41 and GM-54,
  - Zone GM-42: the monitoring zone encompassing GM-42,
  - Zone D1: the monitoring zone encompassing GM-19D,
  - Zone D2: the monitoring zone encompassing wells GM-1 and GM-3, and
  - POC Deep: monitoring at wells GM-11, GM-15 and GM-20D.

The following steps were conducted to assess the site-wide monitoring data for the purpose of determining the extent to which each remedial measure is contributing to achievement of the conditions outlined above for the upper and lower aquifers:

- Groundwater pumping conditions at the facility and surrounding area were reviewed to confirm that the basis for the RTLs remain valid. As discussed in Section 2, groundwater flow patterns generally remain the same as those evaluated during the 1999 baseline sampling and when the groundwater flow model was last updated in 2005. The pumping conditions are summarized on Table F-1 in Appendix F. Table F-1 also provides the source reduction factors calculated from the groundwater flow model updated in 2005 that are used to assess hypothetical concentrations at receptor wells that are attributable to the land-based units (i.e., North and South Settling Lagoons, and Landfills L1, L2 and L3). The RTLs, also updated in 2005, are presented on Table F-4 in Appendix F. GM is currently reviewing the hydrogeologic data collected as part of the supplemental data collection activities. The groundwater flow model and the RTLs will be revised, as appropriate, based on this new information. These revisions will be presented in the Revised CMP.

- Minimum, mean and maximum constituent concentrations in each remediation monitoring zone were calculated based on data collected during the 2007 monitoring period. One-half sample quantitation limits were used for non-detect results.

- Minimum, mean and maximum constituent concentrations were compared against the RTLs developed for each remediation monitoring zone.

4.1.3 Results

The results for groundwater quality data collected in 2007 in each remediation monitoring zone wells are discussed in Section 2.2.3. A comparison of the minimum, mean and maximum concentrations for each parameter in each remediation monitoring zone to the RTLs is presented on Table 24. These results and relative change in these results in comparison with the 2006 monitoring period are discussed below and presented on Table 24. For reference, Table 24 also presents a comparison with the results from the 1999 baseline sampling event.

The comparison of the 2007 shallow zone (upper aquifer) monitoring data with the RTLs indicates the following:

AOI 7, Shallow (wells GM-23, GM-29 and GM-30):

- Consistent with 2006, concentrations of 1,1-DCE remained below the RTL.
- As compared with 2006, the maximum concentrations of cis-1,2-DCE, PCE and vinyl chloride have decreased but still remain above RTLs, while the maximum concentration of TCE has remained relatively stable at a concentration above the RTL.
- As compared with 2006, the average concentration of PCE has decreased to a concentration below the RTL, while the average concentrations of cis-1,2-DCE and vinyl chloride have decreased but still remain above RTLs. The average concentration of TCE has remained relatively stable at a concentration above the RTL.

Zone S1 (well GM-28):

- Consistent with 2006, all concentrations remain below the RTLs.

Zone S1 to S2 (wells GM-28, ME-6):

- Consistent with 2006, the concentrations of 1,1-DCE, cis-1,2-DCE, TCE and PCE remain below RTLs.
- As compared to 2006, the maximum concentration of vinyl chloride has increased to a concentration above the RTL. The maximum detected concentration of vinyl chloride in this zone of 22 ug/L was observed in GM-28 on June 21, 2007. The sample collected from this well on September 20, 2007 exhibited a lower concentration of 1.1 ug/L which is below the vinyl chloride RTL of 18 ug/L.

Zone S2 (wells ME-6, ME-3, GM-31):

- Consistent with 2006, the concentrations of 1,1-DCE, cis-1,2,-DCE, PCE and vinyl chloride remain below RTLs.
- As compared to 2006, the maximum concentration of TCE has increased and remains above the RTL.

Zone S2 to S3 (wells ME-6, ME-3, GM-31, GM-22, GM-19S, EAST, GM-33, GM-35):

- Consistent with 2006, the concentrations of 1,1-DCE and cis-1,2-DCE remain below RTLs.
- As compared with 2006, the maximum concentrations of PCE, TCE and vinyl chloride have remained relatively stable above RTL. The average concentration of TCE has increased and remains above the RTL.

Zone S3 (wells W-4-S, GM-32, GM-21, GM-63, and GM-64):

- Consistent with 2006, the concentrations of 1,1-DCE remain below RTLs.
- As compared with 2006, the maximum and average concentrations of PCE and TCE remained stable and above the RTLs. The maximum concentrations of vinyl chloride has increased and remains above RTLs while the mean concentration has increased to above the RTL.
- As compared to 2006, the maximum concentration of cis-1,2-DCE has increased to a level above the RTL. The maximum detected concentration of cis-1,2-DCE in this zone was observed in GM-64 on March 14, 2007 and June 30, 2007. A sample collected from GM-64 on September 25, 2007 exhibited a cis-1,2-DCE concentration of 74 ug/L, which is below the RTL of 260 ug/L. The average concentration remains below the RTL.

Zone S3 to GM-10 (wells 4S, GM-32, GM-21, GM-8, GM-6, W-4-S, 4S, GM-2, GM-16, GM-18, WSU-24, GM-47, GM-50, GM-51, GM-63, GM-64 and GM-10):

- Consistent with 2006, the concentrations of 1,1-DCE remain below RTL.
- As compared with 2006, the maximum and average concentrations of PCE have decreased but still remain above the RTL.
- As compared with 2006, the maximum and average concentrations of TCE have remained stable relatively above the RTL.
- As compared with 2006, the maximum concentration of vinyl chloride has increased and still remains above the RTL. The mean concentration also increased, but remains below the RTL.

- As compared to 2006, the maximum concentration of cis-1,2-DCE has increased to a level above the RTL. The maximum detected concentration of cis-1,2-DCE in this zone was observed in GM-64 on March 14, 2007 and June 30, 2007. A sample collected from GM-64 on September 25, 2007 exhibited a cis-1,2-DCE concentration of 74 ug/L, which is below the RTL of 210 ug/L.

GM-10/GM-52:

- Consistent with 2006, the concentrations of 1,1-DCE, cis-1,2-DCE and vinyl chloride remain below RTLs.
- As compared with 2006, the maximum and average concentrations of PCE have remained relatively stable above the RTL.
- As compared with 2006, the maximum and average concentrations of TCE have decreased but still remain above the RTL.

POC Shallow (well GM-26):

- Consistent with 2006, all concentrations remain below the RTLs.

The comparison of the 2007 deep zone monitoring data with the RTLs indicates the following:

AOI 7, Deep (wells GM-23, GM-29, and GM-30):

- Consistent with 2006, the concentrations of 1,1-DCE remain below RTLs.
- As compared with 2006, the maximum concentrations of cis-1,2-DCE, PCE and vinyl chloride have decreased but still remain above RTLs. The average concentrations of cis-1,2-DCE and PCE have decreased to levels below the RTLs while the average concentration of vinyl chloride also decreased but remains above RTLs.
- As compared with 2006, the maximum and average concentrations of TCE have remained relatively stable above RTLs.

Zone GM-40/41/54:

- Consistent with 2006, the concentrations of 1,1-DCE, cis-1,2-DCE, and vinyl chloride remain below RTLs.
- As compared with 2006, the maximum and average concentrations of PCE and TCE have remained relatively stable above the RTLs.

GM-42:

- Consistent with 2006, all concentrations remain below the RTLs.

Zone D1 (well GM-19D):

- Consistent with 2006, concentrations of 1,1-DCE, cis-1,2-DCE, PCE, and TCE remain below RTLs.
- As compared with 2006, the detected concentration of vinyl chloride has decreased but remains above the RTL.

Zone D2 (wells GM-1 and GM-3):

- Consistent with 2006, concentrations of 1,1-DCE, cis-1,2-DCE, PCE, and vinyl chloride remain below RTLs.
- As compared with 2006, the concentrations of TCE have remained relatively stable above the RTL.

POC Deep (wells GM-11, GM-15 and GM-20D):

- Consistent with 2006, concentrations of 1,1-DCE, cis-1,2-DCE, PCE and vinyl chloride remain below RTLs.
- As compared to 2006, the concentrations of TCE remained relatively stable above the RTL.

As indicated by the comparison of groundwater monitoring data with the RTLs presented on Table 24, concentrations at the upper aquifer POC well remain below RTLs. Concentrations in the monitoring zone immediately upgradient of the upper

aquifer POC remain stable and above RTLs since 2006. Concentrations in the monitoring zones further upgradient of the upper aquifer POC, as well as concentrations at the lower aquifer POC wells remain above the RTLs for one or more constituents. Therefore, active corrective measures are still required to maintain the short-term objective in the upper aquifer, and to achieve the short-term corrective action objective in the lower aquifer.

Concentrations in the AOI-7 area remain above levels necessary to achieve the RTLs at the downgradient upper and lower aquifer POCs. However, concentrations immediately downgradient of RZ-1 remain below the RTLs, thus indicating that RZ-1 has been effective at remediating groundwater impacts from AOI-7 in the upper aquifer. Continued corrective measures downgradient of RZ-1 (i.e., at RZ-3 and RZ-4) will be continued to address residual impacts in the downgradient upper aquifer plume area. An additional evaluation of corrective measures performance will be conducted as part of the Revised CMP. The Revised CMP will also include a review of the appropriateness of the monitoring wells selected for each zone and the POC.

4.2 Monitoring of Land-Based Waste Management Units

4.2.1 Background and Objectives

One additional component of the site-wide groundwater monitoring program is monitoring of other specific units (i.e., the closed lagoons). Although the RFI and Supplemental RFI determined that the wastes at these units do not contribute constituents to groundwater at levels that would have a significant effect on current and reasonably expected future groundwater uses, the monitoring program includes monitoring wells that are used to confirm these findings. In addition, the Site-Wide Groundwater Monitoring Plan was developed to meet the objectives of Ohio EPA's post-closure monitoring for the closed North and South Settling Lagoons.

4.2.2 Methodology

As indicated above, this site-wide monitoring program was developed to meet the objectives of RCRA corrective action and the post-closure groundwater monitoring requirements for the closed lagoons. The site-wide program monitors potentially significant contributions of hazardous waste constituents to existing groundwater quality from the closed lagoons. To determine if the closed lagoons may be significant contributors of hazardous waste constituents to existing groundwater concentrations, monitoring data collected from the designated post-closure monitoring wells located

downgradient of each of the closed lagoons are evaluated for temporal trends. The approach proposed in the Site-Wide Groundwater Monitoring Plan for this assessment includes, as an initial approach, the application of straight line regression to determine if the data suggests a strong positive correlation.

In addition, in accordance with the Site-Wide Groundwater Monitoring Plan, the monitoring wells located immediately downgradient of the in-place waste management units are evaluated to determine whether these units are significantly affecting groundwater quality. Specifically, the potential health significance of constituents detected in monitoring wells immediately downgradient of these units to current and reasonably expected groundwater uses on-site and off-site are evaluated using the groundwater assessment methods developed in the Supplemental RFI Baseline Risk Assessment (ENVIRON 2000b). If this evaluation identifies detected concentrations that indicate one or more of these units may be having a potentially significant impact on downgradient groundwater quality, then a review of groundwater quality from monitoring wells upgradient and downgradient of the particular unit would be conducted to identify whether the unit is affecting groundwater quality. The monitoring wells identified in the Site-Wide Groundwater Monitoring Plan for monitoring each of the waste management units are:

- Closed North Settling Lagoon: HR-4 (upgradient), HR-5, W-2-N, W-3-N, W-4-N.
- Closed South Settling Lagoon: HR-17 (upgradient), W-2-S, W-3-S, W-4-S.
- Landfill L1: TW-2, GM-6, 4S.
- Landfill L2: W-4-N, HR-2.
- Landfill L3: W-4-N, HR-2, HR-4.

Consistent with the groundwater exposure evaluation conducted for the Supplemental Baseline Risk Assessment, groundwater concentrations reported for each set of downgradient monitoring wells are assumed to represent source concentrations associated with each unit. These source concentrations are combined with source reduction factors developed for the base case exposure scenario (i.e., current groundwater use conditions without corrective measures pumping) to estimate exposure concentrations at the points of groundwater use (e.g., downgradient municipal well fields and on-site industrial wells). For the current evaluation, the maximum concentrations detected during the 2007 sampling events in each set of

monitoring wells are used as the source concentration and combined with the updated source reduction factors presented on Table F-1 (as described in Section 4.1.2). The estimated exposure concentrations are then compared with MCLs or risk-based equivalent drinking water levels (EDWLs).

4.2.3 Results

As proposed in the Site-Wide Groundwater Monitoring Plan, post-closure monitoring data collected from those wells assigned to the closed North and South Settling Lagoons were reviewed for temporal trends (see Section 2.2.3.1.2). Data considered in the evaluation included results through the September 2007 monitoring event and data ranging back to the initial post-closure monitoring event conducted in November 2001. Currently, the data set collected since the lagoons were closed includes six data points for any monitoring well/constituent pair; the data plots for key constituents are provided on Figure F-1 for the North Settling Lagoon (NSL) and Figure F-2 for the South Settling Lagoon (SSL). In general, the linear regression analyses for the NSL using the available data indicates either declining concentrations or little significant changes over time. Similarly for the SSL, changes in concentrations in the wells immediately downgradient of this unit appear to correspond to changes in concentrations in the upgradient well (HR-17). These concentration trend lines do not indicate that any significant increases in groundwater concentrations that would be attributable to these land based units.

Using the methodology developed in the RFI baseline risk assessment for assessing potential impacts to groundwater receptors from releases at the Moraine facilities, GM determined that the data from the wells downgradient of the closed North and South Settling Lagoons do not indicate that these units are significantly affecting groundwater quality. The potential significance of concentrations detected during the 2007 sampling events in each set of downgradient monitoring wells for the lagoons and landfills were assessed. Based on the maximum concentrations detected during the 2007 sampling events at each of these units, exposure concentrations at water supply wells representing current pumping conditions were estimated. The estimated combined groundwater concentrations at each of the receptor wells are presented on Table 25 in comparison with MCLs or EDWLs. As shown on Table 25, the maximum concentrations detected downgradient of each of the land-based waste disposal units do not contribute significantly to concentrations at these points of potential exposure. Therefore, the data from the wells downgradient of the waste management units indicate that these units are not significantly affecting groundwater quality. Supporting calculations for this assessment are provided in Appendix F.

5. Conclusions and Recommendations

This summary report presents the groundwater monitoring activities completed in 2007 at the GM Moraine Facilities located in Moraine, Ohio. This sampling was conducted to meet the five objectives presented in Section 1.2. Compliance with these objectives is presented for the waste management units, corrective measures, and on-going site-wide groundwater monitoring in the following sections.

5.1 Land-Based Waste Management Units

As proposed in the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), monitoring data collected immediately downgradient of the closed North and South Settling Lagoons, and Landfills L1, L2 and L3 were evaluated to determine if these units may be contributing constituents to groundwater at levels that would have a significant effect on current and reasonably expected future groundwater uses. Using the methodology developed in the RFI baseline risk assessment for assessing potential impacts to groundwater receptors from releases at the Moraine facilities, the potential significance of observed groundwater concentrations downgradient of these units was evaluated.

This evaluation determined that data from the wells downgradient of the in-place waste management units indicate that these units are not significantly affecting groundwater quality. Based on the results from the 2007 monitoring, no changes in the monitoring program for the waste management units are proposed.

5.2 Corrective Measures Performance

GM's approach for achieving its corrective action goals for the Moraine facilities is based on a combination of corrective measures (in-situ treatment and hydraulic control) designed to reduce existing plume concentrations thereby achieving plume reduction and migration control.

5.2.1 In-Situ Treatment

Groundwater quality monitoring at and downgradient of the reductive dechlorination treatment zones indicates that this in-situ treatment program has been effective at reducing VOC concentrations in groundwater. As observed during the 2007 monitoring, the upper aquifer conditions in the areas downgradient of the in-situ reactive zones have been converted to more reducing conditions through the

introduction of a carbon source, as evidenced by the changes in field and bioattenuation indicator parameters. Further, the VOC results indicate that the target compounds (PCE and TCE) have been effectively reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to ethene and ethane.

Overall, the process of enhanced reductive dechlorination at this site has been successful in achieving a reduction of VOC concentrations. Based on the data collected in 2007 as part of the site-wide groundwater monitoring program, GM does not believe that additional modifications to the RZs will be necessary at this time; however, as part of the revisions to the CMP, GM will evaluate if modifications to the RZs (i.e., RZ-2) are needed based on water quality and performance monitoring data. Carbon introductions to RZ-4 West were put on hold because of the observation of excess degradation gases building-up at RZ-4 West injection well-heads and the presence of dissolved methane in performance monitoring wells. Additional assessment will be completed prior to continuing operation of RZ-4 West.

5.2.2 Hydraulic Control

Groundwater elevation monitoring indicates that the capture zone corrective measures continue to be effective at maintaining hydraulic control in both the upper and lower aquifers in the southern area of the former Delphi Thermal Moraine. Additionally, the observed flow conditions are consistent with the conditions predicted by the capture zone modeling performed in developing the corrective measures pumping plan, which confirms the continued utility of the previously developed groundwater flow model as a predictive tool. Additionally, GM is currently in the process of revising the groundwater model used to evaluate groundwater flow and capture; the updated model will be provided with the Revised CMP.

Based on the effective performance of the pumping program during the 2007 monitoring and exceedences of RTLs at the Former Oil House Area and in Zones S2 to S3, S3 to GM-10, Zone GM-40/-41, Zone GM-19D, Zone D2, and POC monitoring points in the deep aquifer (GM-11, GM-15, GM-20D), no changes to the hydraulic control component of the ongoing corrective measures are proposed at this time.

GM's ongoing groundwater monitoring program includes the assessment of changes in site-specific VOCs in both the upper and lower aquifers at locations upgradient of the GM Moraine facilities, as well as on-site and downgradient of the facilities. Data collected from upper and lower aquifer wells located upgradient of the facilities confirms that upgradient sources of VOCs, not related to GM operations, continue to

exist in the local area. Notwithstanding these upgradient contributions of VOCs to on-site groundwater, the monitoring data indicate a site-wide decrease in VOC concentrations since the baseline sampling event conducted in 1999. In addition, VOC concentrations at the off-site downgradient upper aquifer well GM-26 remained below MCLs. Concentrations of TCE remained above the MCL in downgradient lower aquifer wells GM-11, GM-15 and GM-20D, however, groundwater downgradient of these wells is contained by the lower aquifer capture zone well DN-13.

The overall decreasing concentrations in the wells downgradient of the site since the corrective measures were first implemented is likely attributable to the combined effects of corrective measures pumping at TW-2 which began in January 1996, pumping at DN-13, and on-going enhanced natural attenuation of the VOCs. However, concentrations in the monitoring zones immediately upgradient of the upper aquifer POC (GM-26), as well as concentrations at the lower aquifer POC wells remain above the RTLs. Therefore, active corrective measures are still required to achieve the corrective action objectives.

Based on the evaluation of the site-wide groundwater quality, both the in-situ treatment and hydraulic control components of the corrective action program will be continued.

5.3 Reassessment of Site-Wide Groundwater Monitoring Program

In accordance with the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), groundwater monitoring was conducted in 2007 to evaluate groundwater quality upgradient and downgradient of the closed lagoons and landfills, performance of the in-situ reactive zones, and performance of the capture zones. Based on the data collected during the 2007 monitoring period, GM believes that the monitoring program has provided sufficient data for a comprehensive evaluation of these corrective action objectives. The site-wide groundwater monitoring program summary for 2007 is presented in Table 26. To reassess the monitoring program in support of the proposed final corrective measures, GM recommends the following:

- In 2007, GM implemented the Corrective Measures Supplemental Groundwater Investigation to collect data that will further refine the available information on groundwater flow and quality within several study areas. This data will be used to further evaluate and refine, if necessary, the site conceptual model, the groundwater flow model, and the corrective measures performance. GM will continue to assess the need for additional monitoring wells in the upper and lower aquifers in support of the final corrective measures with the goal of ultimately

ending active corrective measures. In 2008, GM plans to submit a Revised CMP that incorporates the findings of the supplemental groundwater investigation and an assessment of active corrective measures performance, and provides an evaluation of additional corrective measures, if warranted, to meet the overall corrective action objectives.

- In 2008, GM will review the groundwater flow patterns and groundwater pumping conditions using the groundwater flow model (currently being revised based on the findings of the supplemental investigation), to confirm that the basis for the RTLs remain valid.

- GM will present any revisions to the long term groundwater monitoring program in the Revised CMP.

5.4 Supplemental Groundwater Investigation Recommendations

The Corrective Measures Supplemental Groundwater Investigation was conducted in 2006 and 2007 to gather additional data from within the area where corrective measures are being performed in order to assess whether refinements to the corrective measures approach should be considered in order to achieve the objective of terminating active corrective measures as soon as possible. This supplemental investigation has provided additional data to refine the current understanding of groundwater chemistry and flow direction at the site as these relate to the evaluation of the current corrective measures. While these data are useful in refining the current understanding of site conditions and the current corrective measures at the site, the results continue to support the corrective measures approach that is proposed for the site. The findings of the supplemental investigation and corrective measures performance evaluation will presented in the Revised CMP.

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Table 1. Site-Wide Groundwater Monitoring Events in 2007, General Motors Corporation, Moraine, Ohio.

April-May 2007 Site-Wide Groundwater and Surface Water Elevations

Groundwater and surface water elevations were measured on April 30 and May 1, 2007.

October 2007 Site-Wide Groundwater and Surface Water Elevations

Groundwater and surface water elevations were measured on October 24-25, 2007.

September 2007 Site-Wide Annual Groundwater Sampling

Site-specific list of VOCs(1) and field parameters(2) were analyzed during September 17-27,2007 from the following upper aquifer monitoring wells. Biogeochemical parameters(3) were analyzed at wells denoted with an asterisk(*):

W-2-N	W-2-S	GM-10	GM-28*	GM-52
W-3-N	W-3-S	GM-16	GM-29*	GM-63*
W-4-N	W-4-S*	GM-17	GM-30*	GM-64*
HR-1	TW-2	GM-18	GM-31*	
HR-2	ME-3*	GM-19S*	GM-32*	
HR-4	ME-6*	GM-21*	GM-33	
HR-5	WSU-24	GM-22*	GM-35	
HR-9	GM-2	GM-23*	GM-47*	
HR-11	GM-6*	GM-26	GM-50*	
HR-17	GM-8*	GM-27	GM-51	

Site-specific list of VOCs(1) were analyzed during September 17-27, 2007 from the following list of lower aquifer monitoring wells:

HR-10	MT-69	GM-11	GM-39	GM-54
HR-12	GM-1	GM-15	GM-40	GM-58
HR-15	GM-3	GM-19D	GM-41	GM-61
DN-13	GM-9	GM-20D	GM-42	

1. Site-specific list of VOCs includes: benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.

2. Field parameters include: pH, specific conductivity, dissolved oxygen, oxidation reduction potential, and temperature.

3. Biogeochemical parameters include: manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon, chlorides, ethane, ethene, and methane.

Table 1. Site-Wide Groundwater Monitoring Events in 2007, General Motors Corporation, Moraine, Ohio.

Supplemental Groundwater Sampling

Site-specific list of VOCs[1] and field parameters[2] were analyzed during 2007 from the following monitoring wells. Biogeochemical parameters[3] were analyzed at wells denoted with an asterisk(*):

Wells (5/2/07)	Wells (5/3/07)	Wells (5/4/07)	Wells (9/23/07)	Wells (9/26/07)	Wells (9/27/07)	Wells (10/23/07)
GM-54*	GM-41*	GM-68S	GM-76S	GM-75S	GM-74S	GM-73*
GM-65S	GM-58*	GM-68D*	GM-76D*	GM-75D*	GM-74D*	GM-78
GM-65D	GM-67S				GM-77S	GM-79
GM-66*	GM-67D				GM-77D*	GM-80
	GM-69					GM-81
	GM-70					
	GM-71					
	GM-72					

RZ Performance Sampling

The following events were performed in 2007:

The following wells were sampled on March 14-15, 2007 for site-specific list of VOCs[1], TOC, ethane, ethene, methane, and field parameters[2]: GM-8, GM-19S, GM-21, GM-28, GM-32, GM-63, and GM-64;

The following wells were sampled on June 20-21, 2007 for site-specific list of VOCs[1], TOC, ethane, ethene, methane, and field parameters[2]: GM-8, GM-19S, GM-21, GM-29, GM-63, and GM-64 – also GM-32 for TOC only.

The following wells were sampled on December 3-4, 2007 for site-specific list of VOCs[1], TOC, ethane, ethene, methane, and field parameters[2]: GM-8, GM-19S, GM-21, GM-29, GM-32, GM-63, GM-64, and W-4-S; also GM-32 for TOC and ethane, ethane, and methane only.

DN-13 Monthly Groundwater Sampling

Appendix IX VOCs and cis-1,2-DCE were analyzed during these monthly sampling events from DN-13.

Air Stripper Tower Influent and Effluent Monthly Groundwater Sampling

Benzene, chloroethane, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes were analyzed during the influent sampling events from the air stripper tower by EPA Method 8260B. The stripping tower effluent sample was analyzed for oil and grease and the following list of VOCs: benzene, chloroethane, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes. The effluent sample was analyzed by EPA Methods 8260B and 624 (drinking water standard).

Table 1. Site-Wide Groundwater Monitoring Events in 2007, General Motors Corporation, Moraine, Ohio.

Parameter	Analytical Method
Site-specific list of VOCs	EPA Method 8260B/EPA Method 624
Manganese, total and dissolved	EPA Method 6010B
Iron, total and dissolved	EPA Method 6010B
Sulfate	SM 375.4
Sulfide	SM 376.1
Total Organic Carbon	SM 415.1
Chlorides	SM 325.2
Ethane, Ethene, Methane	Method AM18G

1. Site-specific list of VOCs includes: benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.

2. Field parameters include: pH, specific conductivity, dissolved oxygen, oxidation reduction potential, and temperature.

3. Biogeochemical parameters include: manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon, chlorides, ethane, ethene, and methane.

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Table 2. Influent Monitoring of the Air Stripper Tower for 2007, General Motors Corporation, Moraine, Ohio.

Constituent	Units	1/22/07	2/12/07	3/7/07	4/30/07	5/14/07	6/14/07	7/16/07	8/1/07	9/4/07	10/1/07	11/15/07	12/17/07
Oil & Grease[1]	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1.6B	<5.0	<5.0
VOCs[2]													
Benzene	ug/L	0.75J	1.0	0.98J	1.9	1.6	1.2	1.9	1.6	1.4	1.2	1.2	1.2
Chloroethane	ug/L	4.5	8.0	8.3	19	13	11	18	11	8.1	7.0	8.5	6.9
1,1-Dichloroethane	ug/L	8.7	5.4	8.0	4.0	5.4	6.1	5.4	7.9	10.0	8.8	8.7	7.2
cis-1,2-Dichloroethene	ug/L	36	12	20	16	15	10	8.2	10	11	9.4	8.4	8.7
trans-1,2-Dichloroethene	ug/L	1.0	0.61J	0.76J	0.61J	0.69J	0.72J	0.54J	0.69J	0.78J	0.66J	0.61J	0.47J
Ethylbenzene	ug/L	1.3	0.80J	0.74J	0.26J	1.1	2.4	0.90J	2.1	1.3	0.66J	0.36J	<1.0
Tetrachloroethene	ug/L	5.3	4.4	4.7	3.6	3.0	2.9	2.7	3.1	3.8	3.5	4.1	2.9
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	0.41J	0.64J	0.30J	0.32J	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/L	0.98J	0.54J	0.76J	0.32J	0.28J	0.30J	<1.0	0.23J	0.31J	0.28J	0.28J	<1.0
Trichloroethene	ug/L	18	15	16	13	14	14	9.6	12	13.0	11	9.9	6.5
Vinyl chloride	ug/L	3.6	2.5	3.4	2.3	3.3	2.3	3.3	2.2	2.7	2.0	1.9	1.8
Xylenes	ug/L	1.0J	0.82J	0.50J	<2.0	1.2J	2.5	<2.0	1.9J	0.42J	<2.0	<2.0	<2.0
Total VOCs	ug/L	78.4	48.3	60.4	59.8	56.40	52.40	49.10	49.90	51.30	42.90	42.70	35.20

1 Analytical method for oil & grease is EPA 1664A.
2 Analytical method for VOC analysis is SW-846 Method 8260B.
VOC concentrations in micrograms per liter (ug/L) and Oil & Grease concentrations in milligrams per liter (mg/L) as reported by the laboratory.
J Estimated result. Result is less than reporting limit.

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Table 3. NPDES Permit Effluent Monitoring of the Air Stripper Tower for 2007, General Motors Corporation, Moraine, Ohio.

Constituent	Units	Permit Limit	1/22/07	2/12/07	3/7/07	4/30/07	5/14/07	6/14/07	7/16/07	8/1/07	9/4/07	10/1/07	11/15/07	12/17/07
Oil & Grease[1]	mg/L	10	<5.0	1.3B	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
pH[2]	S.U.	6.5 - 9.0 S.U.	6.98	7.00	7.05	6.70	6.80	6.70	7.91	8.10	6.98	7.13	7.10	7.24
VOCs[3]														
Benzene	ug/L	10	<1.0	<1.0	<1.0	<1.0	0.27J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	10	<1.0	0.27J	<1.0	2.0	1.3	0.95J	0.86J	0.41J	0.42J	<1.0	0.64J	<1.0
1,1-Dichloroethane	ug/L	10	0.61J	0.36J	0.33J	0.71J	0.80J	0.95J	0.36J	0.58J	0.82J	0.57J	0.58J	0.27J
cis-1,2-Dichloroethene	ug/L	10	3.3	0.96J	0.96J	3.2	2.5	2.1	0.77J	0.91J	1.0	0.76J	0.63J	0.39J
trans-1,2-Dichloroethene	ug/L	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	ug/L	10	<1.0	<1.0	<1.0	<1.0	<1.0	0.23J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	ug/L	10	0.24J	0.20J	<1.0	0.43J	0.29J	0.28J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/L	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	10	1.0	0.85J	0.53J	1.7	1.8	1.6	0.63J	0.75J	0.83J	0.51J	0.53J	<1.0
Vinyl Chloride	ug/L	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes	ug/L	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

mg/L Milligrams per Liter.
S.U. Standard Units.
ug/L Micrograms per Liter.
1 Analytical method for oil & grease is EPA 1664A.
2 Analytical method for pH is EPA 150.1.
3 Analytical method for volatile organic compounds (VOCs) is SW-846 Method 8260B.
VOC concentrations in micrograms per liter (ug/L) and Oil & Grease concentrations in milligrams per liter (mg/L) as reported by the laboratory
NS Not Sampled
J Estimated result. Result is less than reporting limit.

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Table 4. DN-13 Monthly Monitoring for 2007, General Motors Corporation, Moraine, Ohio.

Volatile Organic Compound[1]	Units	1/22/07	2/1/07	3/29/07	4/30/07	5/14/07	6/6/07	7/16/07	8/1/07	9/4/07	10/1/07	11/15/07	12/17/07
Acetone	ug/L	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acetonitrile	ug/L	<20	NS	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Acrolein	ug/L	<20	NS	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Acrylonitrile	ug/L	<20	NS	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Allyl chloride	ug/L	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone	ug/L	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon disulfide	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroprene	ug/L	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dibromochloromethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromomethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	ug/L	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dibromoethane (EDB)	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,4-Dichloro-2-butene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	ug/L	1.4	NS	1.3	1.8	1.5	1.8	1.9	1.9	1.9	1.8	1.8	2.2
1,2-Dichloroethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	5.3	NS	4.3	5.3	5.2	5.9	6.7	6.6	7.3	6.8	7.1	7.1
trans-1,2-Dichloroethene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

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Table 4. DN-13 Monthly Monitoring for 2007, General Motors Corporation, Moraine, Ohio.

Volatile Organic Compound[1]	Units	1/22/07	2/1/07	3/29/07	4/30/07	5/14/07	6/6/07	7/16/07	8/1/07	9/4/07	10/1/07	11/15/07	12/17/07
trans-1,3-Dichloropropene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane	ug/L	<200	NS	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Ethyl methacrylate	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone	ug/L	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Iodomethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isobutyl alcohol	ug/L	<50	NS	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Methacrylonitrile	ug/L	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methylene chloride	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Methyl-2-pentanone	ug/L	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methyl methacrylate	ug/L	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Propionitrile	ug/L	<4.0	NS	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Styrene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	5	NS	3.7	3.1	2.9	3.2	3.0	3.4	3.5	3.4	3.7	3.7
Trichlorofluoromethane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	ug/L	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl acetate	ug/L	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Vinyl chloride	ug/L	2.0	NS	5.7	3.7	3.1	4.1	2.5	2.4	2.5	2.3	1.6	2.3
Xylenes (total)	ug/L	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs	**ug/L**	**13.70**	**0.00**	**15.00**	**13.90**	**12.70**	**15.00**	**14.10**	**14.30**	**15.20**	**14.30**	**14.20**	**15.30**

1 Analytical method for VOC analysis is SW-846 Method 8260B.
All concentrations in micrograms per liter (ug/L) as reported by the laboratory.
< - Value below laboratory reporting limits.
NS Not Sampled

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Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well	Surface Elevation	TOC Elevation	Well Diameter	Screened Interval				Borehole Depth	Site Coordinates		State Plane Coordinates		Geologic
ID #	ft msl	ft msl	inches	ft bls	ft bls	ft msl	ft msl	ft bls	Northing, y	Easting, x	Northing, y	Easting, x	Modifiers
Upper Aquifer Wells													
W-1-N	737.61	739.02	4	35	70	703	668	70	6618	5037	625116.2043	1483946.9943	UA:TT
W-2-N	729.68	731.68	4	35	60	695	670	60	5264	4744	623865.9104	1483351.6742	UA
W-3-N	731.98	733.66	4	32	57	700	675	57	5157	5032	623695.8796	1483607.3111	UA
W-4-N	729.88	731.63	4	40	65	690	665	65	5157	5224	623651.9134	1483795.0108	UA:TT
HR-1	730.10	732.71	2	47	57	683	673	57	3420	5205	621967.7490	1483378.1275	UA:TT
HR-2	732.62	734.75	2	47	57	686	676	58	5209	5455	623649.3090	1484030.9226	UA:TT
HR-3	734.31	736.75	2	50	60	684	674	61	5211	5648	623612.1403	1484238.0984	UA:TT
HR-4	740.61	742.60	2	55	65	686	676	67	6111	5214	624582.0074	1484003.5860	UA:TT
HR-5	730.95	734.27	2	44	54	687	677	59	4760	4985	623354.8172	1483478.6541	UA:TT
HR-6	730.18	732.66	2	43	53	687	677	59	4009	4985	622588.6622	1483298.8965	UA:TT
HR-7	731.00	731.73	2	47	57	684	674	58	4743	4678	623373.8266	1483168.5266	UA:TT
HR-8	740.84	743.42	2	54	64	687	677	76	6819	5626	625177.0505	1484566.7534	UA
HR-9	741.00	743.51	2	58	68	683	673	75	7669	5508	626071.2019	1484648.1158	UA
HR-11	740.90	743.33	2	60	70	681	671	75	7313	6207	625682.4858	1485262.9762	UA
HR-16	724.60	727.01	4	42	62	683	663	70	2354	4198	621167.6648	1482171.8435	UA:TT
HR-17	725.40	726.43	4	27	47	698	678	56	2457	4776	621128.4488	1482780.5158	UA:TT
W-1-S	728.23	729.29	4	25	60	703	668	60	2777	4958	621396.0291	1482990.4046	UA:TT
W-2-S	725.01	726.64	4	30	65	695	660	65	1786	4207	620618.7813	1482078.7622	UA:TT
W-3-S	NM	729.17	4	36	76	NA	NA	76	1678	4386	620466.6686	1482207.4451	UA
W-4-S	726.66	727.92	4	30	70	697	657	70	1671	4785	620394.9579	1482564.2035	UA
GM-2	NM	735.81	2	45	55	NA	NA	55	1102	5803	619586.2208	1483427.9998	UA
4S	NM	731.36	4	30	65	NA	NA	65	1071	5564	619578.3226	1483129.6378	UA
GM-6	NM	730.27	2	35	45	NA	NA	45	1042	5306	619627.6172	1482930.9571	UA:TT
GM-8	735.17	735.17	2	40	50	695	685	50	1283	5285	619866.4552	1482965.5535	UA:TT
GM-10	NM	723.90	2	40	50	NA	NA	50	162	5258	618762.6410	1482667.7306	UA:TT
GM-16	NM	725.30	2	48	58	NA	NA	58	652	4566	619420.5576	1482149.1466	UA
GM-17	NM	723.84	2	40	50	NA	NA	50	672	5174	619311.8761	1482697.0210	UA:TT
GM-18	NM	723.80	2	45	55	NA	NA	55	583	4993	619229.5883	1482505.4542	UA
GM-19S	NM	730.92	2	47	57	NA	NA	57	1767	5274	620339.5683	1483017.2551	UA:TT
GM-21	725.36	725.00	2	45	55	680	670	55	1519	6052	619920.5937	1483764.5951	UA:TT
GM-22	731.84	731.63	2	44	54	688	678	54	2531	6285	620840.4209	1484226.5683	UA:TT
GM-23	NM	731.07	2	24	34	NA	NA	34	5393	6018	623699.2336	1484619.9213	UA:TUT
GM-24	747.61	747.29	2	58	68	690	680	70	8122	7812	625945.0802	1486991.6971	UA

Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well	Surface Elevation	TOC Elevation	Well Diameter	Screened Interval				Borehole Depth	Site Coordinates		State Plane Coordinates		Geologic
ID #	ft msl	ft msl	inches	ft bls	ft bls	ft msl	ft msl	ft bls	Northing, y	Easting, x	Northing, y	Easting, x	Modifiers
Upper Aquifer Wells													
GM-25	747.05	746.17	2	48	58	699	689	58	4930	8170	622786.2705	1486599.6865	UA:TT
GM-26	722.29	722.29	2	50	60	672	662	60	-988	4961	617729.9788	1482129.0695	UA
GM-27	731.03	730.57	2	40	50	691	681	58	5393	6029	623696.6136	1484630.7659	UA:TT
GM-28	NM	736.46	2	22	32	NA	NA	32	5041	5916	623392.3799	1484436.8617	UA:TUT
GM-29	731.31	731.37	2	28	38	703	693	38	5209	5974	623534.4471	1484535.0727	UA:TUT
GM-30[1]	NM	734.79	2	28	38	NA	NA	38	5559	5970	623876.3465	1484609.5933	UA:TUT
GM-31[1]	732.05	732.13	2	51	61	681	671	62	2939	5914	621336.9337	1483965.1322	UA:TT
GM-32	732.47	732.08	2	51	61	681	671	61	3486	6070	620114.2493	1483379.9656	UA:TT
GM-33	730.30	729.77	2	48	58	682	672	58	2278	5762	620761.9955	1483714.2282	UA:TT
GM-34	731.06	730.56	2	26	36	705	695	36	2278	5770	620753.8480	1483727.5719	UA:WT
GM-35	731.56	731.27	2	57	67	675	665	70	1750	5510	620389.3810	1483279.5201	UA:TT
GM-36	731.44	731.11	2	25	35	706	696	35	1755	5551	620383.2312	1483300.8386	UA:WT
GM-37	730.36	730.05	2	46	56	684	674	56	1857	5696	620407.3595	1483456.0282	UA:TT
GM-38	730.31	729.88	2	24	34	706	696	34	1858	5686	620403.1387	1483471.6479	UA:WT
GM-43	729.41	729.00	2	40	50	NA	NA	54	3655	5211	622192.2046	1483441.3723	UA:TT
GM-44	729.30	728.77	2	51	61	NA	NA	62	3137	5217	621686.3425	1483331.5124	UA:TT
GM-45	730.03	729.75	2	50	60	NA	NA	60	2853	5217	621409.1769	1483266.9285	UA:TT
GM-46	728.13	727.79	2	19.8	29.8	708	698	29.8	5130	6257	623393.7601	1484777.0271	UA:TUT
GM-47	727.03	726.75	2	49.4	59.4	678	668	59.4	1312	4776	620060.6143	1482479.3608	UA:TT
GM-48	728.98	728.67	2	63.2	73.2	666	656	73.2	610	4200	619488.4287	1481740.8154	UA:TT
GM-49	728.28	727.88	2	66.9	76.9	661	651	76.9	-222	4383	618643.7266	1481742.8231	UA:TT
GM-50	727.03	726.56	2	29.7	39.7	697	687	39.7	1312	4773	620065.0482	1482445.8840	UA:WT
GM-51	728.82	728.30	2	34.3	44.3	695	685	44.3	614	4198	619465.2399	1481753.1472	UA:WT
GM-52	728.16	727.62	2	34	44	694	684	44	-226	4383	618604.5296	1481740.7235	UA:WT
GM-53	730.53	730.35	2	23	33	708	698	33	2999	6824	621184.8324	1484855.6876	UA:TT
GM-55	719.90	719.86	2	25	35	695	685	35	-646	5202	618008.2839	1482441.5719	UA:WT
GM-57	719.41	721.74	2	25	35	694	684	35	-993	4966	617724.0851	1482132.1351	UA:WT
GM-59	732.46	732.25	2	25	35	707	697	35	4501	6323	622761.5281	1484712.7729	UA:WT
GM-60	732.46	732.24	2	42	52	690	680	52	4501	6324	622761.3002	1484712.7809	UA:TT
GM-62	722.17	722.11	2	50	60	672	662	60	-189	5443	618397.3774	1482818.1330	UA
GM-63	726.21	725.79	2	30	40	696	686	40	1625	4919	620283.7218	1482686.3290	UA:WT
GM-64	726.38	725.95	2	50	60	676	666	60	1625	4914	620284.6106	1482681.2885	UA:TT

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Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well	Surface Elevation	TOC Elevation	Well Diameter	Screened Interval				Borehole Depth	Site Coordinates		State Plane Coordinates		Geologic
ID #	ft msl	ft msl	inches	ft bls	ft bls	ft msl	ft msl	ft bls	Northing, y	Easting, x	Northing, y	Easting, x	Modifiers
Upper Aquifer Wells													
GM-65S	723.94	723.58	2	42	52	682	672	52	-1488	4312	617392.2259	1481382.4271	UA
GM-66	733.50	733.22	2	45	55	688	678	57	4377	5714	622780.3860	1484091.5572	UA:TT
GM-67S	732.54	732.06	2	44	54	689	679	54	4744	6096	623050.0533	1484547.2174	UA:TT
GM-68S	732.48	732.18	2	39.5	49.5	693	683	49.5	4064	6358	622326.2125	1484652.8528	UA:TT
GM-71	737.19	736.82	2	21	31	716	706	37	4494	6849	622633.7567	1485222.9070	UA:TUT
GM-72	737.05	736.78	2	52	62	685	675	67	4496	6861	622633.7567	1485233.9320	UA:TT
GM-74S	732.52	732.17	2	40	50	693	683	50	4198	6417	622444.5430	1484733.8601	UA:TT
GM-75S	738.26	737.69	2	42	52	696	686	52	4605	6635	622790.6745	1485039.3503	UA:TT
GM-76S	739.49	739.00	2	27	37	712	702	37	5396	6730	623538.7809	1485313.4176	UA:TT
GM-77S	741.49	741.14	2	33	43	708	698	43	3618	7743	621576.9342	1485892.0315	UA:TT
GM-78	721.58	721.18	2	40	50	682	672	70	-267	5723	618257.5787	1483035.5947	UA
GM-79	718.54	717.91	2	45	55	674	664	60	-29	3623	618970.9862	1481045.8893	UA:TT
GM-80	716.23	715.82	2	15	25	701	691	25	-1046	3753	617951.2997	1480939.3277	UA:WT
GM-81	715.8	715.31	2	50	60	666	656	90	-1063	3752	617934.8895	1480934.7439	UA
EAST	NM	730.98	2	NA	NA	NA	NA	71	2120	5818	620545.6947	1483674.2190	UA:TT
WEST	NM	731.08	2	NA	NA	NA	NA	52	2004	5463	620509.6228	1483299.0985	UA:TT
WSU-17	NM	726.18	2	NA	NA	NA	NA	66	970	5279	619558.2279	1482898.5384	UA:TT
WSU-18	NM	733.52	2	NA	NA	NA	NA	61	1004	5458	619554.9290	1483096.6469	UA:TT
WSU-19	NM	726.62	2	NA	NA	NA	NA	62	1182	5212	619736.8872	1482880.3995	UA:TT
WSU-22	726.21	726.49	2	NA	NA	NA	NA	52	1625	4917	620311.4363	1482687.2293	UA:TT
WSU-23	724.65	724.90	2	NA	NA	NA	NA	58	1535	4204	620381.0854	1481978.6336	UA:TT
WSU-24	725.10	724.82	2	NA	NA	NA	NA	66	574	5663	619124.1425	1483169.1107	UA:TT
TW-2	NM	733.38	10	35	45	NA	NA	45	1027	5337	619568.4036	1482942.6663	UA:TT
ME-2[1]	732.38	732.08	2	27	37	705	695	37	2945	5973	621327.2669	1484014.6258	UA:WT
ME-3[1]	732.23	731.73	2	29	39	703	693	39	2897	5938	621288.3532	1483969.5620	UA:WT
ME-4[1]	732.05	732.24	2	26	36	706	696	36	2925	5914	621321.4422	1483952.3693	UA:WT
ME-6[1]	733.09	732.68	2	29	39	704	694	39	3325	5927	621706.9517	1484057.0461	UA:WT
Lower Aquifer Wells													
GM-1	NM	735.74	2	90	100	NA	NA	100	1087	5803	619570.7118	1483421.8130	LA
GM-3	NM	730.44	2	90	100	NA	NA	100	1023	5309	619621.9727	1482926.3542	LA
GM-4	NM	731.46	2	140	150	NA	NA	150	1010	5322	619602.7099	1482922.7333	LA
GM-5	NM	731.29	2	90	100	NA	NA	100	1037	5512	619588.6213	1483126.6107	LA

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Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well	Surface Elevation	TOC Elevation	Well Diameter	Screened Interval				Borehole Depth	Site Coordinates		State Plane Coordinates		Geologic
ID #	ft msl	ft msl	inches	ft bls	ft bls	ft msl	ft msl	ft bls	Northing, y	Easting, x	Northing, y	Easting, x	Modifiers
Lower Aquifer Wells													
GM-7R	NM	735.61	2	80	90	NA	NA	91	1247	5295	619863.8298	1482962.1340	LA
GM-9	NM	724.07	2	90	100	NA	NA	100	146	5247	618771.8670	1482674.1902	LA
GM-11	NM	723.71	2	90	100	NA	NA	100	679	5164	619318.6270	1482694.0524	LA
GM-13	NM	723.82	2	90	100	NA	NA	100	566	4990	619239.1943	1482501.6168	LA
GM-14	NM	723.50	2	140	150	NA	NA	150	611	5030	619244.0886	1482515.5184	LA
GM-15	NM	725.23	2	90	100	NA	NA	100	664	4581	619427.7004	1482156.5128	LA
GM-19D	NM	730.73	4	145	150	NA	NA	150	1775	5298	620339.8625	1483063.5273	LA
GM-20D	NM	727.26	4	87	92	NA	NA	92	619	5699	619177.7271	1483236.8889	LA
GM-39	731.15	730.95	2	106	116	625	615	116	5396	6006	623705.5364	1484609.0626	LA
GM-40	727.28	727.04	2	140	150	587	577	150	3089	4984	621693.8055	1483084.8121	LA
GM-41	731.22	733.65	2	104	114	627	617	114	3430	6684	621635.7801	1484818.4021	LA
GM-42	729.48	729.16	2	140	150	589	579	150	2338	5651	620810.1968	1483562.5296	LA
GM-54	730.51	730.29	2	70	80	661	651	80	2995	6818	621182.1891	1484848.6752	LA
GM-56	719.75	719.52	2	75	85	645	635	85	-646	5209	618006.1752	1482448.5647	LA:NTP
GM-58	735.59	735.46	2	72	82	664	654	82	3451	7183	621541.9882	1485308.7468	LA:BT
GM-61	732.48	732.23	2	70	80	662	652	80	4501	6318	622762.6947	1484707.4691	LA:BT
GM-65D	723.83	723.54	2	85	95	639	629	108	-1491	4311	617389.5183	1481380.4746	LA:NTP
GM-67D	732.64	732.19	2	70	80	663	653	121	4744	6082	623053.5624	1484533.4779	LA:BT
GM-68D	732.46	732.27	2	64	74	668	658	150	4064	6358	622327.5383	1484645.8862	LA:BT
GM-69	732.42	732.08	2	90	100	642	632	140	3022	6352	621314.8199	1484401.6371	LA
GM-70	737.47	737.19	2	72	82	665	655	120	3887	7283	621944.0370	1485505.8829	LA
GM-73	737.34	736.97	2	85	95	652	642	120	4495	6843	622635.9765	1485216.5022	LA
GM-74D	732.49	732.04	2	69	79	663	653	120	4203	6417	622450.0123	1484735.6502	LA:BT
GM-75D	738.13	737.68	2	85	95	653	643	120	4604	6623	622793.2406	1485027.5873	LA
GM-76D	739.48	738.94	2	70	80	669	659	120	5392	6730	623535.2043	1485312.4245	LA:BT
GM-77D	741.52	740.93	2	75	85	667	657	100	3615	7741	621574.4283	1485889.3662	LA:BT
HR-10	740.90	742.81	4	115	125	626	616	125	7686	5492	626078.4125	1484653.5358	LA:NTP
HR-12	741.00	742.64	4	120	130	621	611	130	7333	6194	625702.3993	1485250.0490	LA
HR-13	733.20	735.03	4	75	85	658	648	85	5221	5665	623616.8315	1484215.3411	LA:BT
HR-14	729.90	731.63	4	78	88	652	642	88	5178	5209	623675.4267	1483782.2839	LA
HR-15	732.10	733.74	4	88	98	644	634	98	5161	5020	623712.7941	1483595.9072	LA
M73C	NM	716.55	NA	NA	NA	NA	NA	NA	180	4539	618973.2537	1482114.3309	LA
MT69	719.84	722.71	8	NA	NA	NA	NA	158	-988	5020	617749.1907	1482121.3945	LA
MT576M	750.00	751.46	5	NA	NA	NA	NA	114	4804	9620	622940.2909	1487799.4686	LA

Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well	Surface Elevation	TOC Elevation	Well Diameter	Screened Interval				Borehole Depth	Site Coordinates		State Plane Coordinates		Geologic
ID #	ft msl	ft msl	inches	ft bls	ft bls	ft msl	ft msl	ft bls	Northing, y	Easting, x	Northing, y	Easting, x	Modifiers
Lower Aquifer Wells													
MT596M*	759.18	757.73	5	NA	NA	NA	NA	89	6438	10644	624057.1091	1488849.1418	LA
DN-13	724.09	727.54	20	110	170	614	554	170	470	4760	619196.1959	1482267.5426	LA
31	NM	734.05	20	90	122	NA	NA	122	NM	NM	623727.4107	1485049.2752	LA
39	NM	732.07	20	117	142	NA	NA	145	NM	NM	623442.4628	1484987.5777	LA

TOC - Top of Casing.
NA - Not Available.
ft bls - Feet Below Land Surface.
NM - Not Measured.
ft msl - Feet Above Mean Sea Level.
(1) - Depth of screened interval and total well depth have been modified from the well log due to site construction.
* Measuring point is top of cement housing.
State plane coordinates in NAD 83 Ohio South
Site coordinates based on site-specific benchmarks.
UA - Upper Aquifer
LA - Lower Aquifer
TT - Top of Till
TUT - Top of Upper Till
BT - Below Till
WT - Water Table
NTP - No Till Present

Table 6. Water-Level Measurements Collected During April 30 and May 1, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Upper Aquifer Wells			
W-1-N	739.02	27.27	711.75
W-2-N	731.68	20.68	711.00
W-3-N	733.66	22.69	710.97
W-4-N	731.63	20.62	711.01
HR-1	732.71	22.87	709.84
HR-2	734.75	23.65	711.10
HR-3	736.75	25.67	711.08
HR-4	742.60	31.21	711.39
HR-5	734.27	23.62	710.65
HR-6	732.66	22.51	710.15
HR-7	731.73	21.06	710.67
HR-8	743.42	31.76	711.66
HR-9	743.51	31.56	711.95
HR-11	743.33	31.17	712.16
HR-16	727.01	17.78	709.23
HR-17	726.43	15.89	710.54
W-1-S	729.29	19.70	709.59
W-2-S	726.64	18.03	708.61
W-3-S	729.17	20.50	708.67
W-4-S	727.92	18.92	709.00
GM-2	735.81	26.66	709.15
4S	731.36	22.67	708.69
GM-6	730.27	22.01	708.26
GM-8	735.17	26.73	708.44
GM-10	723.90	15.71	708.19
GM-16	725.30	18.39	706.91
GM-17	723.84	15.52	708.32
GM-18	723.80	15.59	708.21
GM-19S	730.92	21.62	709.30
GM-21	725.00	15.55	709.45
GM-22	731.63	21.30	710.33
GM-23	731.07	20.11	710.96
GM-24	747.29	34.41	712.88
GM-25	746.17	34.51	711.66
GM-26	722.29	14.71	707.58
GM-27	730.57	19.30	711.27
GM-28	736.46	25.37	711.09
GM-29	731.37	19.39	711.98
GM-30	734.79	24.01	710.78
GM-31	732.13	22.17	709.96
GM-32	732.08	22.81	709.27
GM-33	729.77	19.95	709.82
GM-34	730.56	20.76	709.80
GM-35	731.27	21.99	709.28

Table 6. Water-Level Measurements Collected During April 30 and May 1, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Upper Aquifer Wells			
GM-36	731.11	21.74	709.37
GM-37	730.05	20.34	709.71
GM-38	729.88	20.48	709.40
GM-43	729.00	18.88	710.12
GM-44	728.77	18.98	709.79
GM-45	729.75	19.38	710.37
GM-46	727.79	16.52	711.27
GM-47	726.75	18.32	708.43
GM-48	728.67	20.67	708.00
GM-49	727.88	20.38	707.50
GM-50	726.56	18.18	708.38
GM-51	728.30	20.90	707.40
GM-52	727.62	20.14	707.48
GM-53	730.35	19.89	710.46
GM-55	719.86	12.03	707.83
GM-57	721.74	14.61	707.13
GM-59	732.25	21.34	710.91
GM-60	732.24	21.68	710.56
GM-62	722.11	13.92	708.19
GM-63	725.79	17.57	708.22
GM-64	725.95	17.24	708.71
GM-65S	723.58	16.62	706.96
GM-66	733.22	22.59	710.63
GM-67S	732.06	21.11	710.95
GM-68S	732.18	21.38	710.80
GM-71	736.82	25.43	711.39
GM-72	736.78	25.71	711.07
EAST	730.98	21.18	709.80
WEST	731.08	21.81	709.27
WSU-17	726.18	17.88	708.30
WSU-18	733.52	24.99	708.53
WSU-19	726.62	18.28	708.34
WSU-22	NA	NA	NA
WSU-23	724.90	16.50	708.40
WSU-24	724.82	16.03	708.79
TW-2	733.38	NM	NA
ME-2	732.08	21.99	710.09
ME-3	731.73	21.76	709.97
ME-4	732.24	22.32	709.92
ME-6	732.68	22.77	709.91
Lower Aquifer Wells			
GM-1	735.74	26.97	708.77
GM-3	730.44	22.29	708.15
GM-4	731.46	23.31	708.15

Table 6. Water-Level Measurements Collected During April 30 and May 1, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Lower Aquifer Wells			
GM-5	731.29	22.92	708.37
GM-7R	735.61	27.02	708.59
GM-9	724.07	16.26	707.81
GM-11	723.71	16.06	707.65
GM-13	723.82	16.62	707.20
GM-14	723.50	16.53	706.97
GM-15	725.23	17.14	708.09
GM-19D	730.73	21.58	709.15
GM-20D	727.26	18.37	708.89
GM-39	730.95	19.79	711.16
GM-40	727.04	17.81	709.23
GM-41	733.65	23.40	710.25
GM-42	729.16	20.08	709.08
GM-54	730.29	19.98	710.31
GM-56	719.52	11.76	707.76
GM-58	735.46	24.84	710.62
GM-61	732.23	21.71	710.52
GM-65D	723.54	16.64	706.90
GM-67D	732.19	21.49	710.70
GM-68D	732.27	21.82	710.45
GM-69	732.08	22.12	709.96
GM-70	737.19	26.59	710.60
GM-73	736.97	NA	NI
GM-74D	732.04	NA	NI
GM-75D	737.68	NA	NI
GM-76D	738.94	NA	NI
GM-77D	740.93	NA	NI
HR-10	742.81	30.86	711.95
HR-12	742.64	30.51	712.13
HR-13	735.03	23.97	711.06
HR-14	731.63	20.95	710.68
HR-15	733.74	23.06	710.68
M73C	716.55	9.57	706.98
MT69	722.71	15.32	707.39
MT576M	751.46	38.96	712.50
MT596M*	757.73	44.04	713.69
Production and Fire Wells			
DN-13 (County Well) (ON)	727.78	71.47	656.31
11B	NS	OFF	NA
12A	NS	ON	NA
31	734.05	23.38	710.67
34	733.46	22.88	710.58
39	732.07	21.56	710.51

Table 6. Water-Level Measurements Collected During April 30 and May 1, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Production and Fire Wells			
A	739.00	25.93	713.07
FW-1A	739.89	28.59	711.30
FW-2	737.48	27.13	710.35
FW-3	739.26	28.95	710.31
FW-4	731.62	22.12	709.50
Stream Gauge			
SG1	747.64	NM	NA
SG2	709.95	0.87	709.08
SG3	718.45	6.85	711.60
SG4	714.78	5.96	708.82
SG5	711.10	1.40	709.70
SG6	723.21	14.38	708.83
SG7	731.55	15.17	716.38

Measuring point is to top of the PVC Casing.
Water-level elevations are reported in feet above mean sea level (msl).
Depth-to-water elevations were measured on April 30 and May 1, 2007 using an electronic water level indicator (more than one meter was used and WL elevations reflect a calibration factor).
Depth-to-water measurements are reported in feet below the measuring point.
NS - Not Surveyed.
NM - Not measured.
*Measuring point is top of cement housing.
NA - Not applicable.
NI - Not Installed.

Table 7. Water-Level Measurements Collected During October 24-25, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Upper Aquifer Wells			
W-1-N	739.02	31.01	708.01
W-2-N	731.68	24.15	707.53
W-3-N	733.66	26.24	707.42
W-4-N	731.63	24.18	707.45
HR-1	732.71	26.58	706.13
HR-2	734.75	27.29	707.46
HR-3	736.75	29.31	707.44
HR-4	742.60	34.65	707.95
HR-5	734.27	27.22	707.05
HR-6	732.66	26.13	706.53
HR-7	731.73	NM	NA
HR-8	743.42	35.21	708.21
HR-9	743.51	34.84	708.67
HR-11	743.33	34.66	708.67
HR-16	727.01	21.40	705.61
HR-17	726.43	20.59	705.84
W-1-S	729.29	23.37	705.92
W-2-S	726.64	21.73	704.91
W-3-S	729.17	24.27	704.90
W-4-S	727.92	22.80	705.12
GM-2	735.81	30.98	704.83
4S	731.36	26.85	704.51
GM-6	730.27	26.06	704.21
GM-8	735.17	30.71	704.46
GM-10	723.90	19.94	703.96
GM-16	725.30	21.10	704.20
GM-17	723.84	19.56	704.28
GM-18	723.80	19.65	704.15
GM-19S	730.92	25.56	705.36
GM-21	725.00	19.88	705.12
GM-22	731.63	25.54	706.09
GM-23	731.07	24.00	707.07
GM-24	747.29	38.11	709.18
GM-25	746.17	38.87	707.30
GM-26	722.29	18.86	703.43
GM-27	730.57	22.97	707.60
GM-28	736.46	29.11	707.35
GM-29	731.37	23.85	707.52
GM-30	734.79	26.97	707.82
GM-31	732.13	26.16	705.97
GM-32	732.08	26.98	705.10
GM-33	729.77	24.04	705.73
GM-34	730.56	24.83	705.73
GM-35	731.27	26.14	705.13
GM-36	731.11	25.86	705.25

Table 7. Water-Level Measurements Collected During October 24-25, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Upper Aquifer Wells			
GM-37	730.05	24.51	705.54
GM-38	729.88	24.65	705.23
GM-43	729.00	22.57	706.43
GM-44	728.77	22.70	706.07
GM-45	729.75	23.08	706.67
GM-46	727.79	20.02	707.77
GM-47	726.75	22.22	704.53
GM-48	728.67	24.61	704.06
GM-49	727.88	24.47	703.41
GM-50	726.56	22.09	704.47
GM-51	728.30	24.38	703.92
GM-52	727.62	24.19	703.43
GM-53	730.35	24.19	706.16
GM-55	719.86	16.34	703.52
GM-57	721.74	18.76	702.98
GM-59	732.25	25.30	706.95
GM-60	732.24	25.29	706.95
GM-62	722.11	18.24	703.87
GM-63	725.79	20.95	704.84
GM-64	725.95	21.12	704.83
GM-65S	723.58	20.99	702.59
GM-66	733.22	26.33	706.89
GM-67S	732.06	24.95	707.11
GM-68S	732.18	25.45	706.73
GM-71	736.82	29.90	706.92
GM-72	736.78	29.81	706.97
GM-74S	732.17	25.26	706.91
GM-75S	737.69	30.79	706.90
GM-76S	739.00	31.31	707.69
GM-77S	741.14	34.28	706.86
GM-78	721.18	17.10	704.08
GM-79	717.91	14.48	703.43
GM-80	715.82	13.15	702.67
GM-81	715.31	12.55	702.76
EAST	730.98	25.32	705.66
WEST	731.08	25.46	705.62
WSU-17	726.18	21.86	704.32
WSU-18	733.52	22.15	711.37
WSU-19	726.62	29.07	697.55
WSU-22	NA	NM	NA
WSU-23	724.90	20.26	704.64
WSU-24	724.82	20.32	704.50
TW-2 (ON)	733.38	32.71	700.67
ME-2	732.08	NM	NA
ME-3	731.73	25.78	705.95
ME-4	732.24	26.34	705.90
ME-6	732.68	26.73	705.95

Table 7. Water-Level Measurements Collected During October 24-25, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Lower Aquifer Wells			
GM-1	735.74	31.17	704.57
GM-3	730.44	26.35	704.09
GM-4	731.46	27.38	704.08
GM-5	731.29	27.05	704.24
GM-7R	735.61	31.04	704.57
GM-9	724.07	20.44	703.63
GM-11	723.71	20.12	703.59
GM-13	723.82	20.69	703.13
GM-14	723.50	20.59	702.91
GM-15	725.23	22.37	702.86
GM-19D	730.73	25.57	705.16
GM-20D	727.26	22.63	704.63
GM-39	730.95	23.40	707.55
GM-40	727.04	22.64	704.40
GM-41	733.65	27.33	706.32
GM-42	729.16	24.05	705.11
GM-54	730.29	24.03	706.26
GM-56	719.52	16.06	703.46
GM-58	735.46	28.89	706.57
GM-61	732.23	26.26	705.97
GM-65D	723.54	20.96	702.58
GM-67D	732.19	25.03	707.16
GM-68D	732.27	25.50	706.77
GM-69	732.08	26.14	705.94
GM-70	737.19	30.68	706.51
GM-73	736.97	30.10	706.87
GM-74D	732.04	25.31	706.73
GM-75D	737.68	30.77	706.91
GM-76D	738.94	31.41	707.53
GM-77D	740.93	34.21	706.72
HR-10	742.81	34.14	708.67
HR-12	742.64	33.98	708.66
HR-13	735.03	27.57	707.46
HR-14	731.63	24.23	707.40
HR-15	733.74	26.51	707.23
M73C	716.55	13.54	703.01
MT69	722.71	19.45	703.26
MT576M	751.46	42.86	708.60
MT596M*	757.73	48.05	709.68

Table 7. Water-Level Measurements Collected During October 24-25, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Production and Fire Wells			
DN-13 (County Well)	727.78	73.83	653.95
11B	NS	ON	NA
12A	NS	OFF	NA
31	734.05	26.34	707.71
34	733.46	28.80	704.66
39	732.07	24.65	707.42
A	739.00	29.54	709.46
FW-1A	739.89	32.20	707.69
FW-2	737.48	30.84	706.64
FW-3	739.26	32.39	706.87
FW-4	731.62	26.22	705.40
Stream Gauge			
SG1	747.64	NM	NA
SG2	709.95	2.20	707.75
SG3	718.45	6.91	711.54
SG4	714.78	6.70	708.08
SG5	711.10	2.18	708.92
SG6	723.21	15.56	707.65
SG7	731.55	14.16	717.39
IRZ Wells			
RZ-1D	731.20	23.66	707.54
RZ-1H	730.32	22.98	707.34
RZ-1K	729.85	22.43	707.42
RZ-1N	731.66	23.90	707.76
RZ-1U	735.13	27.11	708.02
OW-4	735.02	27.14	707.88
RZ-3A	726.74	22.16	704.58
RZ-3F	728.54	23.83	704.71
RZ-3L	730.65	25.42	705.23
RZ-3U	730.37	25.60	704.77
RZ-3Y	731.03	25.68	705.35
RZ-3CC	729.39	24.32	705.07
RZ-3GG	725.77	20.86	704.91
RZ-3II	726.08	21.25	704.83
RZ-3MM	726.92	21.84	705.08
RZ-4A	725.71	20.37	705.34
RZ-4D	727.07	21.76	705.31
RZ-4G	728.16	22.88	705.28
RZ-4I	728.55	23.31	705.24
RZ-4L	727.54	22.55	704.99
RZ-4O	726.46	21.44	705.02

Table 7. Water-Level Measurements Collected During October 24-25, 2007, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Moraine City			
MW-1	715.53	11.12	704.41
MW-4	707.19	7.34	699.85
MW-5	709.34	8.00	701.34
MW-9	712.85	13.08	699.77

Measuring point is to top of the PVC Casing.
Water-level elevations are reported in feet above mean sea level (msl).
Depth-to-water elevations were measured on October 24-25, 2007 using an electronic water level indicator (more than one meter was used and WL elevations reflect a calibration factor).
Depth-to-water measurements are reported in feet below the measuring point.
NS - Not Surveyed.
NM - Not measured.
*Measuring point is top of cement housing.
NA - Not applicable.

Table 8. Summary of Precipitation Measurements Recorded by the National Weather Service, During 2007 - Dayton, Ohio.

Date	Actual Precipitation	Average Precipitation	Departure from Average
January	4.08	2.60	1.48 above average
February	2.52	2.29	0.23 above average
March	4.87	3.29	1.58 above average
April	3.52	4.03	0.51 below average
May	2.93	4.17	1.24 below average
June	1.78	4.21	2.43 below average
July	2.34	3.75	1.41 below average
August	3.28	3.49	0.21 below average
September	4.81	2.65	2.16 above average
October	3.31	2.72	0.59 above average
November	3.00	3.30	0.30 below average
December	4.45	3.08	1.37 above average
2007 Total	**40.89**	**39.58**	**1.31 above average**

All precipitation measurements are reported in inches.
Information obtained from the NOAA Website (www.erh.noaa.gov on 01/15/08)

Table 9. Vertical Gradients For Shallow/Deep Well Pairs During 2007, General Motors Corporation, Moraine, Ohio.

	Vertical Gradients April 30 and May 1, 2007		Vertical Gradients October 24-25, 2007	
Upper/Lower Wells	**Direction**	**Gradient (ft/ft)**	**Direction**	**Gradient (ft/ft)**
Upgradient				
HR-9/HR-10	NA	0.0000	NA	0.0000
HR-11/HR-12	D	-0.0005	D	-0.0002
On-Site				
W-3-N/HR-15	D	-0.0060	D	-0.0039
W-4-N/HR-14	D	-0.0108	D	-0.0016
HR-3/HR-13	D	-0.0008	U	0.0008
GM-8/GM-7R	U	0.0038	U	0.0028
GM-2/GM-1	D	-0.0084	D	-0.0058
GM-6/GM-3	D	-0.0020	D	-0.0022
4S/GM-5	D	-0.0067	D	-0.0057
GM-68S/GM-68D	D	-0.0024	D	-0.0004
GM-75S/GM-75D	NA	Not Installed	U	0.0002
Former Oil House Area				
GM-23/GM-27	U	0.0194	U	0.0331
GM-23/GM-39	U	0.0024	U	0.0059
Offsite/Downgradient				
GM-10/GM-9	D	-0.0076	D	-0.0066
GM-16/GM-15	U	0.0281	D	-0.0319
GM-18/GM-13	D	-0.0224	D	-0.0227
GM-17/GM-11	D	-0.0134	D	-0.0138
GM-55/GM-56	D	-0.0014	D	-0.0012
GM-65S/GM-65D	D	-0.0014	D	-0.0002
GM-26/MT-69	D	-0.0019	D	-0.0017

D - Downward gradient (-).
U - Upward gradient (+).
*Outlier data, not included in discussion of the vertical data range.
NA - Not applicable.

Table 10. Summary of Groundwater Analytical Results from Reactive Zone 1 Wells, General Motors Corporation, Moraine, Ohio.

RZ-1		Sidegradient Well GM-29															
Constituents	**Units**	**9/1/99**	**2/22/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/15/04**	**10/17/05**	**9/28/06**	**9/26/07**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	37.8	36.0	32.5	24.5	27.0	23.8J	<50	19J	17	16J	< 50	18J	21 J	19 J	17 J	15 J
1,1-Dichloroethane	ug/L	4.3	4.1	6.3	16.6	10.8	6.3J	<50	<50	<50	<40	< 50	<33	< 50 U	18 J	15 J	15 J
1,1-Dichloroethene	ug/L	1.3	1.1	1.6	3.1	3.5	3.0J	<50	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 50 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0UJ	<50	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 50 U
cis-1,2-Dichloroethene	ug/L	320	223	1,190J	2,871	2,170	2050J	1,800	1,800	1600	1300	950	1200	1200	1600	1300	1200
Ethylbenzene	ug/L	<1.0	1.4	<1.0	<1.0	<1.0	<1.0UJ	21J	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 50 U
Tetrachloroethene	ug/L	<20	38.7	24.6	20.0	24.4	24.8J	17J	22J	22	18J	47J	18J	20 J	15 J	15 J	18 J
Toluene	ug/L	<1.0	<1.0	<1.0	2.2	<1.0	<1.0UJ	<50	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 50 U
trans-1,2-Dichloroethene	ug/L	11.1	9.1	8.9	14.4	20.4	25.6J	26	24J	21	21	< 25	20	21 J	27 J	20 J	19 J
Trichloroethene	ug/L	878	758	649J	289	354	437J	270	320	380	310	280	390	440	390	310	350
Vinyl chloride	ug/L	3.8	1.0	1.7	788	362	276J	230	280	140	140	99	150	230	490	210	290
Xylenes	ug/L	<1.0	6.0	<1.0	<1.0	<1.0	<1.0UJ	52	<50	<50	<40	< 50	<33	< 50 U	< 100 U	< 67 U	< 100 U
Total VOCs	**ug/L**	**1,256.3**	**1,078.4**	**1,914.6**	**4,028.8**	**2,972.1**	**2,846.5**	**2,416**	**2,465**	**2,180**	**1,805**	**1,376**	**1,796**	**1,932**	**2,559**	**1,887**	**1,907**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 10. Summary of Groundwater Analytical Results from Reactive Zone 1 Wells, General Motors Corporation, Moraine, Ohio.

RZ-1		Upgradient Well GM-23															
Constituents	**Units**	**9/2/99**	**2/21/00**	**5/31/00**	**9/20/00**	**3/20/01**	**6/26/01**	**11/12/01**	**12/12/01**	**6/13/02**	**9/26/02**	**5/22/03**	**9/23/03**	**9/14/04**	**10/17/05**	**9/28/06**	**9/27/07**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	7.2	< 50	< 20	2.0	3.1	1.5	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U	< 200 U
1,1-Dichloroethane	ug/L	32.5	< 50	12.8 J	16.3	17.9	3.7	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U	< 200 U
1,1-Dichloroethene	ug/L	17.2	<50	6.6 J	5.1	15.9	16.3	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U	< 200 U
Benzene	ug/L	1.9	< 50	< 20	< 1.0	1.4	< 1.0	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U	< 200 U
cis-1,2-Dichloroethene	ug/L	7530	10400 D	4080 J	5620	9640	11000	8400	7200	9900	7700	6800	5800	4600	19000	11000	4700
Ethylbenzene	ug/L	< 1.0	<50	< 20	< 1.0	<1.0	< 1.0	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U	< 200 U
Tetrachloroethene	ug/L	6250	7280 J	6200 J	3470	2910	8600	15000	14000	8400	10000	12000	12000	6700	2300	370	280
Toluene	ug/L	<1.0	< 50	< 20	< 1.0	< 1.0	2.3	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U	< 200 U
trans-1,2-Dichloroethene	ug/L	54.5	118 J	39.8 J	33.2	85.5	60.8	<210	< 250	<170	< 200	< 310 U	< 250 U	< 250 U	< 560 U	270 J	130 J
Trichloroethene	ug/L	1460	1350 D	1480 J	609	745	1780J	2200	2100	1900	1700	1500	1600	1100	490 J	95 J	82 J
Vinyl chloride	ug/L	2500	2420 J	140 J	801	765	68	1200	< 500	810	540	1700	690	870	2800	4100	2600
Xylenes	ug/L	< 1.0	< 50	< 20	< 1.0	< 1.0	1.4	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 1100 U	< 670 U	< 400 U
Total VOCs	**ug/L**	**17,853.3**	**21,568**	**11,959.2**	**10,556.6**	**14,183.8**	**21,533.8**	**26,800**	**23,300**	**21,010**	**19,940**	**22,000**	**20,090**	**13,270**	**24,590**	**15,835**	**7,792**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 10. Summary of Groundwater Analytical Results from Reactive Zone 1 Wells, General Motors Corporation, Moraine, Ohio.

RZ-1		Downgradient Well GM-28																
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/23/03**	**10/1/03**	**4/30/04**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**
Volatile Organic Compounds																		
1,1,1-Trichloroethane	ug/L	17.7	23.2	18.1	5.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	<1.0	< 1	< 1 U	< 1.0 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	3.3	4.2	11.8	9.9	<1.0	<1.0	<10	<5.0UJ	<4.0	2.7	4.2	3.3	3.5	3.3	4.0	4.2	4.6
1,1-Dichloroethene	ug/L	<1.0	<1.0	3.8	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	<1.0	< 1	< 1 U	< 1.0 U	< 1 U	< 1 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	<1.0	< 1	< 1 U	< 1.0 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	175	503	2,700	37.0	7.7	352	<5.0	2.2UJ	<2.0	1.1	0.66	0.58	0.45 J	0.41 J	0.32 J	0.26 J	0.72 J
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	0.28J	< 1	< 1 U	< 1.0 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	316	88.4	30.2	2.3	2.8	<1.0	<10	<5.0UJ	<4.0	<1	0.95J	<1.0	< 1	0.88 J	< 1.0 U	< 1 U	< 1 U
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	< 1.8UJ	<4.0	<1.3	1	1.0	< 1	< 1 U	< 1.0 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	9.2	9.7	36.5	22.3	17.6	<1.0	11	11J	8.6	11	9.2	4.0	2.2	1.2	0.63 J	0.66 J	0.58 J
Trichloroethene	ug/L	768	833	14.8	1.6	1.8	<1.0	<10	<5.0UJ	<4.0	0.86J	3.1	1.6	1.6	1.4	0.66 J	0.43 J	0.51 J
Vinyl chloride	ug/L	3.2	<1.0	1.9	12.4	2.6	<1.0	<10	<5.0UJ	<4.0	<1	< 1	0.53J	< 1	0.44 J	1.1	0.42 J	1.2
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1.2	0.87J	1.6	< 1	< 1 U	< 2.0 U	< 2 U	< 2 U
Total VOCs	**ug/L**	**1,292.4**	**1,461.5**	**2,817.1**	**90.5**	**32.5**	**352**	**11**	**11**	**8.6**	**15.66**	**19.98**	**12.89**	**7.75**	**7.63**	**6.71**	**5.97**	**7.61**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 11. Summary of Groundwater Analytical Results from Reactive Zone 2 Wells, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-6														
Constituents	**Units**	**8/31/99**	**2/22/00**	**5/25/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**9/25/02**	**5/22/03**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**
Volatile Organic Compounds																
1,1,1-Trichloroethane	ug/L	2.9	<10	<5.0	<1.0	1.3	1.2	2.2	2.9J	<10	0.83J	13	4.1	2.2	1.4	0.61 J
1,1-Dichloroethane	ug/L	<1.0	<10	1.4J	<1.0	1.6	1.8	2.7	4.8	<10	1.7	7.2	6.3	7.0	6.3	6.4
1,1-Dichloroethene	ug/L	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<2.0	<3.3	<10	< 1	<2.0	0.26 J	< 1.0 U	< 1.4 U	< 1 U
Benzene	ug/L	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<2.0	<3.3	<10	< 1	0.46J	< 1 U	< 1.0 U	< 1.4 U	< 1 U
cis-1,2-Dichloroethene	ug/L	255	541	712	98.8	171	67.0	65	86	5.2	3.3	20	14	13	27	9.2
Ethylbenzene	ug/L	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<2.0	<3.3	<10	< 1	0.54J	< 1 U	< 1.0 U	< 1.4 U	< 1 U
Tetrachloroethene	ug/L	213	18.3	16.2	6.7	34.0	<1.0	8.2	6.1	<10	< 1	12	5.3	9.8	13	4.5
Toluene	ug/L	<1.0	<10	<5.0	1.9	<1.0	2.1	0.42J	1.5J	6.6J	1.8	3.4	< 1 U	< 1.0 U	< 1.4 U	< 1 U
trans-1,2-Dichloroethene	ug/L	<1.0	<10	6.1	2.5	4.3	1.8	1.8	2.0	<5	< 0.5	<1.0	0.56	0.93 J	1.3 J	0.51 J
Trichloroethene	ug/L	474	39.0	28.0	19.0	66.0	4.8	23	19	<10	0.69J	31	9.2	25	32	12
Vinyl chloride	ug/L	<1.0	<10	10.8	6.1	27.7	13.3	13	22	<10	1.8	2.9	2.4	5.6	11	4.5
Xylenes	ug/L	<1.0	<10	<5.0	<1.0	<1.0	2.9	<2.0	<3.3	<10	0.93J	3.2	< 1 U	< 2.0 U	< 2.9 U	< 2 U
Total VOCs	**ug/L**	**944.9**	**598.3**	**774.5**	**135**	**305.9**	**94.9**	**116.32**	**144.3**	**11.8**	**11.05**	**93.7**	**42.12**	**63.53**	**92**	**37.72**

ug/L - Micrograms per liter.
J - Value is estimated.
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< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
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Table 11. Summary of Groundwater Analytical Results from Reactive Zone 2 Wells, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-3													
Constituents	**Units**	**8/31/99**	**2/22/00**	**5/25/00**	**9/21/00**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/21/03**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**
Volatile Organic Compounds															
1,1,1-Trichloroethane	ug/L	42.5	16.0	4.8	6.4	1.6	1.9	<40	<2.5	< 1	0.31J	0.53 J	1.6	1.1	2
1,1-Dichloroethane	ug/L	6.1	12.4	4.7	3.4	5.9	5.6	<40	<2.5	19	24	18	15	8.5	3.8
1,1-Dichloroethene	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	<1.0	< 1 U	< 1.0 U	< 1 U	< 1 U
Benzene	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	0.60J	< 1 U	< 1.0 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	5.7	105	100	2.9	16	22	<20	<1.2	1.3	0.96	2.2	1.1	3.5	1.2
Ethylbenzene	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	0.52J	< 1 U	< 1.0 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	57.9	<10	<1.0	<1.0	1.3	3.4	<40	<2.5	< 1	<1.0	0.21 J	< 1.0 U	1.9	5.2
Toluene	ug/L	<1.0	<10	<1.0	1.4	0.34J	0.19J	<40	<2.5	< 1	2.8	< 1 U	< 1.0 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	<1.0	<10	7.5	2.9	2.7	2.8	<20	<1.2	< 0.5	<0.50	< 0.5 U	< 1.0 U	0.34 J	< 1 U
Trichloroethene	ug/L	47.5	<10	4.3	<1.0	3.8	9.7	<40	<2.5	1.2	1.5	1.5	1.9	2.4	3.6
Vinyl chloride	ug/L	<1.0	<10	54.7	2.1	7.3	11	<40	<2.5	0.36J	<1.0	1.1	1.6	2.2	0.82 J
Xylenes	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	2.8	< 1 U	< 2.0 U	< 2 U	< 2 U
Total VOCs	**ug/L**	**159.7**	**133.4**	**176**	**19.1**	**38.94**	**56.59**	**0**	**0**	**21.86**	**33.49**	**23.54**	**21.2**	**19.94**	**16.62**

ug/L - Micrograms per liter.
J - Value is estimated.
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< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
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Carbon source introductions began in December 1999.

Table 11. Summary of Groundwater Analytical Results from Reactive Zone 2 Wells, General Motors Corporation, Moraine, Ohio.

RZ-2		Below Introduction Zone GM-31										
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/31/00**	**9/21/00**	**11/15/01**	**9/24/02**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**
Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	1.4 J	3.4	2.3 J	3.7
1,1-Dichloroethane	ug/L	1.3	1.4	1.8	1.1	3.1J	5.9J	6.0	4 J	6.2	5.1	4.8
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	< 5 U	0.42 J	< 4 U	< 3.3 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	< 5 U	< 2.0 U	< 4 U	< 3.3 U
cis-1,2-Dichloroethene	ug/L	7.80	27.8	48.1	40.2	120	200	170	120	120	110	100
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	< 5 U	< 2.0 U	< 4 U	< 3.3 U
Tetrachloroethene	ug/L	1.3	<1.0	<1.0	<1.0	<4.0	<6	<5.0	2.5 J	< 2.0 U	< 4 U	< 3.3 U
Toluene	ug/L	<1.0	<1.0	1.5	<1.0	<4.0	<6	1.3J	< 5 U	< 2.0 U	< 4 U	< 3.3 U
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	1.8J	3.5	3.5	2.7	3.7	2.9 J	2.8 J
Trichloroethene	ug/L	27.2	13.6	8.4	8.5	11	10	28	29	67	65	90
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	7.4	19	10	2.4 J	3.1	1.2 J	1.1 J
Xylenes	ug/L	<1.0	1.1	1.6	<1.0	<4.0	<6	<5.0	< 5 U	< 4.0 U	< 8 U	< 6.7 U
Total VOCs	**ug/L**	**37.6**	**43.9**	**61.4**	**49.8**	**143.3**	**238.4**	**218.8**	**162**	**203.82**	**186.5**	**202.4**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 12. Summary of Groundwater Analytical Results from Reactive Zone 3 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Upgradient Well EAST														
Constituents	**Units**	**9/21/99**	**2/23/00**	**5/25/00**	**9/22/00**	**3/19/01**	**6/25/01**	**11/12/01**	**12/11/01**	**6/12/02**	**9/23/02**	**5/21/03**	**9/25/03**	**9/13/04**	**10/18/05**	**9/21/06**
Volatile Organic Compounds																
1,1,1-Trichloroethane	ug/L	21.0	20.6	20.5	22.2	19.3	16.7	13	12	14	10	6.2	7.1	5.7	5.9	10
1,1-Dichloroethane	ug/L	5.4	7.3	7.7	7.7	5.9	5.5	6.2	5.3	6.0	3.9	1.9	2.3	0.72 J	3.0	3.2
1,1-Dichloroethene	ug/L	<1.0	<1.0	1.02J	1.2	1.2	<1.0	0.90J	<3.3	1.3	0.73J	< 1.4	<2.0	0.34 J	< 1.0 U	0.59 J
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1 U	< 1.0 U	< 1.4 U
cis-1,2-Dichloroethene	ug/L	9.1	24.0	32.0	77.3	117	80.1	51	51	33	8.8	4.5	4.3	1.6	3.1	4.1
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1	< 1.0 U	< 1.4 U
Tetrachloroethene	ug/L	61.0	77.1	54.6	55.8	49.9	59.3	56	49	37	49	42	47	40	47	41
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1 U	< 1.0 U	< 1.4 U
trans-1,2-Dichloroethene	ug/L	<1.0	2.0	1.5	1.8	5.8	3.3	2.7	2.4	1.3	<1	< 0.72	<1.0	< 0.5 U	< 1.0 U	< 1.4 U
Trichloroethene	ug/L	56.1	90.1	81.3	97.2	105	117	92	94	75	46	29	35	23	23	29
Vinyl chloride	ug/L	<1.0	5.3	1.2	3.0	4.8	<1.0	1.5J	0.66J	0.48	<2	< 1.4	<2.0	< 1 U	1.2	< 1.4 U
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1 U	< 2.0 U	< 2.9 U
Total VOCs	**ug/L**	**152.6**	**226.4**	**199.82**	**266.2**	**308.9**	**281.9**	**223.3**	**214.36**	**168.08**	**118.43**	**83.6**	**95.7**	**71.36**	**83.2**	**87.89**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
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U - Constituent not detected.
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Carbon source introductions began in December 1999.

Table 12. Summary of Groundwater Analytical Results from Reactive Zone 3 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-32															
Constituents	**Units**	**9/22/99**	**2/28/00**	**5/30/00**	**9/25/00**	**3/19/01**	**6/25/01**	**11/12/01**	**12/11/01**	**6/12/02**	**9/20/02**	**5/23/03**	**10/1/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	<1.0	<10	<100	<1.0	<50	9.2	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 5 U
1,1-Dichloroethane	ug/L	3.3	101	46.0J	35.9	<50	3.1	6.2	<100	12	9.7J	5.5	5.5	3 J	4.9 J	3.7 J	4.3 J
1,1-Dichloroethene	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 5 U
Benzene	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	4.3J	<100	4.0	<10	1.6	1.5J	< 10 U	< 10 U	< 10 U	1.6 J
cis-1,2-Dichloroethene	ug/L	2.6	<10	<100	<1.0	<50	32.0	<2.5	<50	<10	<5	0.66	<1.0	< 5 U	< 10 U	< 10 U	< 5 U
Ethylbenzene	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	0.79J	<100	<20	<10	0.65J	0.73J	< 10 U	< 10 U	< 10 U	< 5 U
Tetrachloroethene	ug/L	1.2	<10	<100	<1.0	<50	37.6	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 5 U
Toluene	ug/L	1.0	20.6	<100	10.4	<50	<1.0	12	<100	4.9	<10	2.2	2.3	< 10 U	< 10 U	< 10 U	< 5 U
trans-1,2-Dichloroethene	ug/L	4.2	111	41.0J	20.3	<50	2.5	2.9	<50	3.0	<5	1.6	1.0	< 5 U	< 10 U	< 10 U	1 J
Trichloroethene	ug/L	3.2	<10	<100	<1.0	<50	107	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 5 U
Vinyl chloride	ug/L	3.0	<10	<100	<1.0	<50	<1.0	1.1J	<100	3.0	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 5 U
Xylenes	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	3.0J	<100	<20	<10	2.1	3.6	< 10 U	< 20 U	< 20 U	3.4 J
Total VOCs	**ug/L**	**18.5**	**232.6**	**87**	**66.6**	**0**	**191.4**	**30.29**	**0**	**26.9**	**9.7**	**14.31**	**14.63**	**3**	**4.9**	**3.7**	**10.3**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 12. Summary of Groundwater Analytical Results from Reactive Zone 3 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-8										Downgradient Well GM-6									
Constituents	**Units**	**3/6/98**	**9/20/99**	**9/26/00**	**11/9/01**	**9/20/02**	**10/1/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**	**3/6/98**	**9/20/99**	**9/26/00**	**11/9/01**	**9/20/02**	**10/2/03**	**9/14/04**	**10/19/05**	**9/19/06**	**9/18/07**
Volatile Organic Compounds																					
1,1,1-Trichloroethane	ug/L	6.7	1.9	<1.0	0.40J	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	36.2	24.6	12.1	3.9	1.4J	0.19J	< 1 U	< 1.0 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	49.3	30.2	36.5	40	63	48	15	16	18	9.1	35.3	33.2	13.0	14	60	20	18	21	16	26
1,1-Dichloroethene	ug/L	1.0	<1.0	<1.0	< 1.0	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	<1.0	1.2	<1.0	< 2.0	<2.0	<1.0	< 1 U	< 1.0 U	< 1 U	< 1 U
Benzene	ug/L	2.3	3.4	1.1	0.78J	5.5	5.4	4.2	3.5	2.1 J	2.4	<1.0	<1.0	<1.0	< 2.0	2.2	1.0	1.7	0.49 J	< 1 U	0.42 J
cis-1,2-Dichloroethene	ug/L	56.1	26.2	1.5	2.0	5.5	<1.0	< 0.5	0.24 J	2.1 J	< 2 U	82.4	52.9	41.0	8.2	43	13	10	20	18	16
Ethylbenzene	ug/L	28.9	20.7	12.5	0.40J	7.5	11	19	29	< 5 U	1.7 J	<1.0	<10.0	<1.0	< 2.0	<2.0	0.22J	< 1 U	< 1.0 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	20.0	14.8	<1.0	< 1.0	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	94.0	81.4	51.5	14	14	11	2.6	0.34 J	< 1 U	< 1 U
Toluene	ug/L	<1.0	<1.0	<1.0	< 1.0	1.8J	1.2J	< 1 U	0.39 J	< 5 U	< 2 U	<1.0	<1.0	<1.0	< 2.0	<2.0	0.83J	< 1 U	< 1.0 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	10.1	12.0	5.4	3.6	9	4.4	1.1	0.99 J	1 J	0.9 J	2.4	2.0	2.2	1.8	8.6	2.5	1.9	2.1	1.6	2.6
Trichloroethene	ug/L	95.2	30.4	6.6	4.4	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	119	78.2	56.6	48	33	23	5.7	1.4	0.35 J	0.34 J
Vinyl chloride	ug/L	10.1	8.4	2.4	1.9	5.8	<2.0	0.48 J	0.73 J	3.2 J	< 2 U	2.3	1.6	3.7	1.9J	12	3.3	3	11	7.3	6.7
Xylenes	ug/L	10.3	2.3	1.9	0.39J	1.5J	2.0	1.1	< 2.0 U	< 10 U	0.9 J	<1.0	<10	<1.0	< 2.0	< 2.0	1.0	< 1 U	< 2.0 U	< 2 U	< 2 U
Total VOCs	**ug/L**	**290**	**150.3**	**67.9**	**53.87**	**99.6**	**72**	**40.88**	**50.85**	**26.4**	**15**	**371.6**	**275.1**	**180.1**	**91.8**	**174.2**	**76.04**	**42.9**	**56.33**	**43.25**	**52.06**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 13. Summary of Groundwater Analytical Results from Reactive Zone 3 East Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Upgradient Well GM-22															
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/25/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**	**9/26/07**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.4	0.63J	0.47	0.93J	0.61J	1.2	1.7	0.96 J	0.47 J	0.66 J
1,1-Dichloroethane	ug/L	<1.0	2.2	2.8	2.4	3.8	4.7	6.8	6.6	4.1	<2	1.2	1.0	2.1	1.0	1.1	0.72 J
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.58J	0.32J	<1.0	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U	< 1 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	<1.0	3.1	4.0	1.9	3.5	5.1	8.5	7.8	3.6	<1	0.46J	0.45J	0.9	0.36 J	0.28 J	0.24 J
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	3.6	2.8	3.0	1.6	2.2	3.2	4.9	2.9	1.9	2.3	2.5	2.9	2.9	3.6	3.2	3.3
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	0.32J	<1.0	<2	0.49J	<1.0	< 1 U	< 1.0 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.17J	<0.50	<0.50	<1	< 0.5	<0.50	< 0.5 U	< 1.0 U	< 1 U	< 1 U
Trichloroethene	ug/L	4.0	2.5	3.6	<1.0	1.6	2.8	7.5	2.3	2.1	7.6	6	7.6	10	4.7	3	3.3
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.60J	0.85J	0.38	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U	< 1 U
Xylenes	ug/L	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2	< 1	<1.0	< 1 U	< 2.0 U	< 2 U	< 2 U
Total VOCs	**ug/L**	**7.6**	**11.8**	**13.4**	**5.9**	**11.1**	**16.9**	**33.45**	**21.72**	**12.55**	**10.83**	**11.26**	**13.15**	**17.6**	**10.62**	**8.05**	**8.22**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 13. Summary of Groundwater Analytical Results from Reactive Zone 3 East Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Downgradient Well GM-21																
Constituents	**Units**	**9/22/99**	**2/23/00**	**5/26/00**	**9/22/00**	**3/19/01**	**6/25/01**	**11/13/01**	**12/11/01**	**6/12/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**	**12/1/06**	**9/26/07**
Volatile Organic Compounds																		
1,1,1-Trichloroethane	ug/L	53.1	15.4	27.9	15.7	7.0	7.7	6.9	1.2	23	31	18	31	26	4.3	12	4.7	8.5
1,1-Dichloroethane	ug/L	9.0	5.8	6.8	5.6	5.1	4.1	3.8J	0.71J	5.4	5J	4.1J	6.9J	4.2 J	3.4	8.6	6.4	18
1,1-Dichloroethene	ug/L	3.9	1.6	2.4	1.6	1.2	<1.0	<5.0	<1.0	3.6	2.6J	< 6.7	2.0J	3.1 J	< 1.0 U	0.19 J	0.2 J	< 1.4 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U	< 1.4 U
cis-1,2-Dichloroethene	ug/L	66.4	35.9	47.8	38.7	39.5	37.8	39	6.5	48	43	130	100	56	20	14	8.2	26
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U	< 1.4 U
Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U	< 1.4 U
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U	< 1.4 U
trans-1,2-Dichloroethene	ug/L	7.8	9.3	7.4	12.9	16.4	15.7	15	2.8	8.3	5.1	2.2J	2.9J	7.9	22	4.3	4.8	2.5
Trichloroethene	ug/L	28.7	283	311	189	169	158	160	28	210	230	79	200	180	1.8	5.9	0.8 J	2.8
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	13	9.3	4.7	12
Xylenes	ug/L	<1.0	2.3	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 2.0 U	< 2 U	< 2 U	< 2.9 U
Total VOCs	**ug/L**	**168.9**	**353.3**	**403.3**	**263.5**	**238.2**	**223.3**	**224.7**	**39.21**	**298.3**	**316.7**	**233.3**	**342.8**	**277.2**	**64.5**	**54.29**	**29.8**	**69.8**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 14. Summary of Groundwater Analytical Results from Reactive Zone 4 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-4 West		Sidegradient Well W-4-S									Downgradient Well GM-63			Downgradient Well GM-64		
Constituents	Units	9/23/99	9/28/00	11/08/01	9/18/02	9/26/03	9/17/04	10/19/05	9/19/06	9/24/2007	9/14/06	12/1/06	9/25/07	9/14/06	12/1/06	9/25/07
Volatile Organic Compounds																
1,1,1-Trichloroethane	ug/L	3.3	3.0	2.9	2.3	2	2.3	2.4	1.7	1.5	2.3 J	2.3 J	2.7 J	1.8 J	2.1 J	< 3.3 U
1,1-Dichloroethane	ug/L	1.2	1.0	1.1	0.87J	0.92 J	1.2	1.4	1.3	1.8	1.9 J	1.9 J	1.8 J	1.8 J	2.1 J	2.7 J
1,1-Dichloroethene	ug/L	<1.0	<1.0	< 1.0	< 1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 6.7 U	< 2.5 U	< 2.5 U	< 3.3 U
Benzene	ug/L	<1.0	<1.0	< 1.0	< 1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 6.7 U	< 2.5 U	< 2.5 U	< 3.3 U
cis-1,2-Dichloroethene	ug/L	4.4	4.0	3.3	3.6	3.6	4.4	4.3	4.3	5.9	5.6	8.8	5 J	16	42	74
Ethylbenzene	ug/L	<1.0	<1.0	< 1.0	< 1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 6.7 U	< 2.5 U	< 2.5 U	< 3.3 U
Tetrachloroethene	ug/L	30.5J	15.4	13	17	24	18	20	18	26	160	140	130	77	85	11
Toluene	ug/L	<1.0	<1.0	< 1.0	< 1.0	0.25 J	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 6.7 U	< 2.5 U	< 2.5 U	< 3.3 U
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0	0.43J	0.60	0.78	0.97	1.1	1	1.3	1.4 J	1.3 J	< 6.7 U	1.6 J	2 J	6.6
Trichloroethene	ug/L	14.7J	11.3	8.9B	9.8	13	13	13	12	16	120	100	120	34	35	4.5
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 6.7 U	< 2.5 U	< 2.5 U	18
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	< 1 U	< 1 U	< 2.0 U	< 2 U	< 2 U	< 10 U	< 8 U	< 13 U	< 5 U	< 5 U	< 6.7 U
Total VOCs	**ug/L**	**54.1**	**34.7**	**29.63**	**34.17**	**44.55**	**39.87**	**42.2**	**38.3**	**52.5**	**291.2**	**254.3**	**259.5**	**132.2**	**168.2**	**116.8**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Carbon source introductions began in August 2006.

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Table 15. Summary of Groundwater Analytical Results from Reactive Zone 4 East Wells, General Motors Corporation, Moraine, Ohio.

RZ-4 East		Upgradient Well WEST			Downgradient Well GM-19S													
Constituents	Units	9/21/99	2/23/00	5/25/00	9/20/99	5/24/00	9/22/00	3/19/01	6/25/01	11/12/01	6/12/02	9/26/02	5/21/03	9/25/03	9/13/04	10/18/05	9/21/06	9/17/07
Volatile Organic Compounds																		
1,1,1-Trichloroethane	ug/L	24.8	25.1	27.4	16.0	17.9	14.5	11.9	9.6	7.6	7.2	6.3	12	13	14	13	9.7 J	0.59 J
1,1-Dichloroethane	ug/L	25.6	24.5	32.5	7.7	7.0	4.4	4.1	2.9	2.9J	3.7	6.3	8.4	8.3	8.1	9.0	7 J	10
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	1.0	1.1	<1.0	<1.0	<1.0	<3.3	0.98	<4	< 4	1.6J	1.9 J	1.2 J	< 22 U	< 1 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	0.62	<4	< 4	<5.0	< 4 U	< 1.7 U	< 22 U	< 1 U
cis-1,2-Dichloroethene	ug/L	125	34.5	29.0	34.6	42.9	37.6	38.2	31.5	26	28	39	81	89	61	29	660	0.3 J
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<4	< 4	<5.0	< 4 U	< 1.7 U	< 22 U	< 1 U
Tetrachloroethene	ug/L	41.3	53.9	37.7	46.0	57.1	68.0	67.6	71.7	64	60	52	62	62	71	95	9.1 J	1.5
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<4	< 4	<5.0	< 4 U	< 1.7 U	< 22 U	< 1 U
trans-1,2-Dichloroethene	ug/L	<1.0	1.7	1.3	2.3	2.7	2.6	3.0	2.4	2.0	2.3	2.7	2.5	2.9	2.4	1.0 J	10 J	0.29 J
Trichloroethene	ug/L	37.3	108	103.0	71.1	104	104	107	121	97	110	110	120	140	120	140	11 J	0.46 J
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<3.3	0.70	5.2	< 4	<5.0	< 4 U	1.8	< 22 U	< 1 U
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<4	< 4	<5.0	< 4 U	< 3.3 U	< 44 U	< 2 U
Total VOCs	**ug/L**	**254**	**247.7**	**230.9**	**178.7**	**234.1**	**231.1**	**231.8**	**239.1**	**199.5**	**213.5**	**221.5**	**285.9**	**316.8**	**278.4**	**290**	**706.8**	**13.14**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in August 2006.

Table 16. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1, General Motors Corporation, Moraine, Ohio.

RZ-1		Sidegradient Well GM-29															
Constituents	**Units**	**9/1/99**	**2/22/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/15/04**	**10/17/05**	**9/28/06**	**9/26/07**
Inorganics & TOC																	
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.552	0.136	0.35	0.248	0.203	0.136	0.17B	0.17	1.5B	0.18B	0.67J	0.20J	0.17	0.18	1.3	0.3 J
Manganese (Dissolved)	mg/l	0.13	0.101	0.177	0.125	0.116	0.128	0.17B	0.15	0.13B	0.16B	0.15J	0.21J	0.15	0.14	0.12	0.16 J
Iron (Total)	mg/l	18	1.43	10.1	8.48	5.84	2.52	3.4	3.8	47.8B	3.8	28.6	4.9	3.2	4.6	< 0.1 U	8.9
Iron (Dissolved)	mg/l	0.24	0.13	2.78	3.09	<0.10	2.03	3.3	2.9	2.2B	2.8	2.4	3.6	2.7	3.7	2.9	3.4
Iron (Ferrous)	mg/l	0.02	0	2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	90	126	31	29	31	37	65	48	63	76	91J	52	14 J	51	70	65
Sulfide	mg/l	<4	<1	<1	<1	<1	<1	1.3	<1	<1	<1	0.54B	1.6	< 1 U	< 1 U	< 1 U	< 1 U
Total Organic Carbon	mg/l	18	11	22	<1	7.57	7.3	10	10	8	8	7	9	9	11	13	15 J
Chloride	mg/l	254	426	508	373	337	262	600B	460	490	490	490	560J	540	370	380	360 J
Permanent Gases																	
Carbon Dioxide	mg/l	46.52	49.87	44.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.02	0.66	1.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	20.29	18.7	15.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.01152	0.007699	0.00017	1.62	1.30	1.5	0.610	1.2	0.56	1.1	0.6	1.5	3.8	13	10	NA
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																	
Ethane	ng/l	5641	1861	751	639	460	17000	20000	28000	14000	16000	7400	9900	13000	170000	350000	NA
Ethene	ng/l	9769	1275	12098	441796	160000	130000	230000	180000	48000	140000	150000	200000	1700000	1600000 J	750000	NA
Field Parameters																	
pH	S.U.	6.99	7.02	6.86	7.24	7.31	7.20	7.47	7.57	7.14	7.22	6.32	6.88	6.85	6.80	6.94	6.63
Specific Conductivity	umhos/cm	1502	3044	2388	1942	1733	1291	2703	2860	1977	2354	2303	2278	2580	2200	2170	2350
Dissolved Oxygen	mg/l	0.35	0.51	0.45	3.44	8.20	0.40	0.22	0.01	3.57	1.40	1.38	0.13	0.04	0	0.29	0.4
Redox Potential	mV	-526.6	19.6	-105.4	-35.0	-158.2	-166.4	-129.7	-168	-122.9	-91.3	-157.8	-118.6	-134	-153	-168	-139
Temperature	°C	17.8	16.9	17.97	17.64	20.04	20.47	16.42	17.13	19.33	17.63	18.23	16.81	16.4	16.8	16.69	18

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 16. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1, General Motors Corporation, Moraine, Ohio.

RZ-1		Upgradient Well GM-23											
Constituents	Units	9/2/99	2/21/00	5/31/00	3/20/01	6/13/02	9/26/02	5/22/03	9/23/03	9/14/04	10/17/05	9/28/06	9/27/07
Inorganics & TOC													
Nitrate	mg/l	0.08	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	3.83	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	0.94	2.84	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	4.71	0.887	0.121	0.469	1.5 J	1.0 J	1.5 J	1.6 J	1.3 J	0.79	1.5	1.4 J
Manganese (Dissolved)	mg/l	0.346	0.841	0.101	0.311	1.3 J	0.68 J	1.5 J	1.7 J	1.2 J	0.81	1.5	1.3 J
Iron (Total)	mg/l	13.6	0.53	0.18	0.48	0.16 J	0.63	0.50	0.14	0.11	30.7	13.6	10.8
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	< 1.0	<0.10	<0.10	<0.10	<0.10	<0.10	34.2	13.2	10
Iron (Ferrous)	mg/l	4	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	72	650	8040	1440	920	810	310 J	650	430 J	120	850	590
Sulfide	mg/l	<4	<1	<1	<1	<1	<1	<1 U	0.67 B	<1	<1	<1 U	< 1 U
Total Organic Carbon	mg/l	19	25	19	10.8	15 J	15	15	13	10 J	360	11	9
Chloride	mg/l	118	143	85	232	180	190	220	140 J	220	260	220	210
Permanent Gases													
Carbon Dioxide	mg/l	88.47	264.8	323.79	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	0.96	1.56	17.78	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	20.22	13.75	3.13	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.1248	0.72	0.02083	0.780	1.6	2.1	2.7	1.8	1.5	1.3	0.91	0.64
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan													
Ethane	ng/l	6,878	14644	1037	11000	25000	32000	44000	23000	17000	16000	12000	7100
Ethene	ng/l	580916	439458	569	260000	230000	230000	1200000	270000	260000	500000	900000	370000 J
Field Parameters													
pH	S.U.	6.80	6.62	6.31	6.64	6.81	6.76	5.59	6.73	7.04	5.66	6.69	6.34
Specific Conductivity	umhos/cm	1160	2856	6720	3448	2290	2390	1683	2258	2130	2570	2740	2470
Dissolved Oxygen	mg/l	0.65	0.78	10.48	8.38	4.23	0.42	1.76	0.85	0	0	0.4	0.44
Redox Potential	mV	122.2	158.7	194.2	160.4	346.5	215.6	247.9	198.8	57	-108	-108	-91
Temperature	°C	17.89	17.6	26.45	19.08	16.40	19.06	17.91	17.38	16.30	16.5	16.78	17.5

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 16. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1, General Motors Corporation, Moraine, Ohio.

RZ-1		Downgradient Well GM-28																
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/23/03**	**10/1/03**	**4/30/04**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**
Inorganics & TOC																		
Nitrate	mg/l	0.08	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0.06	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	0.68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	3.2	1.15	6.26	4.1	0.594	2.24	0.58	0.47	1.1	0.48B	0.69J	0.42J	0.34	0.37	0.45	0.46	0.44 J
Manganese (Dissolved)	mg/l	0.068	0.449	6.71	3.94	0.477	1.76	0.61	0.49	1.1	0.41B	0.29J	0.40J	0.32	0.36	0.45	0.43	0.43 J
Iron (Total)	mg/l	106	25.3	22.7	58.9	29.6	59	23.6	23.5	36.2	28.7	47.9	23.4J	17.6	15.7	16.1	14.5	11.7
Iron (Dissolved)	mg/l	<0.10	0.59	23.3	48.3	2.65	49.8	23.3	23.7	34.7	23.4	16.7	22.4J	16.4	15.1	15.2	13.1	10.7
Iron (Ferrous)	mg/l	0	0.03	2.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	89	43	<5	<5	9	106	<5	<5	<5	18	65J	31J	89	93 J	91	75	77
Sulfide	mg/l	<4	<1	<1	<1	<1	<1	1.5	<1.0	2.0	4.3	2.5	<1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U
Total Organic Carbon	mg/l	15	24	742	571	90.0	360	74	68B	140	23	15	17	15 J	8	10	7	8 J
Chloride	mg/l	208	664	805	782	1030	508	730B	560	370	450	350	270J	320	340	320	320	300 J
Permanent Gases																		
Carbon Dioxide	mg/l	41.52	63.57	16.51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	2.32	0.59	0.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	19.42	16.39	19.82	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.002487	0.001832	0.21	1.70	13.0	13.0	13	20	19	14	8.9	11	7.9	6.6	2.8	2.5	2.3
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																		
Ethane	ng/l	750	493	865	1198	42000	39000	91000	98000	420000	300000	310000	230000	160000	150000	81000	73000	72000
Ethene	ng/l	48	98	646	1794606	57000	5000	1100	1400	8800	12000	74000	430	160	54	< 210 U	< 25 U	62
Field Parameters																		
pH	S.U.	7.02	6.92	7.01	7.18	7.10	6.64	6.50	7.45	6.84	7.24	6.86	6.80	NA	6.85	5.47	7.08	6.72
Specific Conductivity	umhos/cm	1359	3124	4402	4538	3724	3216	3136	3700	2187	2195	2132	1501	NA	2030	2230	1880	1.95
Dissolved Oxygen	mg/l	0.95	1.45	2.52	6.78	4.36	0.41	0.83	0.20	0.68	0.35	1.41	0.34	NA	0	0	0.29	0.64
Redox Potential	mV	90.5	56.0	-93.7	-200.1	-70.6	-177.8	-148.2	-203	-153.3	-135.3	-93.1	-146.9	NA	-165	-166	-183	-152
Temperature	°C	16.4	18.48	19.24	20.21	18.93	19.04	19.24	18.92	20.44	18.68	16.88	17.97	NA	16.2	15.9	16.33	17.1

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 17. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 2, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-6														
Constituents	**Units**	**8/31/99**	**2/22/00**	**5/25/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**9/25/02**	**5/22/03**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**
Inorganics & TOC																
Nitrate	mg/l	0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	10.9	23.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.502	4.19	1.44	0.46	0.276	0.245	0.33	0.34	1.9B	0.77J	0.42J	0.28	0.26	0.21	0.21 J
Manganese (Dissolved)	mg/l	<0.010	3.60	1.34	0.456	0.277	0.222	0.30	0.32	1.6B	0.63J	0.40J	0.33	0.25	0.2	0.21 J
Iron (Total)	mg/l	8.17	67.1	46.3	6.4	1.25	3.52	5.5	4.6	37.2	30.3	6.7J	9.6	26.2	5.6	8.7
Iron (Dissolved)	mg/l	<0.10	46.5	42.8	6.66	0.63	1.74	3.9	2.8	7.3	6.5	6.1J	2.9	2.8	1.4	1.3
Iron (Ferrous)	mg/l	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	139	111	34	91	128	165	400	220	<5	<5	91J	64 J	78	100	95
Sulfide	mg/l	<2	2.00	1.11	1.58	<1.0	<1	<1.0	<1.0	1.7	0.86B	6.7	3.7 U	7.0	2.7	< 4.3 U
Total Organic Carbon	mg/l	9	1,560	374	35	21.5	38	41	34	1500	250	56	11	14	7	9 J
Chloride	mg/l	182	350	302	196	261	289	390B	320	430	370	220J	290	230	200	320 J
Permanent Gases																
Carbon Dioxide	mg/l	51.08	173.39	156.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	0.84	0.45	0.52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	18.57	12.44	9.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.002063	0.56	12.2	0.33	8.30	0.25	0.160	0.65	1.6	12	5.1	2.9	1.5	0.7	0.16
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																
Ethane	ng/l	134	97	<5	134	4900	3600	4600	16000	26	2600	2000	4300	< 1100 U	390	67
Ethene	ng/l	134	164	3508	3316	7600	1900	4000	20000	340	810	1400	1700	< 1300 U	710	280
Field Parameters																
pH	S.U.	7.02	6.64	6.58	7.00	7.06	6.82	6.92	7.50	6.78	6.73	6.90	6.49	5.85	6.98	6.38
Specific Conductivity	umhos/cm	1424	4645	3118	1864	1922	2630	3004	3000	6309	3428	1735	1710	1730	1370	1760
Dissolved Oxygen	mg/l	0.66	7.12	0.84	1.19	4.83	0.33	0.67	0.48	0.59	2.49	0.35	2.51	NA	NA	10.09
Redox Potential	mV	109.1	-85.8	-133.8	-200.6	-294.0	43.5	-80.4	-129	-107.2	-101.4	-133.4	-4	NA	-134.0	-76.0
Temperature	°C	27.51	18.59	22.60	18.98	21.68	19.42	20.01	19.74	22.17	19.1	17.58	17.4	15.3	16.75	17.1

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 17. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 2, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-3													
Constituents	Units	8/31/99	2/22/00	5/25/00	9/21/00	11/15/01	12/12/01	7/21/02	9/24/02	5/21/03	10/1/03	9/15/04	10/18/05	9/27/06	9/20/07
Inorganics & TOC															
Nitrate	mg/l	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0.1665	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	3.10	12.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.016	0.870	1.16	0.556	0.580	0.60	3.0	0.67B	0.21J	0.28J	0.47	0.42	0.42	0.44 J
Manganese (Dissolved)	mg/l	<0.010	0.702	0.436	0.543	0.620	0.610	3.4	0.69B	0.23J	0.28J	0.47	0.41	0.46	0.39 J
Iron (Total)	mg/l	<0.10	20.5	38.2	4.9	3.9	3.6	162	41.1	5.9	1.9J	3.2	11.2	4.4	4.6
Iron (Dissolved)	mg/l	<0.10	15.3	10.3	4.45	4.10	3.40	133	36.2	4.7	1.7J	2.8	3.8	2.2	0.63
Iron (Ferrous)	mg/l	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	152	60	34	87	160	150	71B	<5	45J	79J	71 J	68	89	71
Sulfide	mg/l	<1	1.39	1.32	<1	<1	<1.0	0.32J	<1.0	1.70	0.98B	3.4 U	< 1.0 U	< 1 U	< 1 U
Total Organic Carbon	mg/l	1	162	69	4	<1	6	1100	340	15	9	4	8	4	6 J
Chloride	mg/l	336	208	235	184	260B	330	370	380	290	340J	440	480	500	480 J
Permanent Gases															
Carbon Dioxide	mg/l	57.26	183.76	85.52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.72	0.47	0.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	16.44	13.39	13.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.000129	0.01088	9.68	0.001226	0.0430	0.0160	1.6	7	1.8	1.2	0.81	0.25	0.11	0.074
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan															
Ethane	ng/l	10	73	138	47	520	470	370	210	830	540	170	< 140 U	160	22 J
Ethene	ng/l	<5	109	96276	218	23000	38000	1500	200	120	73	270	< 350 U	260	88
Field Parameters															
pH	S.U.	6.96	6.75	6.89	7.15	6.52	7.40	5.77	6.96	6.70	6.97	6.88	6.39	7.05	6.94
Specific Conductivity	umhos/cm	1889	2305	1752	1509	1477	2280	4081	3454	1662	1413	2130	2340	2180	2230
Dissolved Oxygen	mg/l	2.01	4.06	0.59	1.11	1.70	0.19	1.60	2.41	2.92	2.93	3.12	NA	NA	10.43
Redox Potential	mV	80.9	-96.8	-136.7	-193.2	-36.1	-127.0	-103.4	-59.7	-30.6	-89.7	-6.2	NA	-101	-70
Temperature	°C	22.86	19.28	20.00	21.09	18.63	20.05	20.82	21.65	17.18	17.74	17.4	16.0	17.08	18.0

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 17. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 2, General Motors Corporation, Moraine, Ohio.

RZ-2		Below Introduction Zone GM-31										
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/31/00**	**9/21/00**	**11/15/01**	**9/24/02**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**	**9/20/07**
Inorganics & TOC												
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	0.41	<0.3	<0.30	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	7.45	0.53	0.899	0.605	0.470	0.97B	1.6J	0.38	0.43	0.54	0.65 J
Manganese (Dissolved)	mg/l	0.293	0.208	0.189	0.163	0.19	0.27B	0.24J	0.29	0.32	0.27	0.38 J
Iron (Total)	mg/l	288	17.4	34.9	18.7	16.3	33.4	35.9J	4.6 J	6.2	11.1	13.2
Iron (Dissolved)	mg/l	0.27	1.87	2.37	2.51	3.2	2.8	0.79J	1.4	1.0	0.44	0.56
Iron (Ferrous)	mg/l	0	1.6	1.6	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	118	105	131	105	120	130	140J	98 J	88	91	99
Sulfide	mg/l	<4	<1	1.06	<1	<1	<1.0	7.5	< 1 U	< 1.0 U	< 1 U	< 1 U
Total Organic Carbon	mg/l	176	4	12	<1	3B	3	2	< 1 U	3	2	< 3 U
Chloride	mg/l	240	249	259	221	190B	240	290J	300	380	350	460 J
Permanent Gases												
Carbon Dioxide	mg/l	32.12	49.58	38.89	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	0.60	0.61	0.66	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	16.05	19.79	23.03	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.0124	0.03339	0.08616	0.04758	0.034	0.11	0.075	0.059	<0.017 U	0.0098	0.0049
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan												
Ethane	ng/l	2472	4550	9895	2507	1900	1300	740	430	< 300 U	240	180
Ethene	ng/l	2295	1283	2439	413	500	2000	260	190	< 260 U	30	44
Field Parameters												
pH	S.U.	7.25	7.19	7.03	7.30	6.70	6.80	6.99	7.04	6.47	7.09	6.67
Specific Conductivity	umhos/cm	1514	1786	1538	1580	1275	1635	1321	1790	2200	1870	2280
Dissolved Oxygen	mg/l	1.61	0.39	0.81	1.71	ME	0.31	0.25	0.41	0	0.46	1.07
Redox Potential	mV	-328.2	-61.9	-73.7	-188.5	-82.1	-66.2	-69.7	-86	-65	-58	-6.0
Temperature	°C	28.93	20.75	21.91	21.11	19.45	20.87	18.74	18.3	17.6	17.94	18.0

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 18. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Upgradient Well EAST													
Constituents	**Units**	**9/21/99**	**2/23/00**	**5/25/00**	**9/22/00**	**3/19/01**	**11/12/01**	**12/11/01**	**6/12/02**	**9/23/02**	**5/21/03**	**9/25/03**	**9/13/04**	**10/18/05**	**9/21/06**
Inorganics & TOC															
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.627	0.474	0.361	0.227	0.182	0.20B	0.21B	0.56B	0.28B	0.12J	0.23J	0.19	1.4	0.92
Manganese (Dissolved)	mg/l	0.098	0.157	0.116	0.136	0.129	0.18B	0.17B	0.20B	0.16B	0.041J	0.096	0.047	0.10	0.12
Iron (Total)	mg/l	4.82	5.55	5.3	2.26	1.17	0.21	0.29	7.9	0.89	0.16	0.64	0.4	5.1	14
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10	< 0.1 U	< 0.10 U	< 0.1 U
Iron (Ferrous)	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	75	130	117	96	101	130	120	170	95	63J	110	54 J	130	71
Sulfide	mg/l	<1	<1	<1	<1	<1.0	1.2	1.6	<1.0	<1.0	<1	2.1	< 1 U	< 1.0 U	< 1 U
Total Organic Carbon	mg/l	3	10	4	<1	<1.0	3B	2	4	2	<1	1	0.5 B	4	2
Chloride	mg/l	283	254	194	196	198	190B	180	270	310	250	310J	290	370	430
Permanent Gases															
Carbon Dioxide	mg/l	34.69	58.08	52.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.88	0.97	1.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	17.88	17.50	19.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.000571	0.003269	0.01158	1.08	1.100	0.310	0.15	0.0042	0.0027	0.00055	0.0013	0.0012	< 0.0058 U	0.0018
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan															
Ethane	ng/l	32	39	118	126	2600	2000	1800	440	50	13	14	20	< 76 U	28
Ethene	ng/l	18	107	57	73	190	150	56	170	37	34	21	20	< 210 U	43
Field Parameters															
pH	S.U.	6.99	7.04	7.00	7.11	7.34	7.15	7.32	7.02	7.18	6.69	6.94	7.18	6.17	6.88
Specific Conductivity	umhos/cm	1777	1955	1503	1133	1189	1363	1480	1439	1467	1506	1548	1700	2190	2120
Dissolved Oxygen	mg/l	0.30	0.37	2.76	1.68	1.00	1.73	0.05	1.05	1.82	1.79	1.04	0.94	0	0.52
Redox Potential	mV	14.9	122.9	144.5	143.7	468.4	177.1	86	306.5	215.6	201	147.6	195	189	104
Temperature	°C	21.21	19.38	19.32	20.30	19.60	18.68	18.69	19.61	19.62	19.45	18.47	17.4	17.5	18.03

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 18. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-32														
Constituents	Units	9/22/99	2/28/00	5/30/00	9/25/00	3/19/01	11/12/01	12/11/01	6/12/02	9/20/02	5/23/03	10/1/03	9/14/04	10/19/05	9/19/06	9/18/07
Inorganics & TOC																
Nitrate	mg/l	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	2.29	2.00	19.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.147	0.516	0.051	0.30	0.17	0.16B	0.087B	0.043B	0.053B	0.1J	0.13J	0.13 J	0.076	0.088	0.077 J
Manganese (Dissolved)	mg/l	0.052	0.061	0.048	0.31	<0.050	0.020B	0.024B	0.042B	0.028B	0.077J	0.11J	0.13 J	0.067	0.078	0.072 J
Iron (Total)	mg/l	8.14	42.4	18.4	81.0	13.0	16.5	10.5	7.5	8.4B	21.3	31.4J	33.9	22.0	24.7	20
Iron (Dissolved)	mg/l	3.53	0.59	17.1	81.6	3.17	5.2	6.5	8.1	6.8B	18.7	30.5J	34.5	19.8	24.5	19.5
Iron (Ferrous)	mg/l	1.8	2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	30	<5	<10	<10	<20	5	4J	1J	<5	<5	<5	< 5 U	< 5 U	< 5 U	< 5 U
Sulfide	mg/l	<1	<10	<1	<1	1.60	<1	<1.0	0.50J	1.3	0.86B	7.3	16	4.1	1	14
Total Organic Carbon	mg/l	68	1200	2020	2720	1120	320B	250	240	160	150	170	240 J	300	260	290 J
Chloride	mg/l	317	638	740	740	798	700B	630	470	510	390	510J	530	550	560	560 J
Permanent Gases																
Carbon Dioxide	mg/l	39.79	8.94	24.32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.67	0.85	<0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	14.93	15.23	2.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	2.73	7.06	14.91	16.84	29	29	38	24	32	24	19	25	30 J	26	26
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																
Ethane	ng/l	1649	9965	1029	189	7900	42000	72000	84000	94000	74000	46000	57000	85000 J	76000	73000
Ethene	ng/l	86509	163855	472312	510593	150000	130000	90000	93000	49000	9900	3400	2000	1900 J	2400	1200
Field Parameters																
pH	S.U.	7.54	8.59	7.64	7.73	8.36	8.42	8.13	8.55	8.13	6.41	6.81	6.86	6.3	6.84	7
Specific Conductivity	umhos/cm	2750	9030	9195	9225	7483	6874	6200	5432	4289	3908	3192	4210	4810	4510	4240
Dissolved Oxygen	mg/l	0.09	0.23	10.82	2.55	0.36	0.07	0.03	1.14	0.22	1.93	0.31	0	0	0.21	0.45
Redox Potential	mV	-226.4	-279.1	-213.6	-353.8	-152.5	-222.8	-279	-220.5	-227.1	-204.6	-154.4	-160	-191	-193	-161
Temperature	°C	19.27	19.72	23.48	19.27	19.30	18.84	18.62	20.83	19.81	19.31	18.47	17.2	17.0	17.7	16.7

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 18. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-8								Downgradient Well GM-6							
Constituents	Units	3/6/98	9/20/99	9/20/02	12/9/03	9/14/04	10/19/05	9/19/06	9/18/07	3/6/98	9/20/99	9/20/02	12/9/03	9/14/04	10/19/05	9/19/06	9/18/07
Inorganics & TOC																	
Nitrate	mg/l	<4.4	0	NA	NA	NA	NA	NA	NA	<4.4	0	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	<0.033	0	NA	NA	NA	NA	NA	NA	<0.033	0	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	1.69	1.95	NA	NA	NA	NA	NA	NA	<0.300	<0.30	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.204	0.125	0.085B	0.21	0.13	0.17	0.16	0.12 J	1.07	1.11	0.27B	0.57	0.43	0.50	0.54	0.4 J
Manganese (Dissolved)	mg/l	0.229	0.125	0.084B	0.21	0.14	0.15	0.15	0.11 J	1	0.958	0.24B	0.53	0.47	0.49	0.54	0.39 J
Iron (Total)	mg/l	1.01	0.27	0.55B	1.9	1.8	3.2	3.4	3.3	1.32	0.27	0.40B	5.7	3.2	5.4	5.7	6.7
Iron (Dissolved)	mg/l	1.22	0.26	0.52B	1.9	1.8	2.8	3.1	3	<0.1	<0.10	0.30B	1.9	3.1	4.8	5.6	6.3
Iron (Ferrous)	mg/l	<0.2	0	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	59	54	59	<5	13 J	27	24	49	93	83	43	27	26 J	52	55	66
Sulfide	mg/l	<1	<1	<1.0	<1.0	2	< 1.0 U	1.8	0.86 J	<1	<1	<1.0	<1.0	3.4	< 1.0 U	< 1 U	< 1 U
Total Organic Carbon	mg/l	7	8	16	20	19 J	19	16	16 J	3	4	17	12	16 J	6	7	8 J
Chloride	mg/l	248	216	180	180J	190	260	320	360 J	227	247	170	190J	230	290	340	400 J
Permanent Gases																	
Carbon Dioxide	mg/l	15.8	9.91	NA	NA	NA	NA	NA	NA	47.4	48.44	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.1	0.92	NA	NA	NA	NA	NA	NA	1.57	2.23	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	19.7	25.42	NA	NA	NA	NA	NA	NA	20.5	21.77	NA	NA	NA	NA	NA	NA
Methane	mg/l	1.48	2.47	8.5	14	9	8.1 J	7.2	9.1	0.008337	0.006916	7.8	7.8	7.2	4.4 J	3.5	5.3
Carbon Monoxide	mg/l	<0.4	<0.40	NA	NA	NA	NA	NA	NA	<0.4	<0.40	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																	
Ethane	ng/l	370	1134	13000	12000	18000	17000 J	7200	10000	47	67	10000	2400	5000	870 J	520	660
Ethene	ng/l	12233	39617	3700	440	56	< 76 U J	1200	32	91	97	4900	750	2000	3600 J	1700	1800
Field Parameters																	
pH	S.U.	7.7	7.98	8.18	7.2	7.76	6.45	7.31	7.21	7	7.05	7.46	7.76	7.16	6.06	6.8	6.84
Specific Conductivity	umhos/cm	1539	1584	1734	1870	1900	2080	2120	2300	1422	1493	1658	2080	1830	1880	1920	2130
Dissolved Oxygen	mg/l	0.16	0.28	0.37	0.04	0	0	0.53	0.70	0.88	0.48	0.34	0.03	0	0	0.24	0.51
Redox Potential	mV	-145	-49.8	-150.6	-137	-186	-162	-160	-125	57.6	26.5	-27.7	-223	-111	-107	-111	-86
Temperature	°C	17.53	19.09	19.20	18.17	16.6	16.3	18.1	17	18.49	21.07	19.07	17.71	16.8	16.8	17.3	17.5

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 19. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 East, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Upgradient Well GM-22														
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/25/00**	**9/21/00**	**3/20/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**	**9/26/07**
Inorganics & TOC																
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.089	0.273	0.355	0.422	0.458	0.74B	0.63	0.38B	0.029B	0.031J	0.027J	0.1 J	0.040	0.26	0.071 J
Manganese (Dissolved)	mg/l	0.096	0.263	0.328	0.403	0.413	0.73B	0.62	0.40B	0.093B	0.023J	0.020J	0.035 J	0.026	0.18	0.015 J
Iron (Total)	mg/l	<0.10	0.16	0.96	0.94	0.28	<0.10	<0.10	0.11B	0.18	0.22	0.23	1.6	0.19	2.1	1
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	< 0.1 U	< 0.10 U	< 0.1 U	< 0.1 U
Iron (Ferrous)	mg/l	0.6	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	49	125	120	117	99	300	150	120	70	72J	77	49 J	52	48	66
Sulfide	mg/l	<1	<1	<1	<1	<1.0	<1	<1.0	<1.0	0.40J	0.54B	1.6	< 1 U	< 1.0 U	< 1 U	< 1U
Total Organic Carbon	mg/l	6	4	4	<1	<1.0	16B	6B	3	2	<1	1	1 J	2	2	< 2 U
Chloride	mg/l	246	270	279	248	326	220B	280	290	370	350	350J	370	330	420	390 J
Permanent Gases																
Carbon Dioxide	mg/l	40.15	43.99	40.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.05	0.86	1.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	23.38	19.43	21.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.05818	0.23	0.18	0.000967	0.280	0.067	0.16	0.039	0.014	0.00039	1.2	0.02	< 0.012 U	< 0.0047 U	0.0016
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																
Ethane	ng/l	42	91	69	29	83	130	120	140	270	13	8.4	340	< 810 U	< 83 U	22 J
Ethene	ng/l	67	32	64	111	39	210	12	54	62	27	11	12	< 810 U	< 59 U	11 J
Field Parameters																
pH	S.U.	7.12	7.15	7.08	7.17	7.00	7.33	7.39	7.21	7.02	6.89	7.04	7.10	6.88	6.97	6.78
Specific Conductivity	umhos/cm	1373	1975	1671	1684	1610	1753	2020	1415	1720	1730	1597	1760	1930	2080	2170
Dissolved Oxygen	mg/l	0.32	0.46	0.49	1.73	0.82	0.01	0.15	0.94	2.14	1.04	1.2	0	0	0.27	1.18
Redox Potential	mV	62.2	70.2	26.1	-80.8	175.1	54.8	-110	105.2	181.2	116.6	74.6	62	68	51	79
Temperature	°C	19.41	18.87	20.87	22.28	20.79	19.45	18.99	20.29	19.49	18.62	18.45	17.2	16.9	17.46	18.1

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 19. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 East, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Downgradient Well GM-21														
Constituents	**Units**	**9/22/99**	**2/23/00**	**5/26/00**	**9/22/00**	**3/19/01**	**11/13/01**	**12/11/01**	**6/12/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**	**9/26/07**
Inorganics & TOC																
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.3	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.321	0.233	0.215	0.336	0.298	0.30B	0.30B	0.31B	0.29B	0.32J	0.37J	0.35 J	0.17	0.19	0.27 J
Manganese (Dissolved)	mg/l	0.273	0.225	0.212	0.312	0.291	0.32B	0.29B	0.29B	0.25B	0.26J	0.38J	0.33 J	0.16	0.19	0.27 J
Iron (Total)	mg/l	2.58	0.30	0.83	0.63	0.11	<0.10	0.16	0.65	0.56	12.6	0.27	2.3	26.9	10.7	9.2
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	1.4	0.47	< 0.1 U	25.5	10.7	8.9
Iron (Ferrous)	mg/l	0.4	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	103	102	80	102	118	120	100	76	76	55J	82	79 J	< 5 U	35	17
Sulfide	mg/l	<1	<1	<1	<1	<1	<1	1.9	0.50J	0.40J	0.54B	1.5	2.9	< 1.0 U	< 1 U	< 1 U
Total Organic Carbon	mg/l	1	3	2	<1	<1	2B	1	0.9J	2	2	2	2 J	92	7	14 J
Chloride	mg/l	136	145	126	129	165	140	150	170	180	160	190J	190	190	240	260 J
Permanent Gases																
Carbon Dioxide	mg/l	37.04	37.40	18.70	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.41	0.99	1.89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	23.40	21.67	23.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.03744	0.01769	0.01370	0.04218	0.048	0.049	0.035	0.022	0.03	0.031	1.5	0.077	17	4.9	30
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																
Ethane	ng/l	72	67	84	72	82	76	120	150	120	130	30	140	9800	27000	290000 J
Ethene	ng/l	169	38	70	69	46	46	100	120	64	570	520	250	330000	63000	80000
Field Parameters																
pH	S.U.	6.99	7.22	7.06	7.21	7.85	7.50	7.45	7.22	7.09	6.76	7.05	7.19	6.73	6.9	6.64
Specific Conductivity	umhos/cm	1188	1299	1048	1096	1067	1190	1360	1045	1245	968	1181	1180	1640	1580	1870
Dissolved Oxygen	mg/l	0.66	0.60	0.40	0.99	0.57	0.04	0.04	0.63	0.41	0.83	0.75	0	0	0.25	0.46
Redox Potential	mV	-26.9	113.3	167.1	153.9	218.5	168.8	-25	373.8	238.1	77.1	-26.7	-7	-140	-137	-126
Temperature	°C	20.43	18.43	17.92	19.03	17.59	16.73	15.82	18.67	18.67	17.54	18.39	17.1	16.4	16.94	17.2

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 20. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 4 West, General Motors Corporation, Moraine, Ohio.

RZ-4 West		Sidegradient Well W-4-S			Downgradient Well GM-63			Downgradient Well GM-64		
Constituents	Units	9/19/06	12/1/06	9/24/07	9/14/06	12/1/06	9/25/07	9/14/06	12/1/06	9/25/07
Inorganics & TOC										
Nitrate	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	1.2	NA	1.7 J	0.0441	NA	0.18 J	0.667	NA	0.77 J
Manganese (Dissolved)	mg/l	0.17	NA	0.15 J	0.0203	NA	0.24 J	0.484	NA	0.39 J
Iron (Total)	mg/l	0.39	NA	0.16	1.03 J	NA	0.42	1.73 J	NA	16.6
Iron (Dissolved)	mg/l	< 0.1 U	NA	< 0.1 U	< 0.1 U	NA	0.089 J	< 0.167 U	NA	6.6
Iron (Ferrous)	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	74	NA	95	140	NA	130	120	NA	37
Sulfide	mg/l	< 1 U	NA	< 1 U	< 1 U	NA	< 1 U	< 1 U	NA	2.6
Total Organic Carbon	mg/l	2	2	2 J	3	2	3	3	5	18
Chloride	mg/l	140	NA	130 J	180	NA	190 J	170	NA	190 J
Permanent Gases										
Carbon Dioxide	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.00071	0.031	0.0011	0.019 J	0.012	0.0049	0.018	0.01	20
Carbon Monoxide	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan										
Ethane	ng/l	43	270	68	36	110 J	18 J	3500	1000	260
Ethene	ng/l	21 J	180	14 J	290 J	130 J	66	1800	730	100000
Field Parameters										
pH	S.U.	6.99	7.13	6.84	6.99	7.08	6.65	7.13	7.09	6.79
Specific Conductivity	umhos/cm	1280	1530	1320	1640	1580	1540	1480	1820	1490
Dissolved Oxygen	mg/l	0.31	0.43	0.4	0.37	0.38	0.52	0.2	0	0.54
Redox Potential	mV	79	69	86	77	99	53	-62	-17	280
Temperature	°C	17.7	15	17.3	17.4	16.9	17.4	17.8	16.9	18.6

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Carbon source introductions began in August 2006.

Table 21. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 4 East, General Motors Corporation, Moraine, Ohio.

RZ-4 East		Upgradient Well WEST			Upgradient Well GM-19S														
Constituents	**Units**	**9/21/99**	**2/23/00**	**5/25/00**	**9/20/99**	**2/23/00**	**5/24/00**	**9/22/00**	**3/19/01**	**11/20/01**	**12/11/01**	**6/12/02**	**9/26/02**	**5/21/03**	**9/25/03**	**9/13/04**	**10/18/05**	**9/21/06**	**9/17/07**
Inorganics & TOC																			
Nitrate	mg/l	0	0	0	11	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	17.6	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.391	0.038	0.029	0.726	1.09	0.247	0.238	0.191	0.20	0.21B	0.25B	0.39B	0.3J	0.23J	0.25	0.24	0.99	0.28 J
Manganese (Dissolved)	mg/l	0.383	<0.010	<0.010	0.185	0.205	0.200	0.187	0.155	0.19	0.18B	0.18B	0.19B	0.2J	0.21J	0.16	0.20	0.94	0.15 J
Iron (Total)	mg/l	0.27	0.40	0.37	16.9	39.4	1.19	0.40	0.90	0.091	0.18	0.26	0.44	0.17	0.96	3	0.38	1.6	12.7
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	< 0.1 U	< 0.10 U	1.4	9.4
Iron (Ferrous)	mg/l	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	73	129	155	127	131	131	118	113	100	90	110	110	150J	150	110 J	83	95	63
Sulfide	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.96J	<1.0	<1.0	<1	1.3	1.6	< 1.0 U	< 1 U	< 1 U
Total Organic Carbon	mg/l	2	7	3	2	7	5	<1	<1	2B	1	1	3	2	2	1	3	22	6 J
Chloride	mg/l	260	166	164	247	197	168	165	158	130B	150	140	210	270	300J	310	320	350	400 J
Permanent Gases																			
Carbon Dioxide	mg/l	50.41	67.57	61.09	41.85	57.12	50.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.30	1.50	2.20	4.43	1.01	1.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	13.24	13.74	17.1	20.87	17.07	17.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.001409	0.000217	0.002179	0.009863	0.002712	0.003325	0.003706	0.039	0.005	0.0088	0.002	0.46	0.0021	0.0022	0.0014	< 0.0065 U	0.025	7.5
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																			
Ethane	ng/l	37	33	57	71	104	139	184	210	300	350	410	730	170	80	48	< 250 U	730	7800
Ethene	ng/l	100	17	47	55	45	43	36	61	34	27	130	770	78	45	51	< 220 U	550	22000
Field Parameters																			
pH	S.U.	6.89	6.97	6.97	7.05	7.05	7.00	7.19	7.14	7.28	7.31	7.09	7.02	6.71	6.93	7.13	5.97	6.84	7.03
Specific Conductivity	umhos/cm	1759	1640	1547	1500	1784	1548	1235	1097	1190	1350	1052	1474	1706	1726	1970	1940	2150	2010
Dissolved Oxygen	mg/l	0.41	1.73	1.50	0.92	0.30	1.94	1.36	0.96	1.75	0.06	0.90	0.47	2.01	1.87	0	0	0.3	0.43
Redox Potential	mV	106.2	139.1	198.3	31.3	149.6	200.1	187.7	320.8	195.6	13	446.3	259.6	178.3	135	160	122	-82	-145
Temperature	°C	21.44	19.90	19.75	20.85	18.69	20.80	20.09	20.14	19.24	19.10	20.39	20.36	20.22	19.57	18.6	17.6	17.9	17.5

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in August 2006.

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Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Upgradient of the Site		On-Site			
	Units	HR-9 9/25/2007 Upper Aquifer	HR-11 9/19/2007 Upper Aquifer	HR-4 9/26/2007 Upper Aquifer	W-2-N 9/25/2007 Upper Aquifer	W-3-N 9/26/2007 Upper Aquifer	W-4-N 9/26/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	8.9	< 1 U	< 1 U	< 1 U	< 4 U	0.34 J
1,1-Dichloroethane	ug/l	62	7.1	3.6	0.22 J	< 4 U	1.6
1,1-Dichloroethene	ug/l	0.56 J	< 1 U	< 1 U	< 1 U	< 4 U	< 1 U
Benzene	ug/l	< 2.5 U	< 1 U	< 1 U	< 1 U	< 4 U	< 1 U
cis-1,2-Dichloroethene	ug/l	25	< 1 U	< 1 U	1.6	110	2.6
Ethylbenzene	ug/l	< 2.5 U	< 1 U	< 1 U	< 1 U	< 4 U	< 1 U
Tetrachloroethene	ug/l	< 2.5 U	< 1 U	0.33 J	< 1 U	< 4 U	0.88 J
Toluene	ug/l	< 2.5 U	< 1 U	< 1 U	0.28 J	< 4 U	< 1 U
trans-1,2-Dichloroethene	ug/l	3.7	< 1 U	< 1 U	< 1 U	1.4 J	0.24 J
Trichloroethene	ug/l	12	< 1 U	0.31 J	0.88 J	< 4 U	10
Vinyl chloride	ug/l	0.66 J	< 1 U	< 1 U	< 1 U	5.6	0.96 J
Xylene (total)	ug/l	< 5 U	< 2 U	< 2 U	< 2 U	< 8 U	< 2 U
Total VOCs	**ug/l**	**112.82**	**7.1**	**4.24**	**2.98**	**117**	**16.62**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	HR-2 9/26/2007 Upper Aquifer	HR-5 9/24/2007 Upper Aquifer	HR-1 9/24/2007 Upper Aquifer	GM-30 9/26/2007 Upper Aquifer	GM-23 9/27/2007 Upper Aquifer	GM-27 9/27/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	0.45 J	< 18 U	< 200 U	< 2 U
1,1-Dichloroethane	ug/l	5.3	0.51 J	2.2	16 J	< 200 U	2.3
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	0.21 J	< 18 U	< 200 U	< 2 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 18 U	< 200 U	< 2 U
cis-1,2-Dichloroethene	ug/l	5	5.4	9.5	< 18 U	4700	12
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	380	< 200 U	< 2 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	20	< 18 U	280	0.9 J
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 18 U	< 200 U	< 2 U
trans-1,2-Dichloroethene	ug/l	0.76 J	0.41 J	1.9	< 18 U	130 J	0.41 J
Trichloroethene	ug/l	0.45 J	13	40	< 18 U	82 J	70
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 18 U	2600	< 2 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	1300	< 400 U	< 4 U
Total VOCs	**ug/l**	**11.51**	**19.32**	**74.26**	**1,696**	**7,792**	**85.61**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	GM-29 9/26/2007 Upper Aquifer	GM-28 9/20/2007 Upper Aquifer	ME-6 9/20/2007 Upper Aquifer	GM-31 9/20/2007 Upper Aquifer	ME-3 9/20/2007 Upper Aquifer	GM-22 9/26/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	15 J	< 1 U	0.61 J	3.7	2	0.66 J
1,1-Dichloroethane	ug/l	15 J	4.6	6.4	4.8	3.8	0.72 J
1,1-Dichloroethene	ug/l	< 50 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
Benzene	ug/l	< 50 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	1200	0.72 J	9.2	100	1.2	0.24 J
Ethylbenzene	ug/l	< 50 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	18 J	< 1 U	4.5	< 3.3 U	5.2	3.3
Toluene	ug/l	< 50 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	19 J	0.58 J	0.51 J	2.8 J	< 1 U	< 1 U
Trichloroethene	ug/l	350	0.51 J	12	90	3.6	3.3
Vinyl chloride	ug/l	290	1.2	4.5	1.1 J	0.82 J	< 1 U
Xylene (total)	ug/l	< 100 U	< 2 U	< 2 U	< 6.7 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**1,907**	**7.61**	**37.72**	**202.4**	**16.62**	**8.22**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	GM-19S 9/17/2007 Upper Aquifer	GM-33 9/24/2007 Upper Aquifer	GM-35 9/24/2007 Upper Aquifer	GM-32 9/18/2007 Upper Aquifer	GM-21 9/26/2007 Upper Aquifer	HR-17 9/25/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	0.59 J	15	5.8 J	< 5 U	8.5	< 2.5 U
1,1-Dichloroethane	ug/l	10	4.9	26	4.3 J	18	1.2 J
1,1-Dichloroethene	ug/l	< 1 U	0.68 J	< 10 U	< 5 U	< 1.4 U	< 2.5 U
Benzene	ug/l	< 1 U	< 1.7 U	< 10 U	1.6 J	< 1.4 U	< 2.5 U
cis-1,2-Dichloroethene	ug/l	0.3 J	5.5	140	< 5 U	26	1.9 J
Ethylbenzene	ug/l	< 1 U	< 1.7 U	< 10 U	< 5 U	< 1.4 U	< 2.5 U
Tetrachloroethene	ug/l	1.5	32	22	< 5 U	< 1.4 U	51
Toluene	ug/l	< 1 U	< 1.7 U	< 10 U	< 5 U	< 1.4 U	< 2.5 U
trans-1,2-Dichloroethene	ug/l	0.29 J	0.34 J	8 J	1 J	2.5	0.69 J
Trichloroethene	ug/l	0.46 J	49	110	< 5 U	2.8	16
Vinyl chloride	ug/l	< 1 U	< 1.7 U	12	< 5 U	12	< 2.5 U
Xylene (total)	ug/l	< 2 U	< 3.3 U	< 20 U	3.4 J	< 2.9 U	< 5 U
Total VOCs	**ug/l**	**13.14**	**107.42**	**323.8**	**10.3**	**69.8**	**70.79**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		On-Site			Downgradient of the Site		
	Units	W-2-S 9/24/2007 Upper Aquifer	W-3-S 9/24/2007 Upper Aquifer	W-4-S 9/24/2007 Upper Aquifer	GM-63 9/25/2007 Upper Aquifer	GM-64 9/25/2007 Upper Aquifer	GM-47 9/25/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	1.4	1.4	1.5	2.7 J	< 3.3 U	2.2 J
1,1-Dichloroethane	ug/l	1.1	< 1 U	1.8	1.8 J	2.7 J	2.4 J
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
cis-1,2-Dichloroethene	ug/l	0.89 J	< 1 U	5.9	5 J	74	170
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
Tetrachloroethene	ug/l	< 1 U	0.72 J	26	130	11	71
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	1.3	< 6.7 U	6.6	4.6 J
Trichloroethene	ug/l	5.3	2	16	120	4.5	53
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	18	< 7.1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 13 U	< 6.7 U	< 14 U
Total VOCs	**ug/l**	**8.69**	**4.12**	**52.5**	**259.5**	**116.8**	**303.2**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	Downgradient of the Site GM-50 9/25/2007 Upper Aquifer	GM-8 9/18/2007 Upper Aquifer	GM-6 9/18/2007 Upper Aquifer	TW-2 9/18/2007 Upper Aquifer	GM-2 9/18/2007 Upper Aquifer	GM-51 9/27/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	1.4 J	< 2 U	< 1 U	< 1 U	< 1 U	0.61 J
1,1-Dichloroethane	ug/l	1.9 J	9.1	26	1.7	1.4	0.23 J
1,1-Dichloroethene	ug/l	< 5.9 U	< 2 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 5.9 U	2.4	0.42 J	0.81 J	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	130	< 2 U	16	7.9	4.9	1
Ethylbenzene	ug/l	< 5.9 U	1.7 J	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	100	< 2 U	< 1 U	1.9	1.6	7.2
Toluene	ug/l	< 5.9 U	< 2 U	< 1 U	< 1 U	< 1 U	0.29 J
trans-1,2-Dichloroethene	ug/l	2.5 J	0.9 J	2.6	0.25 J	0.28 J	< 1 U
Trichloroethene	ug/l	44	< 2 U	0.34 J	24	2.3	3.9
Vinyl chloride	ug/l	< 5.9 U	< 2 U	6.7	0.97 J	1.1	< 1 U
Xylene (total)	ug/l	< 12 U	0.9 J	< 2 U	< 2 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**279.8**	**15**	**52.06**	**37.53**	**11.58**	**13.23**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site					
	Units	GM-16 9/25/2007 Upper Aquifer	GM-17 9/18/2007 Upper Aquifer	GM-18 9/19/2007 Upper Aquifer	WSU-24 9/19/2007 Upper Aquifer	GM-52 9/26/2007 Upper Aquifer	GM-10 9/19/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	1.4 J	0.31 J	5.4	0.66 J	1.3 J	0.75 J
1,1-Dichloroethane	ug/l	1.5 J	1.5	13	< 1 U	1.5 J	< 1 U
1,1-Dichloroethene	ug/l	< 4 U	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U
Benzene	ug/l	< 4 UJ	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U
cis-1,2-Dichloroethene	ug/l	43	4	19	< 1 U	18	0.35 J
Ethylbenzene	ug/l	< 4 U	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U
Tetrachloroethene	ug/l	94	7.3	14	0.89 J	88	0.93 J
Toluene	ug/l	< 4 U	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U
trans-1,2-Dichloroethene	ug/l	1.3 J	0.22 J	1.2 J	< 1 U	1 J	< 1 U
Trichloroethene	ug/l	52	15	64	7.9	47	8.8
Vinyl chloride	ug/l	< 4 U	< 1 U	1.1 J	< 1 U	< 2.5 U	< 1 U
Xylene (total)	ug/l	< 8 U	< 2 U	< 5 U	< 2 U	< 5 U	< 2 U
Total VOCs	**ug/l**	**193.2**	**28.33**	**117.7**	**9.45**	**156.8**	**10.83**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	Downgradient GM-26 9/27/2007 Upper Aquifer	Upgradient of the Site HR-10 9/25/2007 Lower Aquifer	Upgradient of the Site HR-12 9/19/2007 Lower Aquifer	On-Site HR-15 9/26/2007 Lower Aquifer	On-Site GM-39 9/26/2007 Lower Aquifer	On-Site GM-40 9/25/2007 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	< 1 U	2.2	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	1.3	2.5	19 J	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	1.2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	0.23 J	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	< 1 U	0.37 J	< 1 U	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	15	1.6	4
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**1.2**	**0**	**3.5**	**17.87**	**20.83**	**4**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	GM-61 9/26/2007 Lower Aquifer	GM-41 9/20/2007 Lower Aquifer	GM-58 9/20/2007 Lower Aquifer	GM-54 9/20/2007 Lower Aquifer	GM-42 9/25/2007 Lower Aquifer	GM-19D 9/17/2007 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	0.59 J	< 6.7 U	< 3.3 U	< 5 U	< 1 U	0.25 J
1,1-Dichloroethane	ug/l	1.6 J	< 6.7 U	< 3.3 U	< 5 U	0.67 J	< 1 U
1,1-Dichloroethene	ug/l	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	< 1 U	< 1 U
Benzene	ug/l	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	3.9	17	< 3.3 U	< 5 U	18	1.4
Ethylbenzene	ug/l	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	28	< 6.7 U	69	150	< 1 U	< 1 U
Toluene	ug/l	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	0.18 J	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1.7 U	1.4 J	< 3.3 U	< 5 U	0.69 J	< 1 U
Trichloroethene	ug/l	56	230	< 3.3 U	2.4 J	2.2	3.2
Vinyl chloride	ug/l	< 1.7 U	1.9 J	< 3.3 U	< 5 U	0.44 J	16
Xylene (total)	ug/l	< 3.3 U	< 13 U	< 6.7 U	< 10 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**90.09**	**250.3**	**69**	**152.4**	**22.18**	**20.85**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	Downgradient of the Site					
		GM-3 9/18/2007 Lower Aquifer	GM-1 9/18/2007 Lower Aquifer	GM-15 9/25/2007 Lower Aquifer	GM-11 9/18/2007 Lower Aquifer	GM-20D 9/19/2007 Lower Aquifer	DN-13 9/19/2007 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	0.67 J	0.74 J	< 1 U	0.6 J	0.5 J	0.48 J
1,1-Dichloroethane	ug/l	1.5	< 1 U	1.5	< 1 U	< 1 U	2
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	3.8	< 1 U	1.1	< 1 U	< 1 U	6.4
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	1.9	1.8	< 1 U	1.5	2.1	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	0.77 J	< 1 U	< 1 U	< 1 U	< 1 U	0.4 J
Trichloroethene	ug/l	14	32	5.1	35	9.2	3.3
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2.6
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Total VOCs	ug/l	**22.64**	**34.54**	**7.7**	**37.1**	**11.8**	**15.18**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 22. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	Downgradient of the Site GM-9 9/19/2007 Lower Aquifer	MT-69 9/27/2007 Lower Aquifer
Volatile Organic Compounds			
1,1,1-Trichloroethane	ug/l	1.2	< 1 U
1,1-Dichloroethane	ug/l	0.48 J	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	0.71 J	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U
Trichloroethene	ug/l	18	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U
Total VOCs	**ug/l**	**20.39**	**0**

ug/l - Micrograms per liter.
All QA/QC results for 2007 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

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Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #81[1]		Injection Event #82[2]		Injection Event #83[3]		Injection Event #84[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 1									
	RZ-1A	---	NA	---[13]	NA	---[13]	NA	---	NA
	RZ-1B	---	NA	---[13]	NA	---[13]	NA	---	NA
	RZ-1C	---	NA	800	38.09	800	30.76	---	NA
	RZ-1D	---	NA	800	36.36	---	NA	---	NA
	RZ-1E	---	NA	800	34.78	---	NA	---	NA
	RZ-1F	---	NA	800	26.67	---	NA	---	NA
	RZ-1G	---	NA	800	30.77	---	NA	---	NA
	RZ-1H	---	NA	800	24.24	---	NA	---	NA
	RZ-1I	---	NA	800	26.67	---	NA	---	NA
	RZ-1J	---	NA	800	30.77	---	NA	---	NA
	RZ-1K	---	NA	---[13]	NA	800	32.00	---	NA
	RZ-1L	---	NA	---[13]	NA	800	32.00	---	NA
	RZ-1M	---	NA	---[13]	NA	800	36.36	---	NA
	RZ-1N	---	NA	800	20.51	---	NA	---	NA
	RZ-1O	---	NA	---[13]	NA	800	32.00	---	NA
	RZ-1P	---	NA	800	12.31	---	NA	---[14]	NA
	RZ-1Q	---	NA	---[13]	NA	800	33.33	---	NA
	RZ-1R	---	NA	---[13]	NA	800	25.80	---	NA
	RZ-1S	---	NA	200[14]	10.00	---	NA	---	NA
	RZ-1T	---	NA	---[13]	NA	800	50.00	---	NA
	RZ-1U	---	NA	600	20.00	---	NA	---	NA
	OW-1	---	NA	---	NA	---	NA	---	NA
	OW-2	---	NA	---	NA	---	NA	---	NA
	OW-3	---	NA	---	NA	---	NA	---	NA
Reactive Zone 2									
	ME-2	---	NA	---	NA	---	NA	---	NA
	ME-4	---	NA	---	NA	---	NA	---	NA

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #81[1]		Injection Event #82[2]		Injection Event #83[3]		Injection Event #84[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3A	1600	31	1000	45.45	1600	23.52	1600	29.57
	RZ-3B	1000	52.63	1000	52.63	1600	23.88	1600	31.52
	RZ-3C	1000	47.62	1000	45.45	1600	33.14	1600	28.72
	RZ-3D	1000	22.73	1000	20.83	1500	35.67	1600	30.46
	RZ-3E	400	21.05	1000	19.61	1600	20.51	1600	37.39
	RZ-3F	1600	36	1000	52.63	1600	26.67	1600	24.77
	RZ-3G	1000	40.00	1000	50.00	1600	32.47	1600	24.45
	RZ-3H	200[14]	7.41	1000	26.32	1600	38.18	1600	24.29
	RZ-3I	600[14]	8.82	1000	45.45	1600	30.19	1600	33.39
	RZ-3J	---[15]	NA	1600	33.33	1600	30.29	1600	31.48
	RZ-3K	---[15]	NA	1600	33.33	1600	30.29	1600	33.39
	RZ-3L	---[15]	NA	1600	39.02	1600	33.56	1600	24.54
	RZ-3M	---[15]	NA	1600	47.06	1600	30.29	1600	22.65
	RZ-3N	800	44.44	1600	34.78	1600	35.57	1600	29.33
	RZ-3O	800	40.00	1600	25.81	1600	28.20	1600	26.92
	RZ-3P	800	30.77	1600	24.24	1600	32.99	800	22.86
	RZ-3Q	800	66.67	1600	27.59	1600	22.54	1600	31.39
	RZ-3R	800	47.05	1600	34.04	1600	35.71	1600	27.32
	RZ-3S	800	32.00	1600	24.24	1600	30.20	1600	25.72
	RZ-3T	800	33.33	1600	24.24	1600	45.59	1600	22.64
	RZ-3U	---[15]	NA	1600	40.00	1600	30.29	1600	22.88
	RZ-3V	---[15]	NA	1000	50.00	1600	27.90	1600	30.73
	RZ-3W	---[15]	NA	800	53.33	1600	28.57	1600	35.05
	RZ-3X	---[15]	NA	800	36.36	---[14]	NA	1600	28.72
	RZ-3Y	---[15]	NA	800	22.86	1600	26.60	1600	26.81
	RZ-3Z	---[15]	NA	1600	37.21	800[14]	26.67	---[14]	NA
	RZ-3AA	---[15]	NA	1000	31.25	1600	21.33	---[14]	NA
	RZ-3BB	---[15]	NA	1000	28.57	1600	34.85	1600	29.10

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #81[1]		Injection Event #82[2]		Injection Event #83[3]		Injection Event #84[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3CC	---[15]	NA	1000	23.26	1600	29.67	1600	34.18
	RZ-3DD	---[15]	NA	1000	27.03	1600	31.09	1600	31.39
	RZ-3FF	---[15]	NA	---[13]	NA	---[13]	NA	---[13]	NA
	RZ-3GG	---[15]	NA	---[13]	NA	1600	38.18	1600	22.93
	RZ-3HH	---[15]	NA	800[13]	16.00	1600	30.00	1600	24.62
	RZ-3II	---[15]	NA	---[13]	NA	1600	30.72	1600	22.23
	RZ-3JJ	---[15]	NA	800[13]	42.11	1600	39.62	1600	15.87
	RZ-3KK	---[15]	NA	---[13]	NA	1600	36.44	---[13]	NA
	RZ-3MM	---[15]	NA	---	NA	---	NA	---	NA
	RZ-3NN	---[15]	NA	---	NA	---	NA	---	NA
	RZ-3OO	---[15]	NA	---	NA	---	NA	---	NA
	RZ-3PP	---[15]	NA	---	NA	---	NA	---	NA
	RZ-3QQ	---[15]	NA	---	NA	---	NA	---	NA
	RZ-3RR	1600	17	1600	29.33	---[14]	NA	1600	20.01
	RZ-3SS	1600	23	1600	36.00	---[14]	NA	1600	28.10
	RZ-3TT	1450	5.3	1200	17.60	---[14]	NA	1600	13.76
	RZ-3UU	1600	27	1600	41.06	---[14]	NA	1600	21.77
	RZ-3VV	1600	27	800[14]	20.00	---[14]	NA	1600	16.98
Reactive Zone 4									
(Note-installed	RZ-4A	3000	41	3000	40.00	3000	44.44	3000	34.48
7/6/2006)	RZ-4B	3000	46	3000	37.97	3000	36.40	3000	30.02
	RZ-4C	3000	35	3000	33.33	3000	37.57	3000	35.81
	RZ-4D	3000	42	3000	47.62	3000	34.29	3000	37.51
	RZ-4E	3000	39	3000	41.10	3000	38.61	3000	37.51
	RZ-4F	3000	17	3000	21.28	3000	34.83	3000	14.42
	RZ-4G	3000	48	3000	50.00	3000	31.78	3000	35.80
	RZ-4H	3000	27	---	NA	3000	33.43	3000	31.59
	RZ-4I	3000	32	3000	68.00	3000	43.40	3000	43.49
	RZ-4J	3000	22	3000	56.79	3000	43.17	3000	40.39
	RZ-4K	3000	49	3000	70.11	3000	41.80	3000	38.96

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #81[1]		Injection Event #82[2]		Injection Event #83[3]		Injection Event #84[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
	RZ-4L	200[14]	10	3000	25.36	400[14]	9.76	3000	14.57
	RZ-4M	2900[14]	52	3000	48.58	3000	45.63	3000	33.00
	RZ-4N	2900[14]	41	3000	83.33	3000	46.17	3000	44.79
	RZ-4O	3000	55	3000	48.05	3000	43.56	3000	42.27
Site-Wide Total		63,850		96,400		102,300		103,400	

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #85[5]		Injection Event #86[6]		Injection Event #87[7]		Injection Event #88[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 1									
	RZ-1A	---[13]	NA	---[13]	NA	---	NA	---[13]	NA
	RZ-1B	---[13]	NA	---[13]	NA	---	NA	---[13]	NA
	RZ-1C	800	32.00	800	32.00	---	NA	800	36.36
	RZ-1D	800	33.33	800	32.00	---	NA	800	23.53
	RZ-1E	800	29.63	800	32.00	---	NA	800	16
	RZ-1F	800	33.33	800	30.76	---	NA	800	22.86
	RZ-1G	800	29.63	800	20.51	---	NA	800	36.36
	RZ-1H	800	32.00	800	27.59	---	NA	800	33.33
	RZ-1I	800	32.00	800	25.81	---	NA	800	22.22
	RZ-1J	800	30.77	800	29.63	---	NA	800	26.67
	RZ-1K	800	29.63	800	29.63	---	NA	800	33.33
	RZ-1L	800	32.00	800	26.67	---	NA	800	25
	RZ-1M	800	36.36	800	27.59	---	NA	800	40
	RZ-1N	800	28.57	800	30.76	---	NA	800	26.67
	RZ-1O	800	32.00	800	28.57	---	NA	800	33.33
	RZ-1P	800	21.05	800	32.00	---	NA	800	10.26
	RZ-1Q	800	25.81	800	30.76	---	NA	800	30.77
	RZ-1R	800	26.67	800	27.59	---	NA	800	34.78
	RZ-1S	800	33.33	800	32.00	---	NA	800	32
	RZ-1T	800	34.78	800	34.78	---	NA	800	35
	RZ-1U	800	30.77	800	34.78	---	NA	800	26.67
	OW-1	---	NA	---	NA	---	NA	---	NA
	OW-2	---	NA	---	NA	---	NA	---	NA
	OW-3	---	NA	---	NA	---	NA	---	NA
Reactive Zone 2									
	ME-2	---	NA	---	NA	---	NA	---	NA
	ME-4	---	NA	---	NA	---	NA	---	NA

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #85[5]		Injection Event #86[6]		Injection Event #87[7]		Injection Event #88[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3A	1600	32.39	1600	33.33	1600	27.75	1600	31.48
	RZ-3B	1600	26.67	1600	33.56	1600	22.54	1600	31.95
	RZ-3C	1600	28.91	1600	29.33	1600	23.55	1600	18.00
	RZ-3D	1600	30.73	1600	23.80	1600	19.53	1600	26.58
	RZ-3E	1600	24.77	1600	23.33	1600	19.90	1600	30.20
	RZ-3F	1600	15.65	1600	26.25	1600	23.87	1600	31.48
	RZ-3G	1600	24.34	1600	41.71	1600	28.71	1600	30.77
	RZ-3H	1600	24.32	1600	23.20	1600	26.25	1600	31.48
	RZ-3I	1600	25.14	1600	20.00	1600	27.11	1600	17.85
	RZ-3J	1600	34.06	1600	25.63	1600	30.46	1600	23.34
	RZ-3K	1600	29.67	1600	35.57	1600	24.89	1600	30.46
	RZ-3L	1600	34.85	900	22.90	1600	22.63	1600	30.46
	RZ-3M	1600	25.39	1500	26.25	1600	28.15	1600	32.67
	RZ-3N	1600	32.21	1600	20.23	1600	30.46	1600	27.43
	RZ-3O	1600	32.67	1600	34.18	1600	26.69	1600	23.86
	RZ-3P	1600	36.36	1600	31.09	1600	28.91	1600	26.53
	RZ-3Q	1000	41.67	1600	21.33	1600	21.39	1600	27.62
	RZ-3R	1000	41.67	1600	32.00	1600	34.85	1600	26.20
	RZ-3S	1000	41.67	1600	34.43	1600	29.67	1600	23.41
	RZ-3T	1000	38.46	1600	29.10	1600	29.89	1600	32.47
	RZ-3U	1000	40.00	1600	26.26	1600	30.95	1600	21.34
	RZ-3V	1000	41.67	1600	20.00	1600	32.77	---	NA
	RZ-3W	1000	43.48	1600	30.46	1600	32.67	1600	31.39
	RZ-3X	1000	41.67	1600	33.39	1600	29.17	1600	32.05
	RZ-3Y	1000	45.45	1600	28.15	1600	32.47	1600	29.63
	RZ-3Z	1785	36.75	1600	28.61	1600	38.22	1600	31.52
	RZ-3AA	1600	28.15	1600	32.21	---[14]	NA	1600	22.66
	RZ-3BB	1600	30.81	1600	32.21	1600	33.33	1600	16.44

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #85[5]		Injection Event #86[6]		Injection Event #87[7]		Injection Event #88[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3CC	1600	34.06	1600	35.05	800	30.76	800	22.24
	RZ-3DD	15[14]	1.25	---[14]	NA	---[14]	NA	---[14]	NA
	RZ-3FF	---[13]	NA	---[13]	NA	---[13]	NA	---[13]	NA
	RZ-3GG	1600	27.62	1600	30.95	1600	16.89	1600	28.15
	RZ-3HH	1600	32.00	1600	27.13	1600	18.00	1600	31.98
	RZ-3II	1600	29.51	1600	28.15	1600	22.16	1600	25.63
	RZ-3JJ	1600	30.20	1600	29.33	1600	28.12	1600	30.82
	RZ-3KK	1600	28.79	1600	33.33	1600	25.92	1600	24.81
	RZ-3MM	---	NA	---	NA	---	NA	---	NA
	RZ-3NN	---	NA	---	NA	---	NA	---	NA
	RZ-3OO	---	NA	---	NA	---	NA	---	NA
	RZ-3PP	---	NA	---	NA	---	NA	---	NA
	RZ-3QQ	---	NA	---	NA	---	NA	---	NA
	RZ-3RR	1600	24.27	1600	25.72	1600	22.49	---[14]	NA
	RZ-3SS	1600	27.51	400[14]	11.76	1600	20.91	---[14]	NA
	RZ-3TT	1600	13.82	---[14]	NA	400[14]	10.00	1600	12.96
	RZ-3UU	1600	27.32	---[14]	NA	1600	19.12	---[18]	NA
	RZ-3VV	1600	13.33	---[14]	NA	1200	12.58	---[18]	NA
Reactive Zone 4									
(Note-installed	RZ-4A	3000	38.66	3000	36.00	3000	35.31	3000	36.38
7/6/2006)	RZ-4B	3000	40.00	3000	35.19	3000	35.25	3000	37.95
	RZ-4C	3000	44.79	3000	35.04	3000	33.10	3000	34.93
	RZ-4D	3000	48.48	3000	38.06	3000	39.57	3000	40.00
	RZ-4E	3000	38.96	3000	43.88	3000	39.57	3000	40.92
	RZ-4F	3000	17.17	800	19.17	1800[17]	16.78	3000	Gravity Fed
	RZ-4G	3000	37.14	3000	39.84	3000	42.89	3000	23.98
	RZ-4H	3000	40.25	3000	44.37	3000	42.89	3000	27.06
	RZ-4I	3000	47.73	3000	38.97	3000	43.49	3000	37.09
	RZ-4J	3000	52.78	3000	42.27	3000	45.50	3000	37.05
	RZ-4K	3000	60.00	3000	42.27	3000	46.17	3000	37.18

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #85[5]		Injection Event #86[6]		Injection Event #87[7]		Injection Event #88[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
	RZ-4L	2800	Gravity Fed	3100	11.16	3000[17]	20.00	3000	Gravity Fed
	RZ-4M	3000	41.10	3000	39.02	3000	41.11	3000	37.05
	RZ-4N	3000	47.63	3000	37.04	3000	36.61	3000	36.19
	RZ-4O	3000	47.92	3000	40.01	3000	42.27	3000	34.11
Site-Wide Total		117,200		113,700		102,200		113,800	

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #89[9]		Injection Event #90[10]		Injection Event #91[11]		Injection Event #92[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 1									
	RZ-1A	---[13]	NA	---[13]	NA	---[13]	NA	---[13]	NA
	RZ-1B	---[13]	NA	---[13]	NA	---[13]	NA	---[13]	NA
	RZ-1C	800	20.51	800	32	---	NA	800	27.59
	RZ-1D	800	22.86	800	25	---	NA	800	32.00
	RZ-1E	800	26.67	800	29.63	---	NA	800	22.86
	RZ-1F	800	28.57	800	21.62	---	NA	800	27.59
	RZ-1G	800	34.78	800	22.86	---	NA	800	21.62
	RZ-1H	800	28.57	800	21.05	---	NA	800	19.05
	RZ-1I	800[14]	29.63	800	23.53	---	NA	800	26.67
	RZ-1J	800[14]	32	800	32	800	32.00	800	27.59
	RZ-1K	800[14]	22.86	800	34.78	---	NA	800	25.81
	RZ-1L	800[14]	22.22	800	32	800	32.00	800	21.62
	RZ-1M	800	34.78	800	32	---	NA	800	32.00
	RZ-1N	800	32	800	32	800	32.00	800	28.57
	RZ-1O	800	32	800	25	---	NA	800	26.67
	RZ-1P	800	30.77	800	33.33	800	33.33	800	34.78
	RZ-1Q	800	18.18	800	29.63	800	29.63	800	36.36
	RZ-1R	800	28.57	800	32	800	32.00	800	36.36
	RZ-1S	800	27.59	800	28.57	800	28.57	800	30.77
	RZ-1T	800	26.67	800	32	800	32.00	800	26.67
	RZ-1U	800	32	800	27.58	800	27.59	800	30.77
	OW-1	---	NA	---	NA	---	NA	---	NA
	OW-2	---	NA	---	NA	---	NA	---	NA
	OW-3	---	NA	---	NA	---	NA	---	NA
Reactive Zone 2									
	ME-2	---	NA	---	NA	---	NA	---	NA
	ME-4	---	NA	---	NA	---	NA	---	NA

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #89[9]		Injection Event #90[10]		Injection Event #91[11]		Injection Event #92[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3A	1600	31.39	1600	27.92	1600	27.32	1600	29.18
	RZ-3B	1600	29.17	1600	33.39	1600	24.45	1600	36.44
	RZ-3C	1600	34.06	1600	29.17	1600	23.86	1600	31.39
	RZ-3D	1600	31.48	1600	32.05	1600	28.15	1600	24.50
	RZ-3E	1600	30.00	1600	28.82	1600	23.59	1600	32.00
	RZ-3F	1600	32.00	1600	24.77	1600	30.82	1600	27.32
	RZ-3G	1600	31.39	1600	25.84	1600	18.69	1600	27.51
	RZ-3H	1600	31.48	1600	31.39	1600	25.00	1600	37.43
	RZ-3I	800	30.77	1600	22.93	1600	27.11	1600	24.34
	RZ-3J	---	NA	1600	25.36	1600	26.79	1600	25.93
	RZ-3K	---	NA	1600	26.67	1600	26.79	1600	33.33
	RZ-3L	---	NA	1600	35.57	1600	31.39	1600	33.39
	RZ-3M	1600	25.63	1600	25.34	1600	25.84	1600	17.83
	RZ-3N	1600	22.62	1600	29.67	1600	25.40	1600	25.10
	RZ-3O	1600	35.87	1600	30.30	1600	25.10	1600	26.16
	RZ-3P	1600	33.57	1600	34.06	1600	32.05	1600	27.59
	RZ-3Q	1600	25.56	1600	30.46	1600	27.89	1600	23.34
	RZ-3R	1600	31.48	1600	30.00	1600	30.73	1600	26.94
	RZ-3S	1600	30.29	1600	24.62	1600	31.48	1600	32.67
	RZ-3T	1600	32.00	1600	27.11	1600	32.47	1600	31.39
	RZ-3U	1600	29.34	1600	25.00	1600	31.48	1600	22.24
	RZ-3V	1600	29.1	1600	16.68	1600	30.20	1600	27.72
	RZ-3W	1600	24.17	1600	27.71	1600	12.13	1600	31.39
	RZ-3X	1600	26.30	1600	19.78	1600	24.77	1600	26.24
	RZ-3Y	1600	24.02	1600	20.78	1600	22.02	1600	20.94
	RZ-3Z	1600	36.36	1600	19.76	1600	34.78	1600	23.56
	RZ-3AA	---[14]	NA	1600	24.77	1600	32.00	1600	17.15
	RZ-3BB	1600	30.00	1600	22.12	1600	30.82	1600	17.60

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #89[9]		Injection Event #90[10]		Injection Event #91[11]		Injection Event #92[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3CC	---[14]	NA	1600	21.43	1600	19.09	1600	21.77
	RZ-3DD	---[14]	NA	1600	21.72	1600	25.92	1600	25.91
	RZ-3FF	---[13]	NA	---[13]	NA	---[13]	NA	---[13]	NA
	RZ-3GG	1600	32.47	1600	29.67	1600	29.34	1600	23.55
	RZ-3HH	1600	34.06	1600	31.39	1600	27.32	1600	28.50
	RZ-3II	1600	28.72	1600	28.15	1600	28.08	1600	25.10
	RZ-3JJ	1600	27.39	1600	22.03	1600	26.05	1600	32.67
	RZ-3KK	1600	34.43	1600	26.79	---[13]	NA	1600	32.00
	RZ-3MM	---	NA	---	NA	---	NA	---	NA
	RZ-3NN	---	NA	---	NA	---	NA	---	NA
	RZ-3OO	---	NA	---	NA	---	NA	---	NA
	RZ-3PP	---	NA	---	NA	---	NA	---	NA
	RZ-3QQ	---	NA	---	NA	---	NA	---	NA
	RZ-3RR	---[14]	NA	800[18]	27.58	1600	22.86	---[14]	NA
	RZ-3SS	---[14]	NA	800[18]	34.78	1600	26.25	---[14]	NA
	RZ-3TT	900[14]	Gravity Fed	900[18]	7.26	900	Gravity Fed	---[14]	NA
	RZ-3UU	1600	24.12	800[18]	17.02	1600	29.17	---[14]	NA
	RZ-3VV	1600	26.24	---[18]	NA	1600	31.19	---[14]	NA
Reactive Zone 4									
(Note-installed	RZ-4A	---[18]	NA	3000	32.24	3000	27.62	3000	18.06
7/6/2006)	RZ-4B	---[18]	NA	3000	30.48	3000	16.38	3000	27.71
	RZ-4C	---[18]	NA	3000	29.36	3000	26.33	3000	28.62
	RZ-4D	---[18]	NA	3000	17.50	3000	28.92	3000	24.83
	RZ-4E	---[18]	NA	3000[17]	15.45	3000	23.27	3000	31.22
	RZ-4F	---[18]	NA	3000	18.60	3000	26.05	3000	16.33
	RZ-4G	---[18]	NA	3000	22.72	3000	27.58	3000	18.34
	RZ-4H	---[18]	NA	3000	18.22	3000	27.14	3000	31.95
	RZ-4I	---[18]	NA	---[18]	NA	---[18]	NA	---[18]	NA
	RZ-4J	---[18]	NA	---[18]	NA	---[18]	NA	---[18]	NA
	RZ-4K	---[18]	NA	---[18]	NA	---[18]	NA	---[18]	NA

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #89[9]		Injection Event #90[10]		Injection Event #91[11]		Injection Event #92[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
	RZ-4L	---[18]	NA	---[18]	NA	---[18]	NA	---[18]	NA
	RZ-4M	---[18]	NA	---[18]	NA	---[18]	NA	---[18]	NA
	RZ-4N	---[18]	NA	---[18]	NA	---[18]	NA	---[18]	NA
	RZ-4O	---[18]	NA	---[18]	NA	---[18]	NA	---[18]	NA
Site-Wide Total		64,900		98,500		92,900		95,200	

Table 23. Carbon Source Solution Introduction Volumes for 2007, General Motors Corporation, Moraine, Ohio.

Notes:
Carbon source introduced into each well is a 20:1 solution (potable water to molasses) for RZ-1A through RZ-3KK, 33:1 for RZ-3RR through RZ-3VV and OW-1 through OW-3, and 50:1 solution for RZ-4.
NA Not Applicable
-- Introduction well was not selected for introduction during this event.
(1) Injection Event #81 was completed January 12, 15, 16, 30 through February 3, and February 7, 2007.
(2) Injection Event #82 was completed February 19 through 22, and February 26 through March 8, 2007.
(3) Injection Event #83 was completed March 8th, March 12th through the 16th, and March 19 through the 21st, 2007.
(4) Injection Event #84 was completed April 2nd through the 6th, 9th through the 11th, and 18th through the 20th, 2007.
(5) Injection Event #85 was completed May 1st through 3rd, 7th through 10th, and 14th through the 16th, 2007.
(6) Injection Event #86 was completed June 6th and 7th, 11th through the 14th, and 18th through the 20th, 2007.
(7) Injection Event #87 was completed July 2nd and 3rd, 5th and 6th, 9th through 12th, 16th through 19th, and 25th through 27th, 2007.
(8) Injection Event #88 was completed August 1st, 2nd, 6th through 9th, 13th through 17th, and 20th through 22nd, 2007.
(9) Injection Event #89 was completed September 4th through 6th, 10th through 14th, and 17th through 19th, 2007.
(10) Injection Event #90 was completed October 1st,2nd, 4th, 8th through 11th, 15th through 18th, 22nd through 25th, 31st and November 1st, 2007.
(11) Injection Event #91 was completed November 1st and 2nd, 5th through 9th, 12th through 14th, and 28th and 29th.
(12) Injection Event #92 was completed December 3rd through 6th, 10th through 12th, 17th through 20th, and 26th and 27th.
(13) Introduction not completed or introduction volume reduced due to accessibility.
(14) Introduction not completed or introduction volume reduced because well would not accept solution.
(15) Introductions not completed due to freezing temparatures.
(16) Introduction not completed or introduction volume reduced due to equipment malfunction and time constraints.
(17) Indicates flow rate for pressurized injections only. A portion of this well was gravity fed and rate is not included
(18) Indicates well that could not be injected due to high pressure.

Table 24: Corrective Action Monitoring Results for Comparison to Remediation Target Levels (RTLs)
General Motors Corporation - Moraine, Ohio

			2007					2006			1999											
Aquifer	Remediation Zone	Chemical	Num of Analyses	Num of Detects	Min Value (mg/l)	Mean Value (mg/L)	Max Value (mg/l)	Min Value (mg/l)	Mean Value (mg/L)	Max Value (mg/l)	Min Value (mg/l)	Mean Value (mg/L)	Max Value (mg/l)	RTL[1] (mg/L)	Ratio: Min 2007 Value to RTL	Ratio: Mean 2007 Value to RTL	Ratio: Max 2007 Value to RTL	Ratio: Min 2006 Value to RTL	Ratio: Mean 2006 Value to RTL	Ratio: Max 2006 Value to RTL	Ratio: Min 1999 Value to RTL	Ratio: Mean 1999 Value to RTL	Ratio: Max 1999 Value to RTL
Shallow	AOI 7 Shallow	1,1-Dichloroethene	4	0	1.8E-03	7.9E-03	1.9E-02	3.0E-03	1.7E-02	4.5E-02	1.3E-03	2.4E-02	5.0E-02	1.4E-01	1.3E-02	5.7E-02	1.4E-01	2.2E-02	1.2E-01	3.3E-01	9.5E-03	1.7E-01	3.6E-01
Shallow	AOI 7 Shallow	cis-1,2-Dichloroethene	4	3	1.6E-03	1.8E+00	4.7E+00	3.5E-03	5.1E+00	1.2E+01	7.5E-03	6.0E+00	9.7E+00	1.4E+00	1.1E-03	1.3E+00	3.4E+00	2.5E-03	3.7E+00	9.7E+00	5.5E-03	4.4E+00	7.1E+00
Shallow	AOI 7 Shallow	Tetrachloroethene	4	2	2.7E-03	7.7E-02	2.8E-01	3.2E-03	1.4E-01	3.7E-01	9.5E-03	4.5E+00	7.1E+00	9.8E-02	2.7E-02	7.9E-01	2.9E+00	3.2E-02	1.4E+00	3.8E+00	9.7E-02	4.6E+01	7.3E+01
Shallow	AOI 7 Shallow	Trichloroethene	4	3	1.6E-03	1.9E-01	3.5E-01	4.7E-03	1.6E-01	3.1E-01	5.0E-03	1.0E+00	1.5E+00	9.8E-02	1.6E-02	1.9E+00	3.6E+00	4.7E-02	1.7E+00	3.2E+00	5.1E-02	1.9E+01	3.5E+01
Shallow	AOI 7 Shallow	Vinyl Chloride	4	3	2.0E-03	8.2E-01	2.6E+00	3.5E-03	2.3E+00	7.0E+00	3.8E-03	1.6E+00	2.6E+00	3.9E-02	5.1E-02	2.1E+01	6.7E+01	9.0E-02	3.8E+01	1.8E+02	9.7E-02	4.2E+01	6.7E+01
Shallow	Zone S1	1,1-Dichloroethene	3	0	9.0E-05	9.3E-05	9.5E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	1.2E-01	7.3E-04	7.5E-04	7.7E-04	7.3E-04	7.3E-04	7.3E-04	4.0E-03	4.0E-03	4.0E-03
Shallow	Zone S1	cis-1,2-Dichloroethene	3	3	7.4E-04	1.1E-02	3.0E-02	2.6E-04	3.4E-04	4.2E-04	1.8E-01	1.8E-01	1.8E-01	1.2E+00	6.0E-04	9.1E-03	2.4E-02	2.1E-04	2.8E-04	3.4E-04	1.4E-01	1.4E-01	1.4E-01
Shallow	Zone S1	Tetrachloroethene	3	0	9.5E-05	1.3E-04	1.5E-04	9.5E-05	9.5E-05	9.5E-05	3.2E-01	3.2E-01	3.2E-01	8.8E-02	1.1E-03	1.5E-03	1.6E-03	1.1E-03	1.1E-03	1.1E-03	3.6E+00	3.6E+00	3.6E+00
Shallow	Zone S1	Trichloroethene	3	3	5.4E-04	6.3E-04	7.8E-04	4.3E-04	5.8E-04	7.3E-04	7.7E-01	7.7E-01	7.7E-01	8.8E-02	6.1E-03	7.2E-03	8.9E-03	4.9E-03	6.6E-03	8.3E-03	8.7E+00	8.7E+00	8.7E+00
Shallow	Zone S1	Vinyl Chloride	3	3	1.1E-03	8.6E-03	2.2E-02	4.2E-04	5.5E-04	6.8E-04	3.2E-03	3.2E-03	3.2E-03	3.5E-02	3.1E-02	2.5E-01	6.3E-01	1.2E-02	1.6E-02	1.9E-02	9.1E-02	9.1E-02	9.1E-02
Shallow	Zone S1 to S2	1,1-Dichloroethene	4	0	9.0E-05	9.4E-05	9.5E-05	9.0E-05	1.0E-04	1.3E-04	5.0E-04	5.0E-04	5.0E-04	6.5E-02	1.4E-03	1.4E-03	1.5E-03	1.4E-03	1.6E-03	2.0E-03	7.7E-03	7.7E-03	7.7E-03
Shallow	Zone S1 to S2	cis-1,2-Dichloroethene	4	4	7.4E-04	1.1E-02	3.0E-02	2.6E-04	9.2E-03	2.7E-02	1.8E-01	2.2E-01	2.6E-01	6.5E-01	1.1E-03	1.7E-02	4.7E-02	4.0E-04	1.4E-02	4.2E-02	2.7E-01	3.3E-01	4.0E-01
Shallow	Zone S1 to S2	Tetrachloroethene	4	1	9.5E-05	1.2E-03	4.5E-03	9.5E-05	4.4E-03	1.3E-02	2.1E-01	2.6E-01	3.2E-01	4.6E-02	2.1E-03	2.7E-02	9.8E-02	2.1E-03	9.6E-02	2.8E-01	4.6E+00	5.8E+00	6.9E+00
Shallow	Zone S1 to S2	Trichloroethene	4	4	5.4E-04	3.5E-03	1.2E-02	4.3E-04	1.1E-02	3.2E-02	4.7E-01	6.2E-01	7.7E-01	4.6E-02	1.2E-02	7.6E-02	2.6E-01	9.3E-03	2.4E-01	7.0E-01	1.0E+01	1.4E+01	1.7E+01
Shallow	Zone S1 to S2	Vinyl Chloride	4	4	1.1E-03	7.6E-03	2.2E-02	4.2E-04	4.0E-03	1.1E-02	5.0E-04	1.9E-03	3.2E-03	1.8E-02	6.1E-02	4.2E-01	1.2E+00	2.3E-02	2.2E-01	6.1E-01	2.8E-02	1.0E-01	1.8E-01
Shallow	Zone S2	1,1-Dichloroethene	3	0	9.5E-05	1.7E-04	3.2E-04	9.0E-05	1.9E-04	3.6E-04	5.0E-04	5.0E-04	5.0E-04	5.5E-02	1.7E-03	3.1E-03	5.7E-03	1.6E-03	3.5E-03	6.5E-03	9.1E-03	9.1E-03	9.1E-03
Shallow	Zone S2	cis-1,2-Dichloroethene	3	3	1.2E-03	3.7E-02	1.0E-01	3.5E-03	4.7E-02	1.1E-01	5.7E-03	8.9E-02	2.6E-01	5.5E-01	2.2E-03	6.7E-02	1.8E-01	6.4E-03	8.5E-02	2.0E-01	1.0E-02	1.6E-01	4.6E-01
Shallow	Zone S2	Tetrachloroethene	3	2	4.9E-04	3.4E-03	5.2E-03	3.8E-04	5.1E-03	1.3E-02	1.3E-03	9.1E-02	2.1E-01	3.9E-02	1.2E-02	8.7E-02	1.3E-01	9.7E-03	1.3E-01	3.3E-01	3.3E-02	2.3E+00	5.6E+00
Shallow	Zone S2	Trichloroethene	3	3	3.6E-03	3.5E-02	9.0E-02	2.4E-03	3.3E-02	6.5E-02	2.7E-02	1.8E-01	4.7E-01	3.9E-02	9.2E-02	9.0E-01	2.3E+00	6.2E-02	8.5E-01	1.7E+00	7.0E-01	4.7E+00	1.2E+01
Shallow	Zone S2	Vinyl Chloride	3	3	8.2E-04	2.1E-03	4.5E-03	1.2E-03	4.8E-03	1.1E-02	5.0E-04	5.0E-04	5.0E-04	1.6E-02	5.1E-02	1.3E-01	2.8E-01	7.5E-02	3.0E-01	6.9E-01	3.1E-02	3.1E-02	3.1E-02
Shallow	Zone S2 to S3	1,1-Dichloroethene	7	1	9.5E-05	3.3E-04	9.5E-04	9.0E-05	3.1E-04	1.1E-03	5.0E-04	5.0E-04	5.0E-04	3.7E-02	2.6E-03	9.0E-03	2.6E-02	2.4E-03	8.3E-03	3.0E-02	1.4E-02	1.4E-02	1.4E-02
Shallow	Zone S2 to S3	cis-1,2-Dichloroethene	7	7	2.4E-04	3.7E-02	1.4E-01	2.8E-04	3.2E-02	1.6E-01	5.0E-04	4.7E-02	2.6E-01	3.7E-01	6.5E-04	1.0E-01	3.8E-01	7.5E-04	8.8E-02	4.3E-01	1.3E-03	1.3E-01	6.9E-01
Shallow	Zone S2 to S3	Tetrachloroethene	7	6	4.9E-04	1.3E-02	3.2E-02	3.8E-04	1.7E-02	4.1E-02	1.3E-03	6.1E-02	2.1E-01	2.6E-02	1.9E-02	5.1E-01	1.2E+00	1.5E-02	6.6E-01	1.6E+00	5.0E-02	2.4E+00	6.2E+00
Shallow	Zone S2 to S3	Trichloroethene	7	7	3.3E-03	4.1E-02	1.1E-01	2.4E-03	3.6E-02	1.3E-01	4.0E-03	1.0E-01	4.7E-01	2.6E-02	1.3E-01	1.6E+00	4.2E+00	9.2E-02	1.4E+00	3.7E+00	1.5E-01	4.0E+00	1.8E+01
Shallow	Zone S2 to S3	Vinyl Chloride	7	4	1.1E-04	2.7E-03	1.2E-02	1.1E-04	2.8E-03	1.3E-02	5.0E-04	5.0E-04	5.0E-04	1.1E-02	1.0E-02	2.4E-01	1.1E+00	9.5E-03	2.6E-01	1.2E+00	4.5E-02	4.5E-02	4.5E-02
Shallow	Zone S3	1,1-Dichloroethene	10	1	9.0E-05	6.6E-04	2.4E-03	2.0E-04	4.9E-04	1.8E-03	5.0E-04	2.2E-03	3.9E-03	2.6E-02	3.5E-03	2.5E-02	9.2E-02	7.7E-03	1.9E-02	6.9E-02	1.9E-02	8.5E-02	1.5E-01
Shallow	Zone S3	cis-1,2-Dichloroethene	10	9	4.3E-04	1.3E-01	5.3E-01	3.5E-04	1.1E-02	4.2E-02	2.6E-03	3.5E-02	6.6E-02	2.6E-01	1.6E-03	5.0E-01	2.0E+00	1.3E-03	4.2E-02	1.6E-01	1.0E-02	1.3E-01	2.5E-01
Shallow	Zone S3	Tetrachloroethene	10	6	9.5E-05	3.9E-02	1.3E-01	9.5E-05	4.4E-02	1.4E-01	5.0E-04	8.5E-04	1.2E-03	1.9E-02	5.0E-03	2.0E+00	6.6E+00	5.0E-03	2.3E+00	7.4E+00	2.6E-02	4.5E-02	6.3E-02
Shallow	Zone S3	Trichloroethene	10	9	4.3E-04	3.5E-02	1.2E-01	4.7E-04	2.9E-02	1.1E-01	3.2E-03	1.6E-02	2.9E-02	1.9E-02	2.2E-02	1.5E+00	6.3E+00	2.4E-02	1.6E+00	5.3E+00	1.7E-01	8.4E-01	1.5E+00
Shallow	Zone S3	Vinyl Chloride	10	5	2.1E-04	1.1E-02	5.3E-02	2.6E-04	2.6E-03	9.6E-03	5.0E-04	1.8E-03	3.0E-03	7.0E-03	3.0E-02	1.5E+00	7.6E+00	3.7E-02	3.7E-01	1.4E+00	7.1E-02	2.5E-01	4.3E-01
Shallow	Zone S3 to GM-10/GM-52	1,1-Dichloroethene	21	1	9.0E-05	4.4E-04	2.4E-03	9.0E-05	3.0E-04	1.8E-03	5.0E-04	1.1E-03	3.9E-03	2.1E-02	4.3E-03	2.1E-02	1.1E-01	4.3E-03	1.4E-02	8.6E-02	2.4E-02	5.3E-02	1.9E-01
Shallow	Zone S3 to GM-10/GM-52	cis-1,2-Dichloroethene	21	18	8.5E-05	8.0E-02	5.3E-01	1.1E-04	8.8E-03	4.2E-02	5.0E-04	2.3E-02	6.6E-02	2.1E-01	4.1E-04	3.9E-01	2.5E+00	5.1E-04	4.3E-02	2.0E-01	2.4E-03	1.1E-01	3.2E-01
Shallow	Zone S3 to GM-10/GM-52	Tetrachloroethene	21	13	9.5E-05	3.2E-02	1.3E-01	9.5E-05	5.3E-02	1.8E-01	5.0E-04	1.9E-02	8.1E-02	1.5E-02	6.3E-03	2.1E+00	8.7E+00	6.3E-03	2.6E+00	1.2E+01	3.3E-02	1.2E+00	5.4E+00
Shallow	Zone S3 to GM-10/GM-52	Trichloroethene	21	17	8.5E-05	2.7E-02	1.2E-01	1.4E-04	3.8E-02	1.2E-01	5.0E-04	3.7E-02	1.3E-01	1.5E-02	5.7E-03	1.8E+00	8.0E+00	9.3E-03	2.5E+00	7.7E+00	3.3E-02	2.5E+00	8.7E+00
Shallow	Zone S3 to GM-10/GM-52	Vinyl Chloride	21	10	1.1E-04	6.1E-03	5.3E-02	1.1E-04	1.7E-03	9.6E-03	5.0E-04	1.9E-03	8.4E-03	6.0E-03	1.8E-02	1.0E+00	5.8E+00	1.8E-02	2.8E-01	1.6E+00	8.3E-02	3.2E-01	1.4E+00
Shallow	GM-10/GM-52	1,1-Dichloroethene	2	0	9.5E-05	1.7E-04	2.4E-04	9.0E-05	1.5E-04	1.8E-04	5.0E-04	5.0E-04	5.0E-04	1.5E-02	6.3E-03	1.1E-02	1.6E-02	6.0E-03	1.0E-02	1.2E-02	3.3E-02	3.3E-02	3.3E-02
Shallow	GM-10/GM-52	cis-1,2-Dichloroethene	2	2	3.5E-04	9.2E-03	1.8E-02	7.7E-04	1.8E-03	2.7E-03	5.0E-04	5.0E-04	5.0E-04	1.5E-01	2.3E-03	6.1E-02	1.2E-01	5.1E-03	1.2E-02	1.8E-02	3.3E-03	3.3E-03	3.3E-03
Shallow	GM-10/GM-52	Tetrachloroethene	2	2	9.7E-04	4.4E-02	8.8E-02	9.8E-04	4.8E-02	7.5E-02	5.0E-04	5.0E-04	5.0E-04	1.1E-02	8.8E-02	4.0E+00	8.0E+00	8.9E-02	4.4E+00	8.1E+00	4.5E-02	4.5E-02	4.5E-02
Shallow	GM-10/GM-52	Trichloroethene	2	2	8.6E-03	2.8E-02	4.7E-02	1.1E-02	4.0E-02	6.1E-02	1.4E-02	1.4E-02	1.4E-02	1.1E-02	7.8E-01	2.5E+00	4.3E+00	1.0E+00	3.6E+00	5.5E+00	1.3E+00	1.3E+00	1.3E+00
Shallow	GM-10/GM-52	Vinyl Chloride	2	0	1.1E-04	1.9E-04	2.8E-04	1.1E-04	1.8E-04	2.1E-04	5.0E-04	5.0E-04	5.0E-04	4.0E-03	2.8E-02	4.8E-02	6.9E-02	2.6E-02	4.4E-02	5.3E-02	1.3E-01	1.3E-01	1.3E-01
Shallow	POC Shallow	1,1-Dichloroethene	1	0	9.5E-05	9.5E-05	9.5E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	7.0E-03	1.4E-02	1.4E-02	1.4E-02	1.3E-02	1.3E-02	1.3E-02	7.1E-02	7.1E-02	7.1E-02
Shallow	POC Shallow	cis-1,2-Dichloroethene	1	0	8.5E-05	8.5E-05	8.5E-05	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	7.0E-02	1.2E-03	1.2E-03	1.2E-03	1.5E-03	1.5E-03	1.5E-03	7.1E-03	7.1E-03	7.1E-03
Shallow	POC Shallow	Tetrachloroethene	1	1	1.2E-03	1.2E-03	1.2E-03	9.6E-04	9.6E-04	9.6E-04	5.0E-04	5.0E-04	5.0E-04	5.0E-03	2.4E-01	2.4E-01	2.4E-01	1.9E-01	1.9E-01	1.9E-01	1.0E-01	1.0E-01	1.0E-01
Shallow	POC Shallow	Trichloroethene	1	0	8.5E-05	8.5E-05	8.5E-05	1.4E-04	1.4E-04	1.4E-04	5.0E-04	5.0E-04	5.0E-04	5.0E-03	1.7E-02	1.7E-02	1.7E-02	2.8E-02	2.8E-02	2.8E-02	1.0E-01	1.0E-01	1.0E-01
Shallow	POC Shallow	Vinyl Chloride	1	0	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	2.0E-03	5.5E-02	5.5E-02	5.5E-02	5.3E-02	5.3E-02	5.3E-02	2.5E-01	2.5E-01	2.5E-01
Deep	AOI 7 Deep	1,1-Dichloroethene	4	0	1.8E-03	7.9E-03	1.9E-02	3.0E-03	1.7E-02	4.5E-02	1.3E-03	2.4E-02	5.0E-02	1.8E-01	9.8E-03	4.4E-02	1.1E-01	1.7E-02	9.5E-02	2.5E-01	7.3E-03	1.3E-01	2.8E-01
Deep	AOI 7 Deep	cis-1,2-Dichloroethene	4	3	1.6E-03	1.8E+00	4.7E+00	3.5E-03	5.1E+00	1.2E+01	7.5E-03	6.0E+00	9.7E+00	1.8E+00	8.6E-04	1.0E+00	2.6E+00	1.9E-03	2.9E+00	6.7E+00	4.2E-03	2.4E+00	5.4E+00
Deep	AOI 7 Deep	Tetrachloroethene	4	2	2.7E-03	7.7E-02	2.8E-01	3.2E-03	1.4E-01	3.7E-01	9.5E-03	4.5E+00	7.1E+00	1.3E-01	2.1E-02	6.0E-01	2.2E+00	2.5E-02	1.1E+00	2.9E+00	7.4E-02	3.5E+01	5.6E+01
Deep	AOI 7 Deep	Trichloroethene	4	3	1.6E-03	1.9E-01	3.5E-01	4.7E-03	1.6E-01	3.1E-01	5.0E-03	1.0E+00	1.5E+00	1.3E-01	1.2E-02	1.5E+00	2.7E+00	3.6E-02	1.3E+00	2.4E+00	3.9E-02	8.9E+00	1.1E+01
Deep	AOI 7 Deep	Vinyl Chloride	4	3	2.0E-03	8.2E-01	2.6E+00	3.5E-03	2.3E+00	7.0E+00	3.8E-03	1.6E+00	2.6E+00	5.1E-02	3.9E-02	1.6E+01	5.1E+01	6.9E-02	1.6E+01	1.4E+02	7.5E-02	2.2E+01	3.1E+01

[1] RTL = Remediation Target Level

Table 24: Corrective Action Monitoring Results for Comparison to Remediation Target Levels (RTLs)
General Motors Corporation - Moraine, Ohio

			2007					2006			1999											
Aquifer	Remediation Zone	Chemical	Num of Analyses	Num of Detects	Min Value (mg/l)	Mean Value (mg/L)	Max Value (mg/l)	Min Value (mg/l)	Mean Value (mg/L)	Max Value (mg/l)	Min Value (mg/l)	Mean Value (mg/L)	Max Value (mg/l)	RTL[1] (mg/L)	Ratio: Min 2007 Value to RTL	Ratio: Mean 2007 Value to RTL	Ratio: Max 2007 Value to RTL	Ratio: Min 2006 Value to RTL	Ratio: Mean 2006 Value to RTL	Ratio: Max 2006 Value to RTL	Ratio: Min 1999 Value to RTL	Ratio: Mean 1999 Value to RTL	Ratio: Max 1999 Value to RTL
Deep	GM-40/41/54	1,1-Dichloroethene	5	0	9.5E-05	4.5E-04	6.5E-04	9.0E-05	3.5E-04	6.0E-04				3.2E-02	3.0E-03	1.4E-02	2.0E-02	2.8E-03	1.1E-02	1.9E-02			
Deep	GM-40/41/54	cis-1,2-Dichloroethene	5	2	8.5E-05	6.6E-03	1.7E-02	1.1E-04	3.9E-03	1.1E-02				3.2E-01	2.6E-04	2.0E-02	5.3E-02	3.3E-04	1.2E-02	3.4E-02			
Deep	GM-40/41/54	Tetrachloroethene	5	2	1.5E-04	6.2E-02	1.6E-01	9.5E-05	6.0E-02	1.8E-01				2.3E-02	6.3E-03	2.7E+00	7.0E+00	4.1E-03	2.6E+00	7.8E+00			
Deep	GM-40/41/54	Trichloroethene	5	4	8.5E-05	8.1E-02	2.3E-01	1.4E-04	7.1E-02	2.1E-01				2.3E-02	3.7E-03	3.5E+00	1.0E+01	6.1E-03	3.1E+00	9.1E+00			
Deep	GM-40/41/54	Vinyl Chloride	5	3	5.0E-04	1.9E-03	4.0E-03	4.2E-04	1.7E-03	3.9E-03				9.0E-03	5.6E-02	2.1E-01	4.4E-01	4.7E-02	1.9E-01	4.3E-01			
Deep	GM-42	1,1-Dichloroethene	1	1	1.5E-04	1.5E-04	1.5E-04	9.0E-05	9.0E-05	9.0E-05				1.1E-02	1.3E-02	1.3E-02	1.3E-02	8.2E-03	8.2E-03	8.2E-03			
Deep	GM-42	cis-1,2-Dichloroethene	1	1	1.8E-02	1.8E-02	1.8E-02	1.4E-02	1.4E-02	1.4E-02				1.1E-01	1.6E-01	1.6E-01	1.6E-01	1.3E-01	1.3E-01	1.3E-01			
Deep	GM-42	Tetrachloroethene	1	0	1.5E-04	1.5E-04	1.5E-04	9.5E-05	9.5E-05	9.5E-05				8.0E-03	1.8E-02	1.8E-02	1.8E-02	1.2E-02	1.2E-02	1.2E-02			
Deep	GM-42	Trichloroethene	1	1	2.2E-03	2.2E-03	2.2E-03	6.4E-04	6.4E-04	6.4E-04				8.0E-03	2.7E-01	2.7E-01	2.7E-01	8.0E-02	8.0E-02	8.0E-02			
Deep	GM-42	Vinyl Chloride	1	1	4.7E-04	4.7E-04	4.7E-04	4.5E-04	4.5E-04	4.5E-04				3.0E-03	1.6E-01	1.6E-01	1.6E-01	1.5E-01	1.5E-01	1.5E-01			
Deep	Zone D1	1,1-Dichloroethene	1	0	9.5E-05	9.5E-05	9.5E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	5.0E-03	1.9E-02	1.9E-02	1.9E-02	1.8E-02	1.8E-02	1.8E-02	1.0E-01	1.0E-01	1.0E-01
Deep	Zone D1	cis-1,2-Dichloroethene	1	1	1.4E-03	1.4E-03	1.4E-03	2.0E-03	2.0E-03	2.0E-03	1.2E-03	1.2E-03	1.2E-03	5.4E-02	2.6E-02	2.6E-02	2.6E-02	3.7E-02	3.7E-02	3.7E-02	2.2E-02	2.2E-02	2.2E-02
Deep	Zone D1	Tetrachloroethene	1	0	1.5E-04	1.5E-04	1.5E-04	9.5E-05	9.5E-05	9.5E-05	5.0E-04	5.0E-04	5.0E-04	4.0E-03	3.6E-02	3.6E-02	3.6E-02	2.4E-02	2.4E-02	2.4E-02	1.3E-01	1.3E-01	1.3E-01
Deep	Zone D1	Trichloroethene	1	1	3.2E-03	3.2E-03	3.2E-03	1.4E-03	1.4E-03	1.4E-03	1.4E-02	1.4E-02	1.4E-02	4.0E-03	8.0E-01	8.0E-01	8.0E-01	3.5E-01	3.5E-01	3.5E-01	3.4E+00	3.4E+00	3.4E+00
Deep	Zone D1	Vinyl Chloride	1	1	1.6E-02	1.6E-02	1.6E-02	1.8E-02	1.8E-02	1.8E-02	1.5E-03	1.5E-03	1.5E-03	2.0E-03	8.0E+00	8.0E+00	8.0E+00	9.0E+00	9.0E+00	9.0E+00	7.5E-01	7.5E-01	7.5E-01
Deep	Zone D2	1,1-Dichloroethene	2	0	9.5E-05	9.5E-05	9.5E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	8.0E-03	1.2E-02	1.2E-02	1.2E-02	1.1E-02	1.1E-02	1.1E-02	6.3E-02	6.3E-02	6.3E-02
Deep	Zone D2	cis-1,2-Dichloroethene	2	1	8.5E-05	1.9E-03	3.8E-03	1.1E-04	3.1E-03	6.1E-03	5.0E-04	8.0E-04	1.1E-03	7.5E-02	1.1E-03	2.6E-02	5.1E-02	1.4E-03	4.1E-02	8.1E-02	6.7E-03	1.1E-02	1.5E-02
Deep	Zone D2	Tetrachloroethene	2	2	1.8E-03	1.9E-03	1.9E-03	2.1E-03	2.1E-03	2.1E-03	1.2E-03	1.6E-03	2.0E-03	5.0E-03	3.6E-01	3.7E-01	3.8E-01	4.2E-01	4.2E-01	4.2E-01	2.4E-01	3.2E-01	4.0E-01
Deep	Zone D2	Trichloroethene	2	2	1.4E-02	2.3E-02	3.2E-02	1.3E-02	2.4E-02	3.4E-02	7.5E-03	1.9E-02	3.1E-02	5.0E-03	2.8E+00	4.6E+00	6.4E+00	2.6E+00	4.7E+00	6.8E+00	1.5E+00	2.5E+00	6.4E+00
Deep	Zone D2	Vinyl Chloride	2	0	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.9E-04	2.7E-04	5.0E-04	5.0E-04	5.0E-04	2.0E-03	5.5E-02	5.5E-02	5.5E-02	5.3E-02	9.4E-02	1.4E-01	2.5E-01	2.5E-01	2.5E-01
Deep	POC Deep	1,1-Dichloroethene	3	0	9.5E-05	9.5E-05	9.5E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	7.0E-03	1.4E-02	1.4E-02	1.4E-02	1.3E-02	1.3E-02	1.3E-02	7.1E-02	7.1E-02	7.1E-02
Deep	POC Deep	cis-1,2-Dichloroethene	3	1	8.5E-05	4.2E-04	1.1E-03	1.1E-04	4.7E-04	1.2E-03	5.0E-04	1.8E-03	4.3E-03	7.0E-02	1.2E-03	6.0E-03	1.6E-02	1.5E-03	6.7E-03	1.7E-02	7.1E-03	2.5E-02	6.1E-02
Deep	POC Deep	Tetrachloroethene	3	2	1.5E-04	1.2E-03	2.1E-03	9.5E-05	1.4E-03	2.1E-03	5.0E-04	8.3E-04	1.5E-03	5.0E-03	2.9E-02	2.5E-01	4.2E-01	1.9E-02	2.8E-01	4.2E-01	1.0E-01	1.7E-01	3.0E-01
Deep	POC Deep	Trichloroethene	3	3	5.1E-03	1.6E-02	3.5E-02	6.3E-03	1.7E-02	3.4E-02	5.0E-04	6.4E-03	1.5E-02	5.0E-03	1.0E+00	3.1E+00	7.0E+00	1.2E+00	3.4E+00	6.8E+00	1.0E-01	1.3E+00	2.9E+00
Deep	POC Deep	Vinyl Chloride	3	0	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	2.0E-03	5.5E-02	5.5E-02	5.5E-02	5.3E-02	5.3E-02	5.3E-02	2.5E-01	2.5E-01	2.5E-01

NOTES

1. RTL reflects updated groundwater modeling conducted to reflect current pumping conditions (see Appendix F, Table F-1 and Table F-4)

Table 25: In-Place Waste Management Unit Assessment
Summary of Downgradient Ground Water Concentrations (mg/L) for Current Ground Water Use[1]
Delphi Thermal, Moraine Engine and Moraine Assembly Plants - GMC, Moraine, Ohio

TCL/TAL Group	Constituent	CASRN	Moraine Assembly	Moraine Engine	West Carrollton	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6	0.	0.	0.	0.2	
VOC	1,1-Dichloroethane	75-34-3	0.0001	0.	0.	3.65	
VOC	1,1-Dichloroethene	75-35-4	0.	0.	0.	0.007	
VOC	1,2-Dichloroethene (total)	540-59-0	0.	0.	0.	0.07	
VOC	2-Butanone	78-93-3	0.	0.	0.	21.9	
VOC	Acetone	67-64-1	0.	0.	0.	3.65	
VOC	Benzene	71-43-2	0.	0.	0.	0.005	
VOC	Carbon Disulfide	75-15-0	0.	0.	0.	3.65	
VOC	Chlorobenzene	108-90-7	0.	0.	0.	0.1	
VOC	Chloroethane	75-00-3	0.	0.	0.	0.01	
VOC	Chloroform	67-66-3	0.	0.	0.	0.1	
VOC	cis-1,2-Dichloroethene	156-59-2	0.0001	0.	0.	0.07	
VOC	Ethyl Benzene	100-41-4	0.	0.	0.	0.7	
VOC	Styrene	100-42-5	0.	0.	0.	0.1	
VOC	Tetrachloroethene	127-18-4	0.	0.	0.0001	0.005	
VOC	Toluene	108-88-3	0.	0.	0.	1.	
VOC	trans-1,2-Dichloroethene	156-60-5	0.	0.	0.	0.1	
VOC	Trichloroethene	79-01-6	0.0001	0.	0.0001	0.005	
VOC	Trichlorofluoromethane	75-69-4	0.	0.	0.	10.95	
VOC	Vinyl Chloride	75-01-4	0.	0.	0.	0.002	
VOC	Xylenes (total)	1330-20-7	0.	0.	0.	10.	
SVOC	1,2-Dichlorobenzene	95-50-1	0.	0.	0.	0.6	
SVOC	2-Methylnaphthalene	91-57-6	0.	0.	0.	0.73	
SVOC	Benzo(a)anthracene	56-55-3	0.	0.	0.	0.01	
SVOC	Benzo(a)pyrene	50-32-8	0.	0.	0.	0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2	0.	0.	0.	0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	0.	0.	0.	0.006	
SVOC	Butylbenzylphthalate	85-68-7	0.	0.	0.	7.3	
SVOC	Chrysene	218-01-9	0.	0.	0.	0.0117	
SVOC	Di-n-butylphthalate	84-74-2	0.	0.	0.	3.65	
SVOC	Fluoranthene	206-44-0	0.	0.	0.	1.46	
SVOC	Fluorene	86-73-7	0.	0.	0.	1.46	
SVOC	Naphthalene	91-20-3	0.	0.	0.	0.73	
SVOC	Phenanthrene	85-01-8	0.	0.	0.	1.095	
SVOC	Pyrene	129-00-0	0.	0.	0.	1.095	
P/PCB	Aroclor-1242	53469-21-9	0.	0.	0.	0.0005	
P/PCB	Aroclor-1254	11097-69-1	0.	0.	0.	0.0005	
P/PCB	Aroclor-1260	11096-82-5	0.	0.	0.	0.0005	
INORG	Antimony	7440-36-0	0.	0.	0.	0.006	
INORG	Arsenic	7440-38-2	0.	0.	0.	0.05	
INORG	Barium	7440-39-3	0.	0.	0.	2.	
INORG	Beryllium	7440-41-7	0.	0.	0.	0.004	
INORG	Cadmium	7440-43-9	0.	0.	0.	0.005	
INORG	Chromium (total)	7440-47-3	0.	0.	0.	0.1	
INORG	Cobalt	7440-48-4	0.	0.	0.	2.19	
INORG	Copper	7440-50-8	0.	0.	0.	1.3	
INORG	Cyanide (total)	57-12-5	0.	0.	0.	0.2	
INORG	Lead	7439-92-1	0.	0.	0.	0.015	
INORG	Manganese	7439-96-5	0.	0.	0.0007	5.11	
INORG	Mercury	7439-97-6	0.	0.	0.	0.002	
INORG	Nickel	7440-02-0	0.	0.	0.	0.1	
INORG	Selenium	7782-49-2	0.	0.	0.	0.05	
INORG	Silver	7440-22-4	0.	0.	0.	0.1825	
INORG	Thallium	7440-28-0	0.	0.	0.	0.002	
INORG	Vanadium	7440-62-2	0.	0.	0.	0.2555	
INORG	Zinc	7440-66-6	0.	0.	0.	10.95	

Note:

1 Supplemental Baseline Risk Assessment (ENVIRON 2001b).
Groundwater Exposure Scenario 1 - Baseline wells (West Carrollton municipal well field and Moraine Assembly industrial wells (11A, 12A)).

Table 26. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
HR-9	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-11	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-4	Monitoring of groundwater quality upgradient of the closed North Settling Lagoon and downgradient of Landfill L3.	Annual	VOCs[1]
W-2-N	Monitoring of groundwater quality downgradient of the closed North Settling Lagoon.	Annual	VOCs[1]
W-3-N	Monitoring of groundwater quality downgradient of the closed North Settling Lagoon.	Annual	VOCs[1]
W-4-N	Monitoring of groundwater quality downgradient of the closed North Settling Lagoon and Landfills L2 and L3.	Annual	VOCs[1]
HR-2	Monitoring groundwater quality downgradient of Landfills L2 and L3.	Annual	VOCs[1]
HR-5	Monitoring of groundwater quality downgradient of the North Settling Lagoon.	Annual	VOCs[1]
HR-1	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs[1]
GM-30	Monitoring effectiveness of corrective measures at AOI 7.	Annual	VOCs[1] Biogeochemical[2]
GM-23	Monitoring effectiveness of corrective measures at RZ-1.	Annual	VOCs[1] Biogeochemical[2]

Table 26. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
GM-27	Monitoring effectiveness of corrective measures at RZ-1 in lower portion of the upper aquifer.	Annual	VOCs[1]
GM-29	Monitoring effectiveness of corrective measures sidegradient to RZ-1.	Annual	VOCs[1] Biogeochemical[2]
GM-28	Monitoring effectiveness of corrective measures downgradient of RZ-1.	Annual	VOCs[1] Biogeochemical[2]
ME-6	Monitoring effectiveness of corrective measures at the upgradient boundary of RZ-2.	Annual	VOCs[1] Biogeochemical[2]
GM-31	Monitoring effectiveness of corrective measures beneath the introduction zone within RZ-2.	Annual	VOCs[1] Biogeochemical[2]
ME-3	Monitoring effectiveness of corrective measures at the downgradient boundary of RZ-2.	Annual	VOCs[1] Biogeochemical[2]
GM-22	Monitoring effectiveness of corrective measures upgradient of RZ-3 East.	Annual	VOCs[1] Biogeochemical[2]
GM-19S	Monitoring effectiveness of corrective measures downgradient of RZ-4 East and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1] Biogeochemical[2]

Table 26. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
GM-33	Monitoring effectiveness of corrective measures upgradient of RZ-3 West and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1]
GM-35	Monitoring effectiveness of corrective measures upgradient of RZ-3 West and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1]
GM-32	Monitoring effectiveness of corrective measures downgradient of RZ-3 West and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1] Biogeochemical[2]
GM-21	Monitoring effectiveness of corrective measures downgradient of RZ-3 West.	Annual	VOCs[1] Biogeochemical[2]
HR-17	Monitoring of groundwater quality upgradient of the closed South Settling Lagoon.	Annual	VOCs[1]
W-2-S	Monitoring of groundwater quality downgradient of the closed South Settling Lagoon.	Annual	VOCs[1]
W-3-S	Monitoring of groundwater quality downgradient of the closed South Settling Lagoon.	Annual	VOCs[1]
W-4-S	Monitoring of groundwater quality downgradient of the closed South Settling Lagoon and sidegradient to RZ-4 West.	Annual	VOCs[1] Biogeochemical[2]
GM-8	Monitoring groundwater quality downgradient of RZ-3 West and within Landfill L1.	Annual	VOCs[1] Biogeochemical[2
GM-6	Monitoring groundwater quality downgradient of RZ-3 West and within Landfill L1.	Annual	VOCs[1] Biogeochemical[2
GM-47/GM-50	Monitoring effectiveness of corrective measures downgradient of RZ-4 West.	Annual	VOCs[1] Biogeochemical[2
GM-51	Monitoring effectiveness of corrective measures downgradient of the site.	Annual	VOCs[1]

Table 26. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
GM-52	Monitoring effectiveness of corrective measures downgradient of the site.	Annual	VOCs[1]
GM-63/GM-64	Monitoring effectiveness of corrective measures downgradient of RZ-4 West.	Annual	VOCs[1] Biogeochemical[2]
TW-2	Monitoring groundwater quality downgradient of the site and Landfill L1.	Annual	VOCs[1]
GM-2	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-16	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-17	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-18	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
WSU-24	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-10	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-26	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs[1]
Lower Aquifer Wells			
HR-10	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-12	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-15	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs[1]

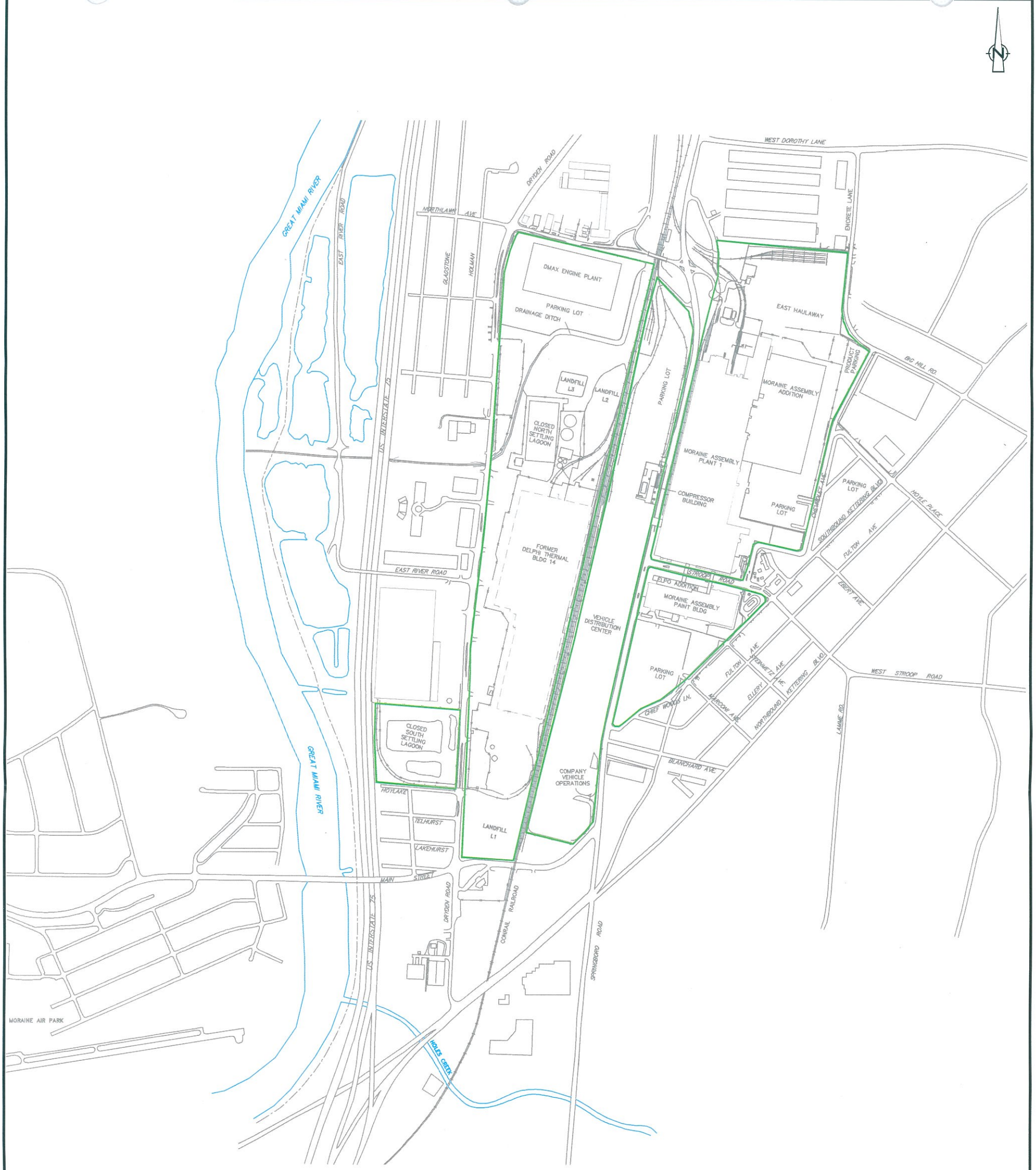
Table 26. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Lower Aquifer Wells			
GM-39	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-40	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-41	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-42	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-54	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-58	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-61	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-19D	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-3	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-1	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-15	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs(1)
GM-11	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs(1)
GM-20D	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs(1)
DN-13	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-9	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
MT-69	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)

VOCs - Volatile organic compounds.

(1) The parameters for the remaining annual sampling events will include the site-specific list of VOCs: benzene, 1,1,-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.

(2) The biogeochemical list includes the field and laboratory parameters presented on Table 1.



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SITE LAYOUT
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-04
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		FIGURE NUMBER
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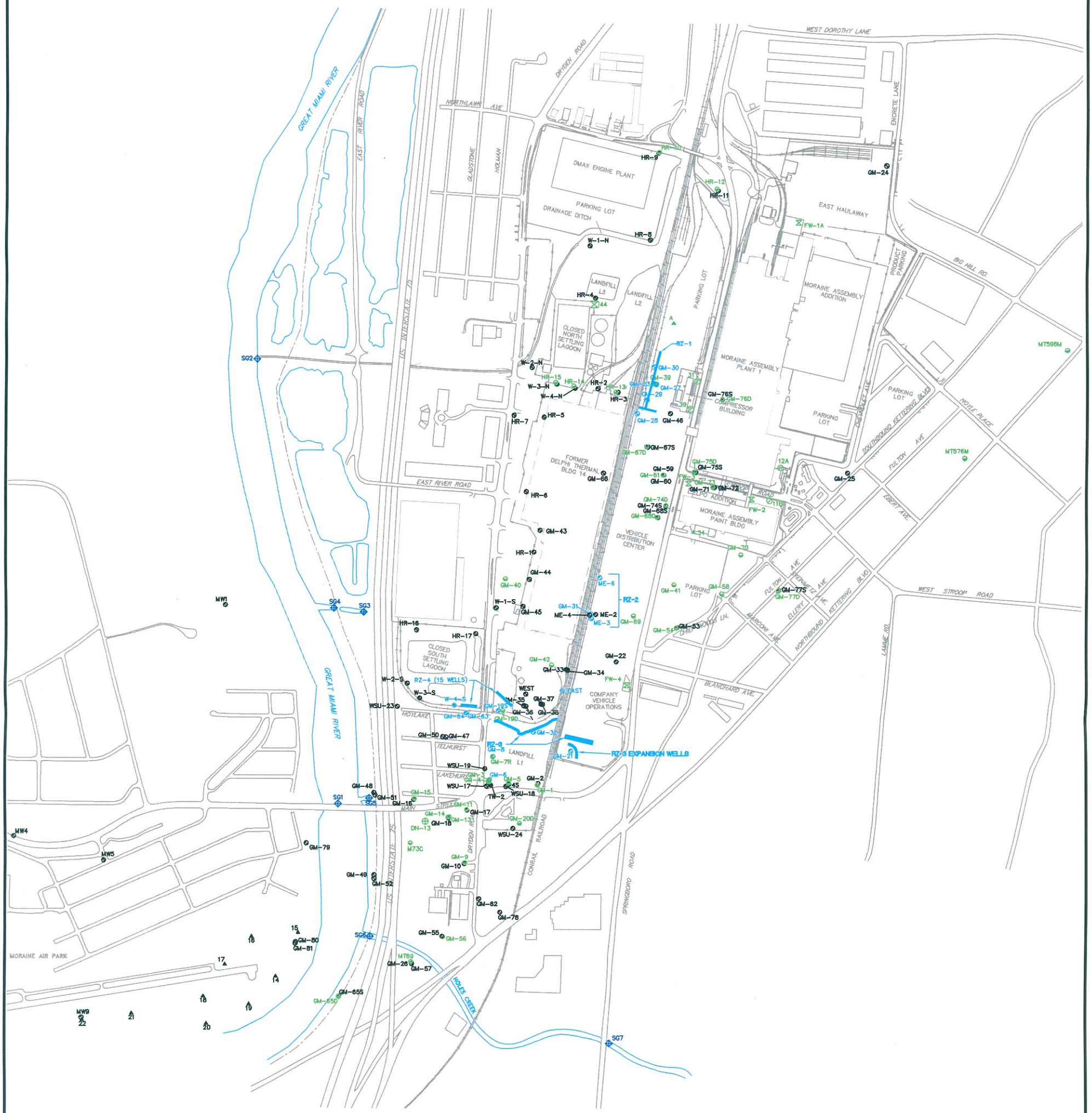

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Dublin, OH 43017
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SITE-WIDE CORRECTIVE MEASURES
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-04
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		FIGURE NUMBER
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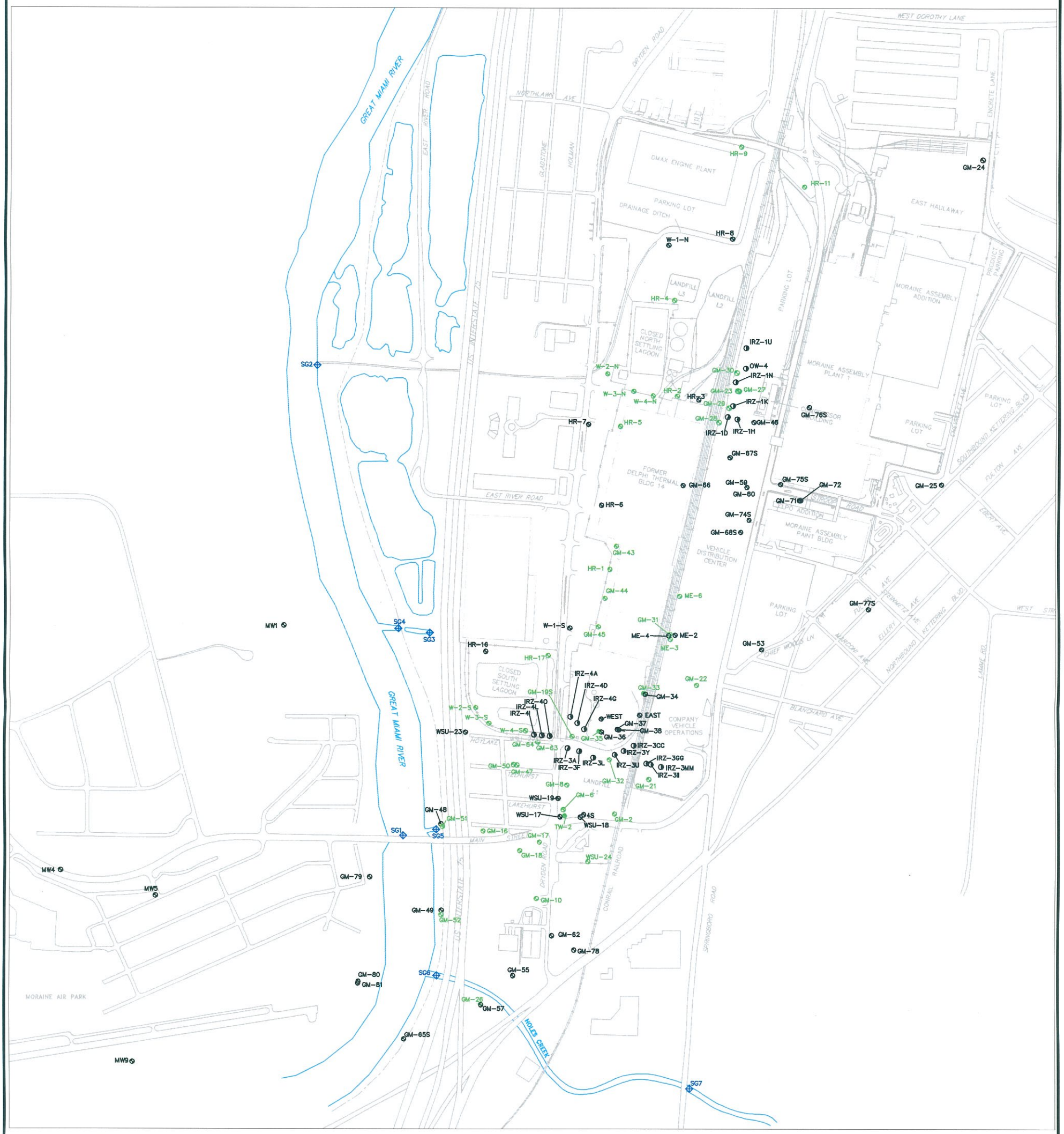

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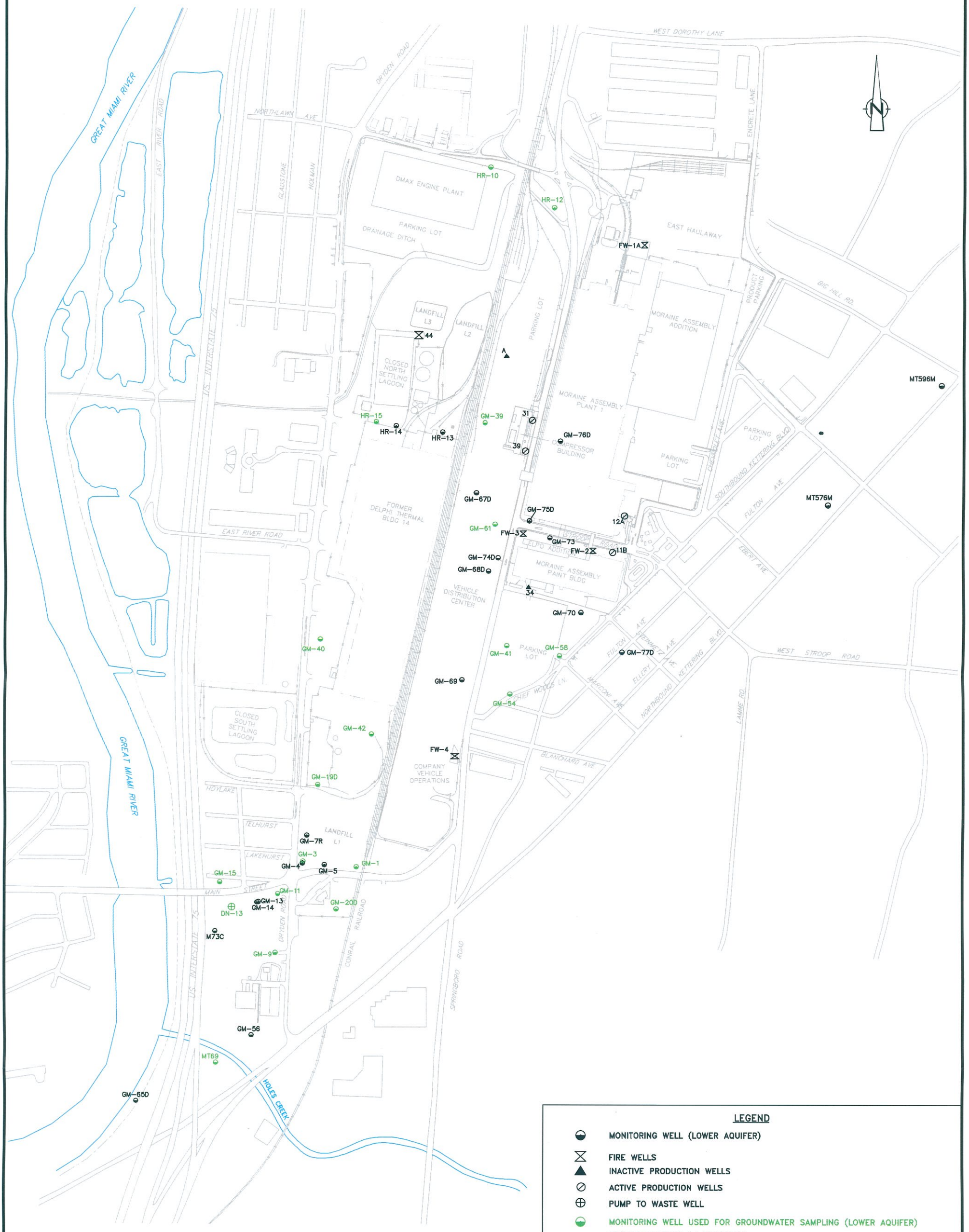
UPPER AQUIFER MONITORING WELLS FOR SITE-WIDE GROUNDWATER MONITORING GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-01
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. HUNT	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
OH000294.0010.007		3



LEGEND

- MONITORING WELL (LOWER AQUIFER)
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- ACTIVE PRODUCTION WELLS
- PUMP TO WASTE WELL
- MONITORING WELL USED FOR GROUNDWATER SAMPLING (LOWER AQUIFER)
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE

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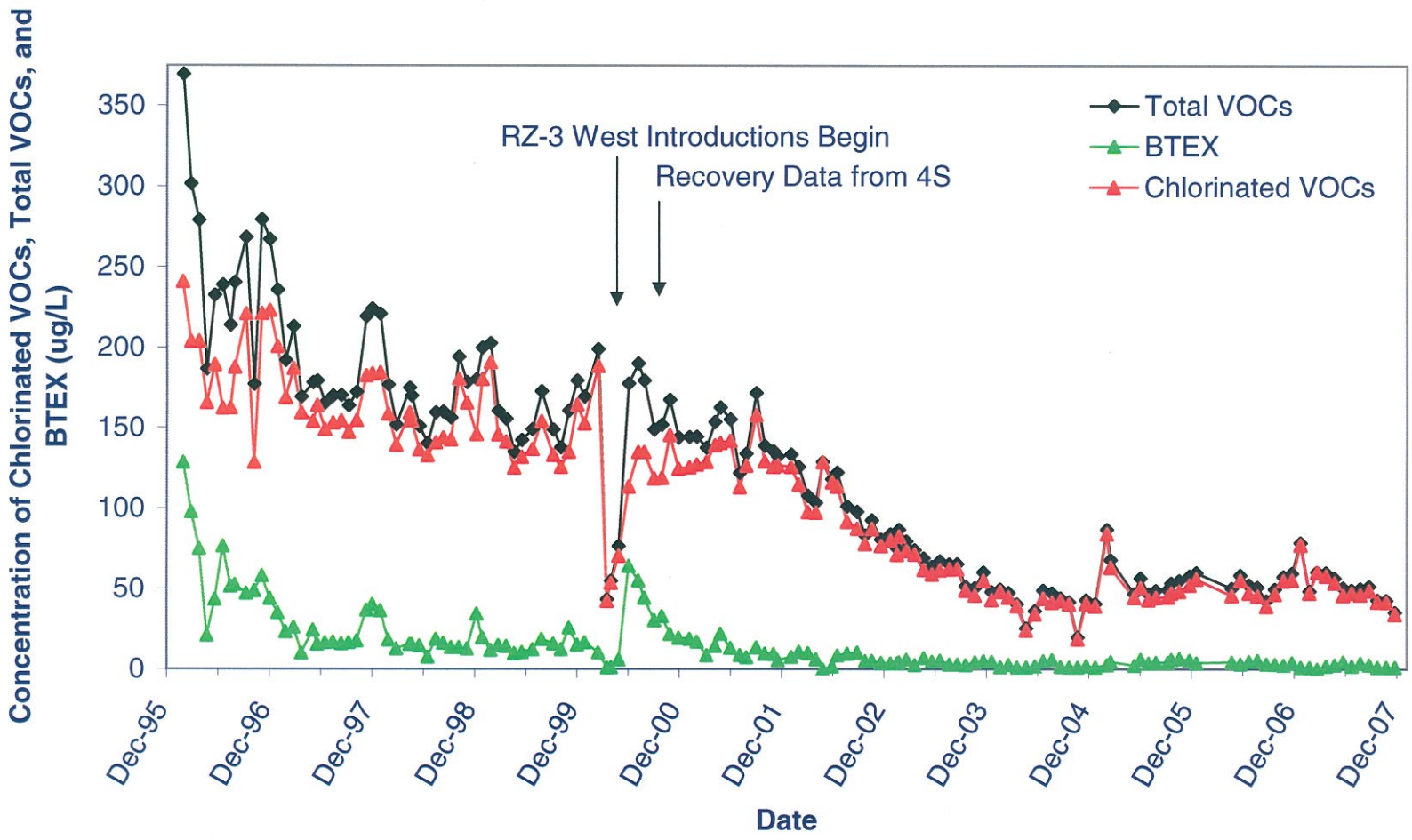
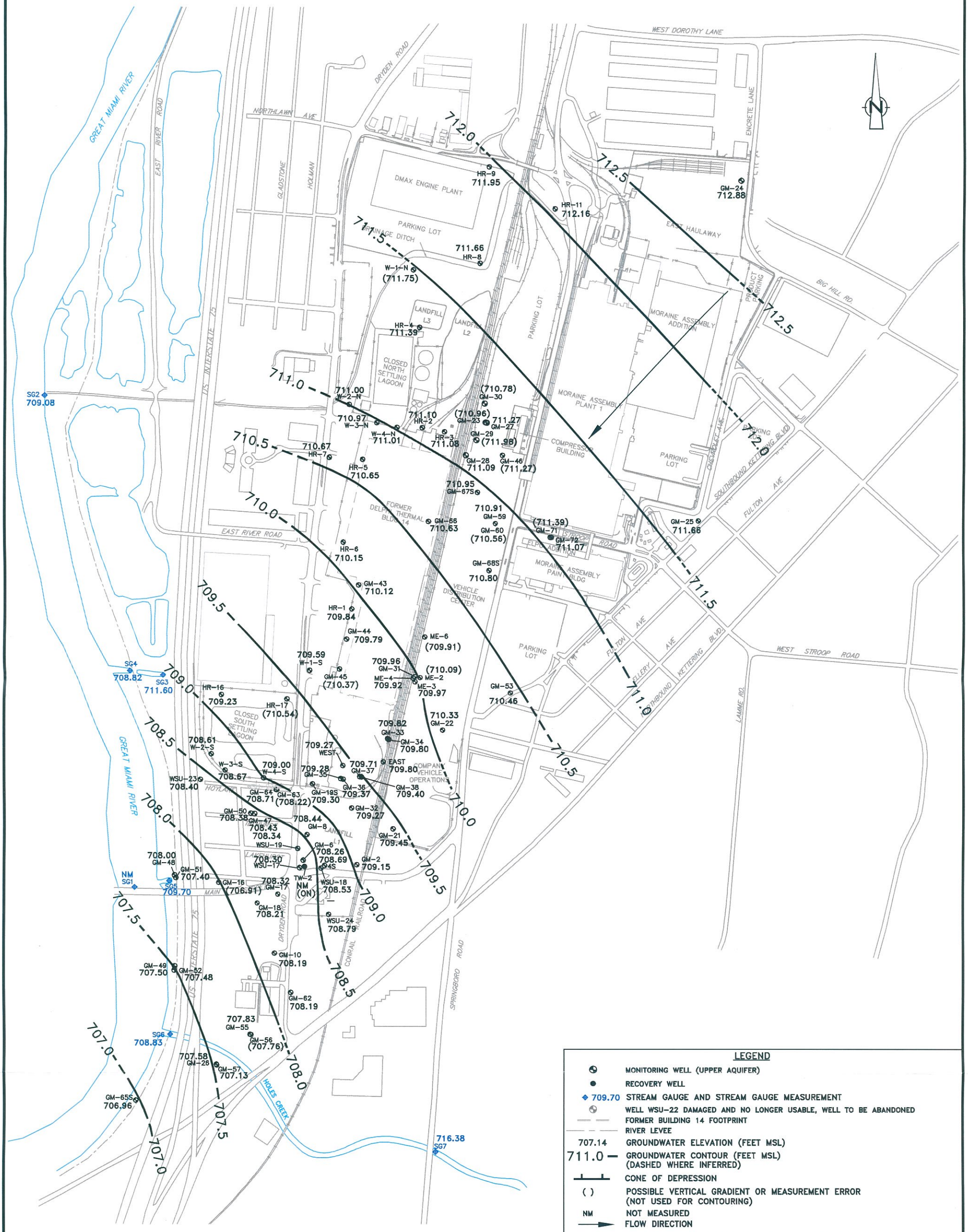
LOWER AQUIFER MONITORING WELLS FOR SITE-WIDE GROUNDWATER MONITORING GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-01
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. HUNT	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.007		4

Figure 5. Influent VOCs Since System Start-Up, Groundwater Recovery & Treatment System, General Motors Corporation, Moraine, Ohio





LEGEND

- MONITORING WELL (UPPER AQUIFER)
- RECOVERY WELL
- 709.70 STREAM GAUGE AND STREAM GAUGE MEASUREMENT
- WELL WSU-22 DAMAGED AND NO LONGER USABLE, WELL TO BE ABANDONED
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 707.14 GROUNDWATER ELEVATION (FEET MSL)
- 711.0 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- CONE OF DEPRESSION
- ( ) POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- NM NOT MEASURED
- FLOW DIRECTION
- ON/OFF INDICATES WHETHER RECOVERY WELL IS IN OPERATION
- SG5 STREAM GAUGE 5 REPRESENTS SURFACE WATER LEVELS IN THE OUTFALL. DATA NOT INCLUDED IN THE CONTOUR.

CONTOUR INTERVAL = 0.5 FOOT

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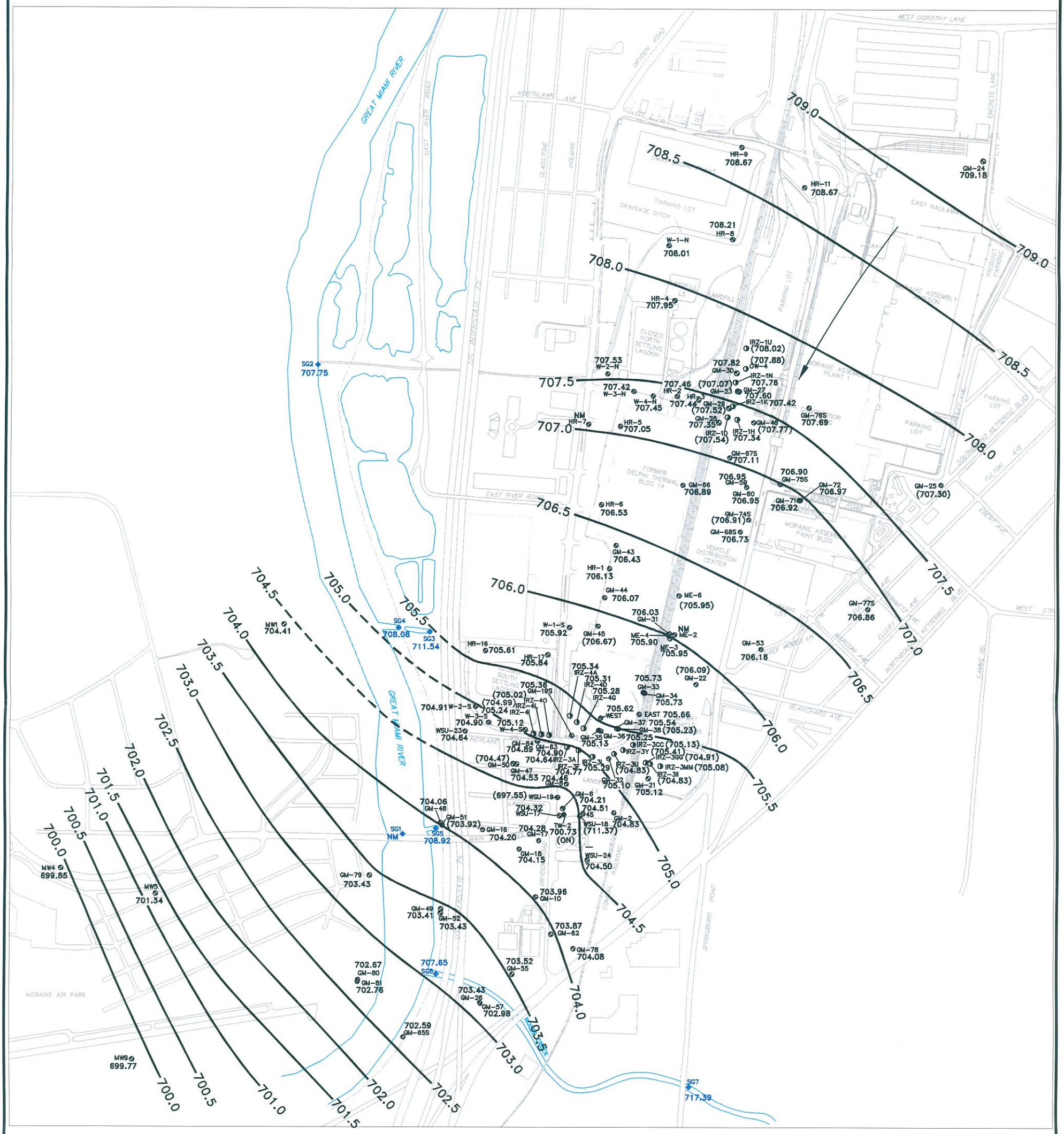
POTENTIOMETRIC SURFACE (UPPER AQUIFER) ON APRIL 30 AND MAY 1, 2007 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-02
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.007		6



LEGEND

- MONITORING WELL (UPPER AQUIFER)
- RECOVERY WELL
- 707.75 — STREAM GAUGE AND STREAM GAUGE MEASUREMENT
- CARBON INTRODUCTION WELL (OW-4 IS AN OBSERVATION WELL FOR IRZ 1)
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 708.01 — GROUNDWATER ELEVATION (FEET MSL)
- 706.0 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- CONE OF DEPRESSION
- ( ) — POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- NM — NOT MEASURED
- FLOW DIRECTION
- ON/OFF — INDICATES WHETHER RECOVERY WELL IS IN OPERATION
- SG5 — STREAM GAUGE 5 REPRESENTS SURFACE WATER LEVELS IN THE OUTFALL. DATA NOT INCLUDED IN THE CONTOUR.

CONTOUR INTERVAL = 0.5 FOOT

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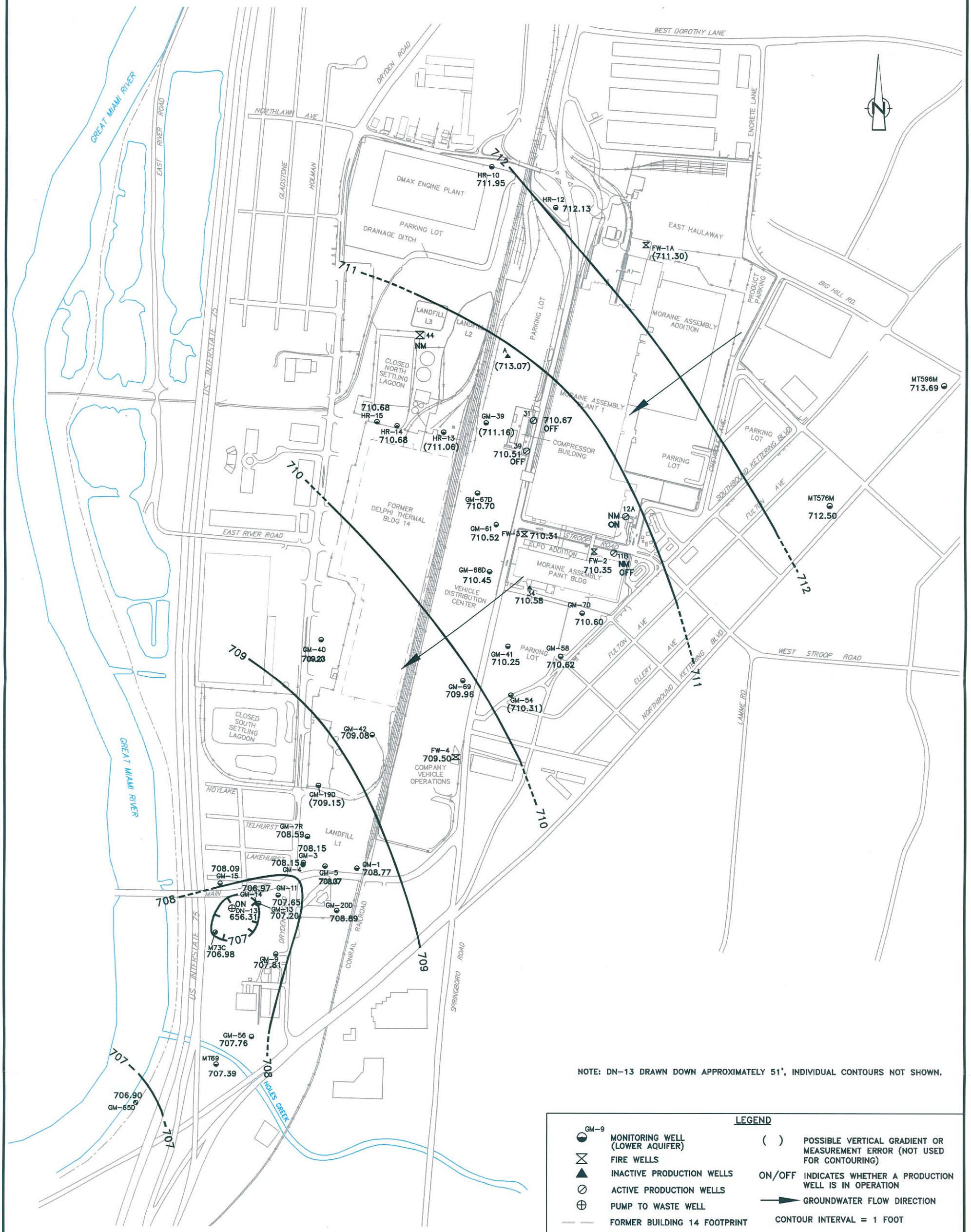
POTENTIOMETRIC SURFACE (UPPER AQUIFER) ON OCTOBER 24-25, 2007 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-01
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. HUNT	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.007		7



NOTE: DN-13 DRAWN DOWN APPROXIMATELY 51', INDIVIDUAL CONTOURS NOT SHOWN.

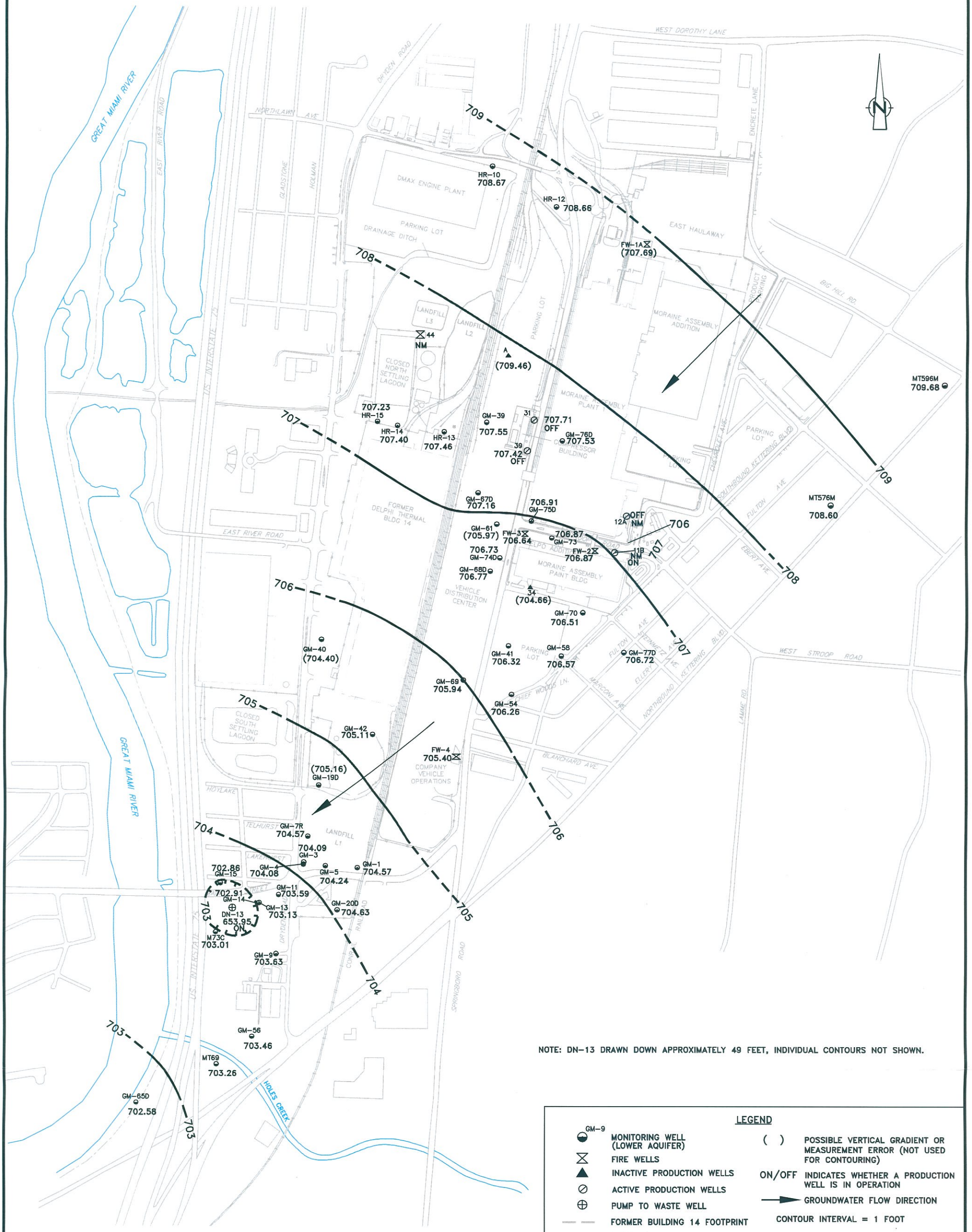
LEGEND

- GM-9 — MONITORING WELL (LOWER AQUIFER)
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- ACTIVE PRODUCTION WELLS
- PUMP TO WASTE WELL
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 711.69 — GROUNDWATER ELEVATION (FEET MSL)
- NM — NOT MEASURED
- 708 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- CONE OF DEPRESSION
- ( ) — POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- ON/OFF — INDICATES WHETHER A PRODUCTION WELL IS IN OPERATION
- GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 1 FOOT

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

POTENTIOMETRIC SURFACE (LOWER AQUIFER) ON APRIL 30 AND MAY 1, 2007 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-03
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.007		8



NOTE: DN-13 DRAWN DOWN APPROXIMATELY 49 FEET, INDIVIDUAL CONTOURS NOT SHOWN.

LEGEND

- GM-9 — MONITORING WELL (LOWER AQUIFER)
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- ACTIVE PRODUCTION WELLS
- PUMP TO WASTE WELL
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 703.69 — GROUNDWATER ELEVATION (FEET MSL)
- NM — NOT MEASURED
- 708 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- CONE OF DEPRESSION
- ( ) — POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- ON/OFF — INDICATES WHETHER A PRODUCTION WELL IS IN OPERATION
- GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 1 FOOT

ARCADIS
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POTENTIOMETRIC SURFACE (LOWER AQUIFER) ON OCTOBER 24-25, 2007 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-01
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. HUNT	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.007		9

HR-4: UA: TT (676-686)	9/14/1999	9/20/2000	11/6/2001	9/27/2002	9/18/2003	9/16/2004	10/20/2005	9/25/2006	9/26/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	0.77 J	1.5	0.77 J	1.8	3.6
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.28 J	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	0.26 J	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene		1.2 ND (1.00) U	0.88 J	0.59 J	0.95 J	0.39 J	0.41 J	0.33 J	
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.95 J	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Trichloroethene		1.4 ND (1.00) U	0.5 J	1.0	0.71 J	0.5 J	0.32 J	0.34 J	0.31 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

HR-3: UA:TT (674-684)	9/16/1999	9/19/2000	11/7/2001	9/24/2002	9/16/2003	9/16/2004	10/20/2005	9/25/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.27 J	0.34 J	ND (1.0) U
1,1-Dichloroethane	6.2	5.4	6.9	15	13	23	18	10
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	6.1	4.6	5.1	9.9	9.9	18	9.9	8.2
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	0.32 J	ND (1.0) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.53 J	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.60		1.1	1.8	1.5	0.99 J
Trichloroethene	ND (1.0) U	ND (1.00) U	0.66 J	1.4	1.6	8.1	1.4	7.2
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR-2: UA:TT (676-686)	9/16/1999	9/19/2000	11/7/2001	9/24/2002	9/16/2003	9/16/2004	10/20/2005	9/25/2006	9/26/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	3.9	4.6	4.2	4.9	4.5	5.6	4.4/4.5	5.2	5.3
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	9.6	8.6	8.3	8.8	7.2	7.8	5.0/5.1	5.6	5.0
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.47 J	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene		1.5	1.1	1.2	0.96	1.1	0.78 J/0.80 J	0.79 J	0.76 J
Trichloroethene	ND (1.0) U	ND (1.00) U	0.56 J	0.46 J	0.4 J	0.53 J	0.35 J/0.40 J	0.48 J	0.45 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.23 J	0.29 J/0.25 J	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U/ND (2.0) U	ND (2.0) U	ND (2.0) U

W-4-N: UA:TT (665-690)	9/17/1999	9/19/2000	11/7/2001	9/24/2002	9/17/2003	9/16/2004	10/20/2005	9/25/2006	9/26/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.33 J	0.44 J	0.28 J	0.4 J	ND (1.0) U	0.34 J
1,1-Dichloroethane	1.3	ND (1.00) U	0.89 J	1.7	0.94 J	1.7	1.2	1.3	1.6
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	2.2	2.0	1.6	5.2	1.7	5.8	2.0	2.4	2.6
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	2.1	ND (1.00) U	0.92 J	0.94 J	1.1	1.7	1.0	0.96 J	0.88 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.81 J	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	1.4	ND (1.00) U	ND (0.50) U	0.33 J	ND (0.5) U	0.38 J	ND (1.0) U	0.19 J	0.24 J
Trichloroethene	9.8	7.3	7.1	8.5	8.1	12	7.2	7.6	10
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.77 J	0.48 J	0.49 J	0.54 J	0.56 J	0.96 J
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.71 J	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

W-3-N: UA (675-700)	9/17/1999	9/19/2000	11/7/2001	9/23/2002	9/17/2003	9/16/2004	10/20/2005	9/25/2006	9/26/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U	ND (4.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U	ND (4.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U	ND (4.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U	ND (4.0) U
cis-1,2-Dichloroethene	291	282	160	150	100	120	84	140	110
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U	ND (4.0) U
Tetrachloroethene	2.5	ND (1.00) U	9.0	ND (6.7) U	5.1	0.94 J	1.4	ND (5.0) U	ND (4.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U	ND (4.0) U
trans-1,2-Dichloroethene	2.6	3.9	2.2 J	ND (3.3) U	1.6 J	1.6 J	1.0 J	1.9 J	1.4 J
Trichloroethene	ND (1.0) U	ND (1.00) U	2.1 J	ND (6.7) U	1.7 J	ND (4) U	ND (4.0) U	ND (5.0) U	ND (4.0) U
Vinyl chloride	12.8	24.0	7.6	6.5 J	6.6	6.1	8.0	9.6	5.6
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (8.0) U	ND (10) U	ND (8.0) U

W-2-N: UA (670-695)	9/14/1999	9/19/2000	11/6/2001	9/19/2002	9/18/2003	9/16/2004	10/20/2005	9/22/2006	9/25/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	0.48 J	ND (1.0) U	ND (1) U	0.3 J	ND (1.0) U	0.25 J/0.25 J	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.33 J	0.31 J	ND (1) U	0.36 J	0.28 J	0.26 J/0.29 J	0.22 J
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	1.6	1.2	1.1	1.6	1.3	1.8	1.3	1.4 J/1.4 J	1.6
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	0.31 J	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Trichloroethene	1.7	ND (1.00) U	1.3	1.4	ND (1) U	1.4	0.91 J	1.1 J/1.0 J	0.88 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U/ND (2.0) U	ND (2.0) U

HR-5: UA: TT (677-687)	9/16/1999	9/19/2000	11/7/2001	9/23/2002	9/18/2003	9/13/2004	10/18/2005	9/22/2006	9/24/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	0.17 J/ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.51 J/0.55 J	0.55 J	0.42 J	0.54 J	0.43 J	0.51 J	0.51 J
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	10.5	5.6	7.1/7.8	7.5	5.4	4.8	4.6	5.1	5.4
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	3.0	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	1.1	ND (1.00) U	0.67/0.74	0.58	0.46 J	0.44 J	0.52 J	0.46 J	0.41 J
Trichloroethene	12.0	8.3	11	13	15	11	13	13 J	13
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	1.1	0.22 J	ND (1.0) U
Xylene (total)	ND (1.0) U	2.0	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

HR-8: UA (677-687)	9/16/1999	9/18/2000	11/6/2001	9/19/2002	9/17/2003	9/13/2004	10/19/2005	9/21/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	10.6	9.9	10	11	7.8	6.4	4.4	4.2
1,1-Dichloroethane	26.4	29.0	26	18	13	8.6	5.5	6.1
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.44 J	ND (1) U	0.32 J	0.19 J	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	4.4	5.6	5.4	4.8	2.8	1.5	1.3	0.92 J
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	1.1	ND (1.00) U	ND (1.0) U	ND (1.0) U	1.1	1.8	1.5	0.99 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	1.6	1.6	1.4	1.0	0.85	0.63	0.45 J	0.28 J
Trichloroethene	1.5	1.3	1.1	1.3	1	0.66 J	0.55 J	0.30 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR-9: UA (673-683)	9/16/1999	9/18/2000	11/6/2001	9/19/2002	9/17/2003	9/13/2004	10/19/2005	9/21/2006	9/25/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	20.3	20.5	17	13	12	15	14	16	8.9
1,1-Dichloroethane	52.2	51.0	38	46	35	45	42	36	62
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	0.95 J	1.1 J	ND (1.2) U	1.4	0.97 J	0.65 J	0.56 J
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (2) U	ND (1.0) U	ND (2.5) U	ND (2.0) U
cis-1,2-Dichloroethene	20.3	16.3	12	17	11	17	19	15	25
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.4) U	ND (1.7) U	ND (1.2) U	ND (2) U	ND (1.2) U	ND (1.4) U	ND (2.5) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.4) U	ND (1.7) U	ND (1.2) U	ND (2) U	ND (1.2) U	ND (1.4) U	ND (2.5) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.4) U	ND (1.7) U	ND (1.2) U	ND (2) U	ND (1.2) U	ND (1.4) U	ND (2.5) U
trans-1,2-Dichloroethene	3.2	2.6	1.7	2.5	1.5	2.5	2.8	2.5	3.7
Trichloroethene	18.1	16.9	14	15	11	13	12	13	16
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.4) U	ND (1.7) U	ND (1.2) U	ND (2) U	ND (2.5) U	ND (2.9) U	ND (5.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.4) U	ND (1.7) U	ND (1.2) U	ND (2) U	ND (2.5) U	ND (2.9) U	ND (5.0) U

HR-1: UA: TT (673-683)	9/16/1999	9/25/2000	11/8/2001	9/23/2002	9/18/2003	9/13/2004	10/18/2005	9/25/2006	9/24/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	1.5/1.6	1.3	2.2 J	ND (2) U	1 J	0.56 J/0.56 J	1.2	0.57 J	0.45 J
1,1-Dichloroethane	2.4/2.5	2.4	2.8 J	2.8	2.6	2.5/2.5	2.7	2.2	2.2
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U	ND (1.0) U	ND (1.7) U	0.21 J
Benzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U/ND (1) U	ND (1.0) U	ND (1.7) U	ND (1.0) U
cis-1,2-Dichloroethene	5.8/6.1	8.5	9.9	4.5	2.3	24/24	4.3	2.3	20
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U	ND (1.0) U	ND (1.7) U	ND (1.0) U
Tetrachloroethene	40.5/44.3	32.6	36	33	27	23/24	28	ND (1.7) U	20
Toluene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U	ND (1.0) U	ND (1.7) U	ND (1.0) U
trans-1,2-Dichloroethene	3.9/4.0	3.2	2.8	3.2	3.2	2.3/2.4	2.3	1.4 J	1.9
Trichloroethene	53.5/56.5	56.4	86	33	43	30/31	43	50	40
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	0.55 J/0.61 J	1.1	ND (1.7) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U	ND (2.0) U	ND (3.3) U	ND (2.0) U

HR-16: UA: TT (663-683)	9/23/1999	9/18/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	0.46 J	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (0.50) U	ND (0.50) U
Trichloroethene	2.7	1.6
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (2.0) U

W-1-S: UA:TT (668-703)	9/22/1999	9/19/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (2.0) U
1,1-Dichloroethane	ND (1.0) U	0.97 J/1.3 J
1,1-Dichloroethene	ND (1.0) U	ND (2.0) U
Benzene	7.8/8.0	6.0/6.1
Ethylbenzene	ND (1.0) U	ND (2.0) U
Tetrachloroethene	28.4/30.9	61/62
Toluene	ND (1.0) U	ND (2.0) U
trans-1,2-Dichloroethene		1.3
Trichloroethene	11.6	16
Vinyl chloride	ND (1.0) U	ND (2.0) U
Xylene (total)	ND (1.0) U	ND (2.0) U

HR-17: UA: TT (678-698)	9/23/1999	9/28/2000	11/8/2001	9/18/2002	9/25/2003	9/17/2004	10/19/2005	9/18/2006	9/25/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	1.9	1.4	0.39 J	ND (2) U	ND (1) U	ND (1.8) U	ND (1.0) U	ND (2.5) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	1.5	0.75 J	2 J	0.70 J	0.60 J	1.2 J
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (2) U	ND (1) U	ND (1.8) U	ND (1.0) U	ND (2.5) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (2) U	ND (1) U	ND (1.8) U	ND (1.0) U	ND (2.5) U
cis-1,2-Dichloroethene	2.2 J	ND (1.00) U	ND (0.50) U	5.1	2.2	7.1	3.1	4.6	1.9 J
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (2) U	ND (1) U	ND (1.8) U	ND (1.0) U	ND (2.5) U
Tetrachloroethene	15.5	82	36	22	64	45	54	51	51
Toluene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (1.0) U	ND (2) U	ND (1) U	ND (1.8) U	ND (1.0) U	ND (2.5) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	1.4	0.7 J	1.6 J	0.57 J	0.46 J	0.69 J
Trichloroethene	7.4	4.4	4.2	12	10	18	8.3	5.3	16
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (2) U	ND (1) U	ND (1.8) U	ND (1.0) U	ND (2.5) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (2) U	ND (3.7) U	ND (2.0) U	ND (3.0) U	ND (5.0) U

W-2-S: UA: TT (660-695)	9/23/1999	9/27/2000	11/8/2001	9/18/2002	9/26/2003	9/17/2004	10/19/2005	9/18/2006	9/24/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	1.9	1.6/1.7	1.7	1.5	1.4	1.5	1.6	1.8	1.4
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.58 J	0.98 J	0.99 J	1.3	1.2	1.2	1.1
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.49 J	0.90 J	0.74 J	1.1	0.96 J	0.89 J	0.89 J
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	0.55 J	0.36 J	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	0.25 J	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Trichloroethene	6.1	5.0	5.2 B	4.9	5.5	5.4	5.3	6	5.3
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

W-4-S: UA (657-697)	9/23/1999	9/28/2000	11/8/2001	9/18/2002	9/26/2003	9/17/2004	10/19/2005	9/19/2006	9/24/2007
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L	ug/L
1,1,1-Trichloroethane	3.3/3.4	3.0	2.9	2.3	3	2.3	2.4	1.7	1.5
1,1-Dichloroethane	1.2	1.1	1.1	0.87 J	0.92 J	1.2	1.4	1.3	1.8
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	4.3/4.4	4.0	3.3	3.6	3.6	4.4	4.3	5.6	5.9
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	28.6/30.5	15.4	13	17	24	18	20	26	20
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	0.25 J	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.43 J	0.60	0.78	0.97	1.1	1.0	1.3
Trichloroethene	14.6/14.7	8.9 B	9.8	13	13	12	16	16	16
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

HR-7: UA: TT (674-684)	9/17/1999	9/19/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	0.65	
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (0.50) U
Trichloroethene	0.8	9.4
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.0) U

HR-6: UA: TT (677-687)	9/16/1999	9/23/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1) U

HR-10: LA:NTP (616-626)	9/15/1999 UG/L	9/29/2000 UG/L	11/14/2001 UG/L	9/27/2002 UG/L	9/17/2003 ug/l	9/20/2004 ug/l	10/24/2005 ug/L	9/26/2006 ug/L	9/25/2007 ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Trichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U/ND (2.0) U

HR-13: LA:BT (648-658)	9/15/1999 UG/L	9/29/2000 UG/L	11/14/2001 UG/L	9/30/2002 UG/L	9/16/2003 ug/l	9/21/2004 ug/l	10/25/2005 ug/L	9/25/2006 ug/L
1,1,1-Trichloroethane	1.6/1.6	1.7	0.74 J	1.4	2.2	2.6	2.3	2.0
1,1-Dichloroethane	41.4/42.8	39.5	15	25	33	30	25	22
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.27 J	0.25 J	0.18 J
Benzene	ND (1.0) U	ND (1.00) U	0.18 J	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	20.8/21.2	14.1	6.5	11	12	12	11	9.0
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.20 J	0.22 J	0.20 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.4 U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	3.1/3.3	2.5	0.65	1.4	1.8	1.5	1.5	1.4
Trichloroethene	3.3/3.4	2.0	1.2	3.6	5.7	21	20	15
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.43 J	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR-15: LA (634-644)	9/15/1999 UG/L	9/29/2000 UG/L	11/14/2001 UG/L	9/30/2002 UG/L	9/17/2003 ug/l	9/21/2004 ug/l	10/25/2005 ug/L	9/25/2006 ug/L	9/26/2007 ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) UJ/ND (1) UJ	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	2.5	2.8	0.86	0.98/1	2.2	2.5	2.2	2.1/2.2	2.5
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	0.29 J	0.38 J	0.40 J	0.51 J/0.50 J	0.37 J
Vinyl chloride	11.0	11.2	ND (1.0) U	0.38 J/ND (1) U	14	19	14	13/13	15
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U/ND (2.0) U	ND (2.0) U

HR-14: LA (642-652)	9/15/1999 ug/l	9/30/2002 ug/l
1,1,1-Trichloroethane	ND (1) U	ND (1) U
1,1-Dichloroethane	ND (1) U	ND (1) U
1,1-Dichloroethene	ND (1) U	ND (1) U
Benzene	ND (1) U	ND (1) U
cis-1,2-Dichloroethene	7.9	3.6
Ethylbenzene	ND (1) U	ND (1) U
Tetrachloroethene	ND (1) U	ND (1) U
Toluene	ND (1) U	0.57 U
trans-1,2-Dichloroethene	ND (1) U	ND (0.5) U
Trichloroethene	3.4	1.2
Vinyl chloride	11.5	ND (1) U
Xylene (total)	ND (1) U	ND (1) U

GM-68D: LA:BT (658-668)	5/4/2007 ug/L
1,1,1-Trichloroethane	ND (50) U/ND (50) U
1,1-Dichloroethane	ND (50) U/ND (50) U
1,1-Dichloroethene	ND (50) U/ND (50) U
Benzene	ND (50) U/ND (50) U
cis-1,2-Dichloroethene	ND (50) U/ND (50) U
Ethylbenzene	ND (50) U/ND (50) U
Tetrachloroethene	1500/1500
Toluene	ND (50) U/ND (50) U
trans-1,2-Dichloroethene	ND (50) U/ND (50) U
Trichloroethene	770/750
Vinyl chloride	ND (50) U/ND (50) U
Xylene (total)	ND (100) U/ND (100) U

GM-74D: LA:BT (653-663)	9/27/2007 ug/L
VOAs	
1,1,1-Trichloroethane	ND (8.0) U
1,1-Dichloroethane	ND (8.0) U
1,1-Dichloroethene	ND (8.0) U
Benzene	ND (8.0) U
cis-1,2-Dichloroethene	ND (8.0) U
Ethylbenzene	ND (8.0) U
Tetrachloroethene	250
Toluene	ND (8.0) U
trans-1,2-Dichloroethene	ND (8.0) U
Trichloroethene	130
Vinyl chloride	ND (8.0) U
Xylene (total)	ND (16) U

GM-69: LA (632-642)	5/3/2007 ug/L
1,1,1-Trichloroethane	ND (12) U
1,1-Dichloroethane	8.7 J
1,1-Dichloroethene	ND (12) U
Benzene	ND (12) U
cis-1,2-Dichloroethene	29
Ethylbenzene	ND (12) U
Tetrachloroethene	6.5 J
Toluene	ND (12) U
trans-1,2-Dichloroethene	ND (12) U
Trichloroethene	300
Vinyl chloride	ND (12) U
Xylene (total)	ND (24) U

GM-42: LA (579-589)	12/9/2003 ug/l	9/20/2004 ug/l	10/25/2005 ug/L	9/26/2006 ug/L	9/25/2007 ug/L
1,1,1-Trichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1-Dichloroethane	0.46 J	0.7 J	0.64 J	0.50 J	0.64 J/0.67 J
1,1-Dichloroethene	ND (1) U	0.25 J	0.21 J	ND (1.0) U	0.20 J/ND (1.0) U
Benzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
cis-1,2-Dichloroethene	11	16	17	14	17/18
Ethylbenzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Tetrachloroethene	0.27 J	ND (1) U	0.19 J	ND (1.0) U	ND (1.0) U/ND (1.0) U
Toluene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	0.30 J/0.18 J
trans-1,2-Dichloroethene	0.34 J	0.44 J	0.59 J	0.44 J	0.59 J/0.69 J
Trichloroethene	0.37 J	0.43 J	0.85 J	0.64 J	2.1/2.2
Vinyl chloride	1	0.92 J	0.56 J	0.45 J	0.49 J/0.44 J
Xylene (total)	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U/ND (2.0) U

GM-40: LA (577-587)	12/10/2003 ug/l	9/20/2004 ug/l	10/25/2005 ug/L	9/26/2006 ug/L	9/25/2007 ug/L
1,1,1-Trichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Vinyl chloride	3.1	3.2	2.9	3.9	4.0
Xylene (total)	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

GM-19D: LA (583-588)[1]	9/28/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	9/26/2002 UG/L	9/25/2003 ug/l	9/20/2004 ug/l	10/25/2005 ug/L	9/26/2006 ug/L	9/17/2007 ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	0.18 J	ND (1) U	ND (1) U	0.31 J	ND (1.0) U	ND (1.0) U	0.25 J
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	1.2	3.5	0.92	0.81	1.8	2	2.7	2.0	1.4
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	0.38 J	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Trichloroethene	13.5	2.9	3.7	3.1	0.24 J	3.5	1.2	1.4	3.2
Vinyl chloride	1.5	15.7	13	0.36 J	17	18	15	18	16
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

GM-15: LA (625-635)[1]	9/24/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	9/27/2002 UG/L	9/22/2003 ug/l	9/20/2004 ug/l	10/26/2005 ug/L	9/18/2006 ug/L	9/25/2007 ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	2.4	2.2/2.3	1.4	1.6	1.7	1.8	1.7	1.6	1.5
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	4.3	2.6/3.8	1.2	1.8	1.6	1.4	1.7	1.2	1.1
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Trichloroethene	4.1	4.5/4.7	4.9	4.7	5.9	5.8	5.9	6.3	5.1
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

GM-14: LA (573-583)[1]	9/24/1999 UG/L
1,1,1-Trichloroethane	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U
Ethylbenzene	ND (1.0) U
Tetrachloroethene	ND (1.0) U
Toluene	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U
Trichloroethene	ND (1.0) U
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (1.0) U

GM-13: LA (624-634)[1]	9/24/1999 UG/L
1,1,1-Trichloroethane	1.9
1,1-Dichloroethane	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U
Ethylbenzene	ND (1.0) U
Tetrachloroethene	3.6
Toluene	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U
Trichloroethene	31.0
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (1.0) U

GM-65D: LA:NTP (629-639)	5/2/2007 ug/L
1,1,1-Trichloroethane	0.44 J/0.40 J
1,1-Dichloroethane	1.4/1.4
1,1-Dichloroethene	ND (1.0) U/ND (1.0) U
Benzene	ND (1.0) U/ND (1.0) U
cis-1,2-Dichloroethene	1.5/1.5
Ethylbenzene	ND (1.0) U/ND (1.0) U
Tetrachloroethene	ND (1.0) U/ND (1.0) U
Toluene	ND (1.0) U/ND (1.0) U
trans-1,2-Dichloroethene	0.22 J/0.21 J
Trichloroethene	1.2/1.3
Vinyl chloride	ND (1.0) U/ND (1.0) U
Xylene (total)	ND (2.0) U/ND (2.0) U

MT-69: LA (NA)	9/24/1999 UG/L	10/3/2000 UG/L	11/15/2001 UG/L	9/30/2002 UG/L	10/1/2003 ug/l	9/27/2004 ug/l	10/24/2005 ug/L	9/26/2006 ug/L	9/27/2007 ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Trichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U/ND (2.0) U

GM-56: LA:NTP (635-645)	9/14/2006 ug/L
1,1,1-Trichloroethane	0.35 J
1,1-Dichloroethane	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U
Ethylbenzene	ND (1.0) U
Tetrachloroethene	0.57 J
Toluene	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U
Trichloroethene	ND (1.0) U
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (2.0) U

DN-13: LA (554-614)	11/14/2001 ug/l	9/27/2002 ug/l	9/22/2003 ug/l	9/16/2004 ug/l	10/20/2005 ug/L	9/27/2006 ug/L	9/19/2007 ug/L
1,1,1-Trichloroethane	1.1	1.1	1.1	0.84 J	1.5	0.51 J	0.48 J
1,1-Dichloroethane	2.5	2.5	2.4	2.2	2.0	1.5	2.0
1,1-Dichloroethene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	6.2	7.3	6.8	6.7	5.5	6.1	6.4
Ethylbenzene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1) U	0.31 J	0.44 J	0.38 J	0.33 J	ND (1.0) U
Toluene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	0.37 J	0.48 J	0.4 J	0.49 J	ND (1.0) U	0.41 J	0.40 J
Trichloroethene	5.0	6.1	6.4	6.8	7.2	5.7	3.3
Vinyl chloride	1.2	1.3	1.1	2.1	2.6	2.3	2.6
Xylene (total)	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

HR-12: LA (611-621)	9/14/1999 UG/L	9/28/2000 UG/L	11/14/2001 UG/L	9/26/2002 UG/L	9/18/2003 ug/l	9/21/2004 ug/l	10/24/2005 ug/L	9/26/2006 ug/L	9/19/2007 ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	2.7	2.0/2.2	3.6	2.4/2.5	1.7	1.8	2.1	2.1	2.2
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	1.2	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	1.8	1.8/2.0	2.7	2.1/2.2	1.4	1.2	1.5	1.3	1.3
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.23 J	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U
Vinyl chloride	1.7	2.5/2.6	3.8	1.7/1.8	1.6	1.1	0.36 J	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

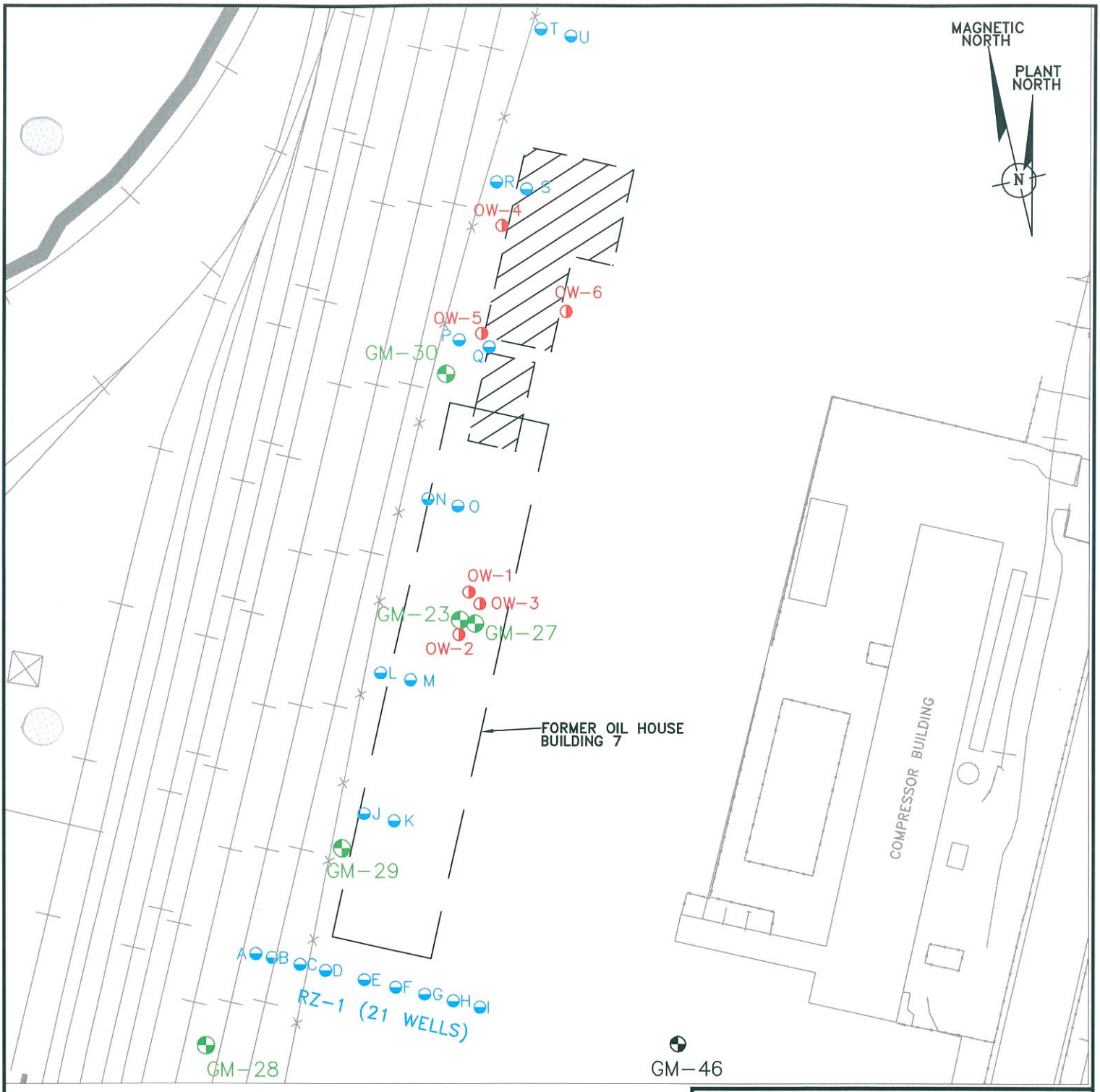
GM-39: LA (615-625)	12/10/2003 ug/l	9/20/2004 ug/l	10/24/2005 ug/L	9/27/2006 ug/L	9/26/2007 ug/L
1,1,1-Trichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1-Dichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1-Dichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Benzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
cis-1,2-Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	7.6 J/19 J
Ethylbenzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Tetrachloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Toluene	0.18 J	ND (1) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
trans-1,2-Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U	ND (1.0) U/0.23 J
Trichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U	
Vinyl chloride	1.3	1.8	0.77 J	1.7	2.5/1.6
Xylene (total)	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U/ND (2.0) U

31: LA (612-644)[1]	9/29/2000 UG/L	11/15/2001 UG/L
1,1,1-Trichloroethane	ND (1.00) U	ND (1) U
1,1-Dichloroethane	7.4	3.1
1,1-Dichloroethene	ND (1.00) U	ND (1) U
Benzene	ND (1.00) U	ND (1) U
cis-1,2-Dichloroethene	8.4	2.4
Ethylbenzene	ND (1.00) U	ND (1) U
Tetrachloroethene	ND (1.00) U	ND (1) U
Toluene	ND (1.00) U	ND (1) U
trans-1,2-Dichloroethene	ND (1.00) U	ND (0.5) U
Trichloroethene	12.9	5.1
Vinyl chloride	4.4	2.5
Xylene (total)	ND (1.00) U	ND (1) U

GM-67D: LA:BT (653-663)	5/3/2007 ug/L
1,1,1-Trichloroethane	0.59 J
1,1-Dichloroethane	3.0
1,1-Dichloroethene	0.36 J
Benzene	ND (1.7) U
cis-1,2-Dichloroethene	23
Ethylbenzene	ND (1.7) U
Tetrachloroethene	54
Toluene	ND (1.7) U
trans-1,2-Dichloroethene	0.83 J
Trichloroethene	45
Vinyl chloride	ND (1.7) U
Xylene (total)	ND (3.3) U

GM-54: LA (651-661)	9/14/2006 ug/L	5/2/2007 ug/L	9/20/2007 ug/L
1,1,1-Trichloroethane	ND (6.7) U	ND (5.0) U	ND (5.0) U
1,1-Dichloroethane	ND (6.7) U	ND (5.0) U	ND (5.0) U
1,1-Dichloroethene	ND (6.7) U	ND (5.0) U	ND (5.0) U
Benzene	ND (6.7) U	ND (5.0) U	ND (5.0) U
cis-1,2-Dichloroethene	ND (6.7) U	ND (5.0) U	ND (5.0) U
Ethylbenzene	ND (6.7) U	ND (5.0) U	ND (5.0) U
Tetrachloroethene	180	160	150
Toluene	ND (6.7) U	ND (5.0) U	ND (5.0) U
trans-1,2-Dichloroethene	ND (6.7) U	ND (5.0) U	ND (5.0) U
Trichloroethene	3.2 J	2.9 J	2.4 J
Vinyl chloride	ND (6.7) U	ND (5.0) U	ND (5.0) U
Xylene (total)	ND (13) U	ND (10) U	ND (10) U

GM-1: LA (633-643)[1]	9/28/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	10/1/2002 UG/L	10/2/2003 ug/l	9/21/2004 ug/l	10/25/2005 ug/L	9/20/2006 ug/L	9/18/2007 ug/L
1,1,1-Trichloroethane	1.1	2.2	0.80 J	1.3 J	1.2	1.2	0.95 J/1.0	0.76 J	0.74 J
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.29 J	0.48 J	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.72) U	ND (0.5) U	ND (0.5) U	ND (1.0) U/ND (1.0) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	2.0	2.8	1.3	2.3	2	2.1	2.1/2.0	2.1	1.8



LEGEND

- MONITORING WELL (UPPER AQUIFER)
- OXIDATION WELLS
- MONITORING WELL USED FOR SITE-WIDE (UPPER AQUIFER)
- A BIOREMEDIATION WELLS (RZ-1A)
- APPROXIMATE LOCATION OF FORMER MORAINE ENGINE TANK FARM

0 150 FT

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

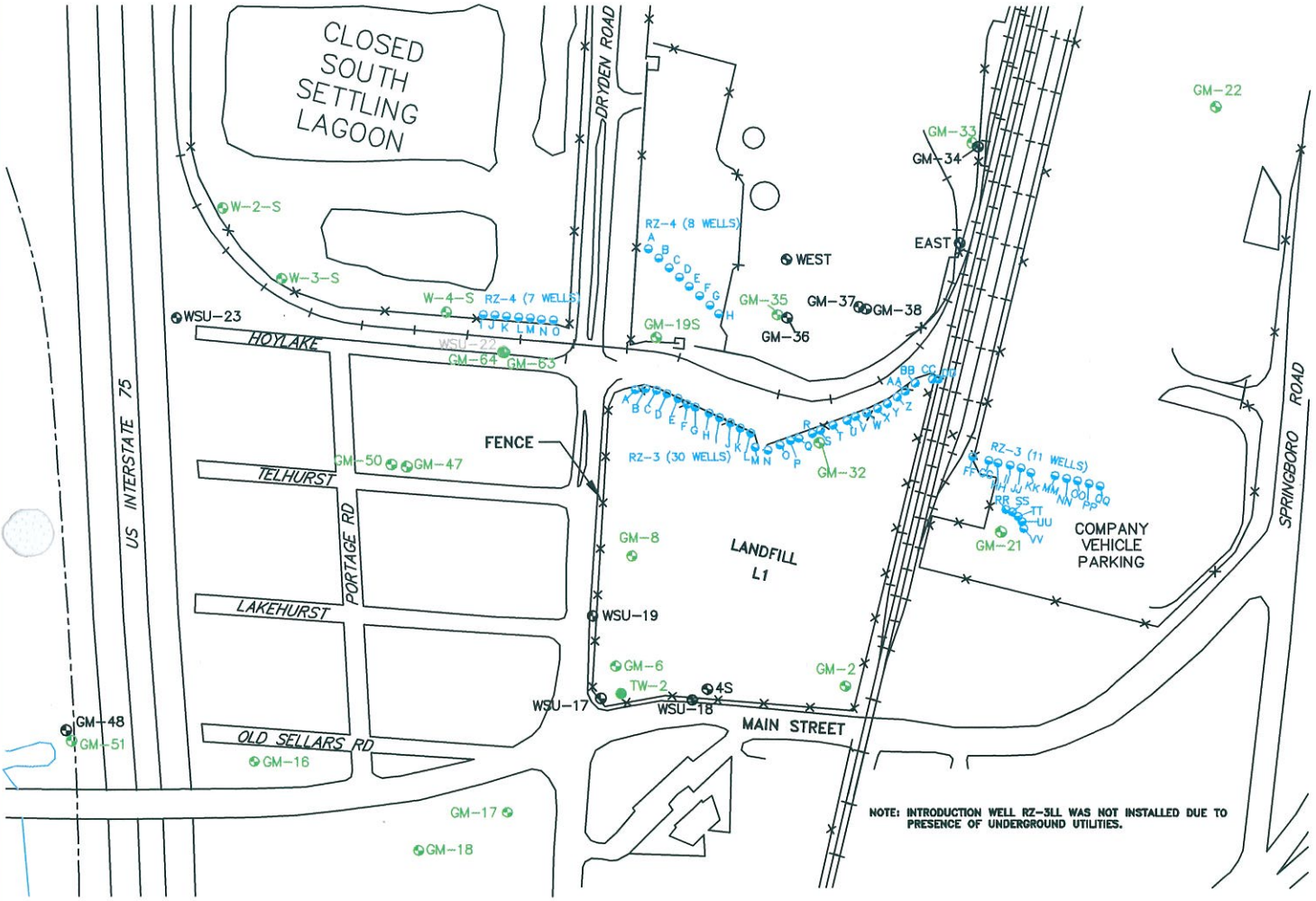
REACTIVE ZONE #1
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-07
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. HUNT	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.0007		12

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

FORMER REACTIVE ZONE #2
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-08
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. HUNT	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.0007		13



LEGEND

- MONITORING WELL USED FOR SITE-WIDE MONITORING (UPPER AQUIFER)
- CARBON SOURCE INTRODUCTION WELLS REACTIVE ZONE #3 (RZ-3A)
- RECOVERY WELL (USED FOR SITE-WIDE MONITORING)
- MONITORING WELL (UPPER AQUIFER)
- WELL WSU-22 DAMAGED AND NO LONGER USABLE (WELL TO BE ABANDONED)
- RIVER LEVEE

0 300 FT

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

REACTIVE ZONES #3 AND #4
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/29/2008	N. GILLOTTI	C\07\ANN\ANN07-09
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. HUNT	N. GILLOTTI
PROJECT NUMBER		FIGURE NUMBER
0H000294.0010.00037		14

Appendix A

Site-Wide Groundwater VOC
Analytical Results from 1999 to 2006

ARCADIS

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
Upgradient of the Site													
HR-9	9/16/1999	<1.0	52.2	<1.0	20.3	3.2	<1.0	<1.0	<1.0	20.3	18.1	<1.0	<1.0
HR-9	9/18/2000	<1.0	51.0	<1.0	16.3	2.6	<1.0	<1.0	<1.0	20.5	16.9	<1.0	<1.0
HR-9	11/6/2001	< 1.4	38	0.95J	12	1.7	< 1.4	< 1.4	< 1.4	17	14	< 1.4	< 1.4
HR-9	9/19/2002	< 1.7	46	1.1J	17	2.5	< 1.7	< 1.7	< 1.7	13	15	< 1.7	< 1.7
HR-9	9/17/2003	< 1.2 U	35	< 1.2 U	11	1.5	< 1.2 U	< 1.2 U	< 1.2 U	12	11	< 1.2 U	< 1.2 U
HR-9	9/13/2004	< 2 U	45	1 J	17	2.5	< 2 U	< 2 U	< 2 U	15	13	0.44 J	< 2 U
HR-9	10/19/2005	< 1.2 U	42	0.97 J	19	2.8	< 1.2 U	< 1.2 U	< 1.2 U	14	12	0.46 J	< 2.5 U
HR-9	9/21/2006	< 1.4 U	36	0.65 J	15	2.5	< 1.4 U	< 1.4 U	< 1.4 U	16	13	< 1.4 U	< 2.9 U
HR-11	9/14/1999	<1.0	13.5	<1.0	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-11	9/18/2000	<1.0	32.9	<1.0	18.5	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-11	11/6/2001	< 1.0	33	<1.0	18	2.3	< 1.0	< 1.0	< 1.0	0.30J	< 1.0	< 1.0	< 1.0
HR-11	9/26/2002	< 1	18	< 1	6.1	0.72	< 1	< 1	< 1	< 1	< 1	< 1	< 1
HR-11	9/18/2003	< 1 U	10	< 1 U	1.7	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-11	9/15/2004	< 1 U	7.3	< 1 U	0.45 J	< 0.5 U	< 1 U	2.2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-11	10/17/2005	< 1.0 U	6.5	< 1.0 U	0.72 J	< 1.0 U	< 1.0 U	6.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
HR-11	9/25/2006	< 1 U	6.7	< 1 U	0.31 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U
GM-24	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.7	<1.0	<1.0	<1.0
On-Site													
HR-8	9/16/1999	<1.0	26.4	<1.0	4.4	1.5	<1.0	<1.0	<1.0	10.6	1.6	<1.0	<1.0
HR-8	9/18/2000	<1.0	29.0	<1.0	5.6	1.8	<1.0	<1.0	<1.0	9.9	1.1	<1.0	<1.0
HR-8	11/6/2001	< 1.0	26	< 1.0	5.4	1.3	< 1.0	< 1.0	< 1.0	10	1.4	< 1.0	< 1.0
HR-8	9/19/2002	< 1.0	18	0.44J	4.8	0.85	< 1.0	< 1.0	< 1.0	11	1.8	< 1.0	< 1.0
HR-8	9/17/2003	< 1 U	13	< 1 U	2.8	0.63	< 1 U	< 1 U	< 1 U	7.8	1.3	< 1 U	< 1 U
HR-8	9/13/2004	< 1 U	8.6	0.32 J	1.5	0.45 J	< 1 U	< 1 U	< 1 U	6.4	1	< 1 U	< 1 U
HR-8	10/19/2005	< 1.0 U	5.5	0.19 J	1.3	0.28 J	< 1.0 U	0.24 J	< 1.0 U	4.4	0.66 J	< 1.0 U	< 2.0 U
HR-8	9/21/2006	< 1 U	6.1	< 1 U	0.92 J	0.3 J	< 1 U	< 1 U	< 1 U	4.2	0.55 J	< 1 U	< 2 U
W-1-N	9/17/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
W-1-N	9/19/2002	< 1.0	0.36J	< 1.0	< 0.50	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HR-4	9/14/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	1.4	<1.0	<1.0
HR-4	9/20/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-4	11/6/2001	< 1.0	< 1.0	< 1.0	0.28J	< 0.50	< 1.0	0.88J	< 1.0	0.17J	1.0	< 1.0	< 1.0
HR-4	9/27/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	0.59J	< 1	< 1	0.71J	< 1	< 1
HR-4	9/18/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	0.55 J	< 1 U	< 1 U	0.71 J	< 1 U	< 1 U
HR-4	9/16/2004	< 1 U	0.77 J	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.3	< 1 U	< 1 U	0.5 J	< 1 U	< 1 U
HR-4	10/20/2005	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 2.0 U
HR-4	9/25/2006	< 1 U	1.6	< 1 U	0.26 J	< 1 U	< 1 U	0.41 J	< 1 U	< 1 U	0.34 J	< 1 U	< 2 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
W-2-N	9/14/1999	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	<1.0	<1.0
W-2-N	9/19/2000	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
W-2-N	11/6/2001	< 1.0	0.33J	< 1.0	1.1	< 0.50	< 1.0	< 1.0	< 1.0	0.48J	1.3	< 1.0	< 1.0
W-2-N	9/19/2002	< 1.0	0.31J	< 1.0	1.6	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	1.4	< 1.0	< 1.0
W-2-N	9/18/2003	< 1 U	< 1 U	< 1 U	1.3	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
W-2-N	9/16/2004	< 1 U	0.36 J	< 1 U	1.8	0.2 J	< 1 U	0.31 J	< 1 U	0.3 J	1.4	< 1 U	< 1 U
W-2-N	10/20/2005	< 1.0 U	0.28 J	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.91 J	< 1.0 U	< 2.0 U
W-2-N	9/22/2006	< 1 UJ	0.29 J	< 1 UJ	1.4 J	0.18 J	< 1 UJ	< 1 UJ	< 1 UJ	0.25 J	1 J	< 1 UJ	< 2 UJ
W-3-N	9/17/1999	<1.0	<1.0	<1.0	291	2.6	<1.0	2.5	<1.0	<1.0	<1.0	12.8	<1.0
W-3-N	9/19/2000	<1.0	<1.0	<1.0	282	3.9	<1.0	<1.0	<1.0	<1.0	<1.0	24.0	<1.0
W-3-N	11/7/2001	< 5.6	< 5.6	< 5.6	160	2.2J	< 5.6	9.0	< 5.6	< 5.6	2.1J	7.6	< 5.6
W-3-N	9/23/2002	< 6.7	< 6.7	< 6.7	150	< 3.3	< 6.7	< 6.7	< 6.7	< 6.7	< 6.7	6.5J	< 6.7
W-3-N	9/17/2003	< 4 U	< 4 U	< 4 U	100	1.6 J	< 4 U	5.1	< 4 U	< 4 U	1.7 J	6.6	< 4 U
W-3-N	9/16/2004	< 4 U	< 4 U	< 4 U	120	1.6 J	< 4 U	0.94 J	< 4 U	< 4 U	< 4 U	6.1	< 4 U
W-3-N	10/20/2005	< 4.0 U	< 4.0 U	< 4.0 U	84	1.0 J	< 4.0 U	1.4 J	< 4.0 U	< 4.0 U	< 4.0 U	8.0	< 8.0 U
W-3-N	9/25/2006	< 5 U	< 5 U	< 5 U	140	1.9 J	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	9.6	< 10 U
W-4-N	9/17/1999	<1.0	1.3	<1.0	2.2	<1.0	<1.0	2.1	<1.0	<1.0	9.8	<1.0	<1.0
W-4-N	9/19/2000	<1.0	<1.0	<1.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.3	<1.0	<1.0
W-4-N	11/7/2001	< 1.0	0.89J	< 1.0	1.6	< 0.50	< 1.0	0.92J	< 1.0	0.33J	7.1	< 1.0	< 1.0
W-4-N	9/24/2002	< 1	1.7	< 1	5.2	0.33J	< 1	0.94J	< 1	0.44J	8.5	0.77J	< 1
W-4-N	9/17/2003	< 1 U	0.94 J	< 1 U	1.7	< 0.5 U	< 1 U	1.1	< 1 U	0.26 J	8.1	0.48 J	< 1 U
W-4-N	9/16/2004	< 1 U	1.7	< 1 U	5.8	0.38 J	< 1 U	1.7	< 1 U	0.4 J	12	0.49 J	< 1 U
W-4-N	10/20/2005	< 1.0 U	1.2	< 1.0 U	2.0	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	7.2	0.54 J	< 2.0 U
W-4-N	9/25/2006	< 1 U	1.3	< 1 U	2.4	0.19 J	< 1 U	0.96 J	< 1 U	< 1 U	7.6	0.56 J	< 2 U
HR-2	9/16/1999	<1.0	3.9	<1.0	9.6	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-2	9/19/2000	<1.0	4.6	<1.0	8.6	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-2	11/7/2001	< 1.0	4.2	< 1.0	8.3	1.1	< 1.0	< 1.0	< 1.0	< 1.0	0.56J	< 1.0	< 1.0
HR-2	9/24/2002	< 1	4.9	< 1	8.8	1.2	< 1	< 1	< 1	< 1	0.46J	< 1	< 1
HR-2	9/16/2003	< 1 U	4.5	< 1 U	7.2	0.96	< 1 U	< 1 U	< 1 U	< 1 U	0.4 J	< 1 U	< 1 U
HR-2	9/16/2004	< 1 U	5.6	< 1 U	7.8	1.1	< 1 U	0.37 J	< 1 U	< 1 U	0.53 J	0.23 J	< 1 U
HR-2	10/20/2005	< 1.0 U	4.4	< 1.0 U	5.0	0.78 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.35 J	0.29 J	< 2.0 U
HR-2	9/25/2006	< 1 U	5.2	< 1 U	5.6	0.79 J	< 1 U	< 1 U	< 1 U	< 1 U	0.48 J	< 1 U	< 2 U
HR-3	9/16/1999	<1.0	6.2	<1.0	6.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-3	9/19/2000	<1.0	5.1	<1.0	4.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-3	11/7/2001	< 1.0	6.9	< 1.0	5.1	0.60	< 1.0	< 1.0	< 1.0	< 1.0	0.66J	< 1.0	< 1.0
HR-3	9/24/2002	< 1	15	< 1	9.9	1	< 1	< 1	< 1	< 1	1.4	< 1	< 1
HR-3	9/16/2003	< 1 U	13	< 1 U	9.9	1.1	< 1 U	< 1 U	< 1 U	< 1 U	1.6	< 1 U	< 1 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
HR-3	9/16/2004	< 1 U	23	< 1 U	18	1.8	< 1 U	0.32 J	< 1 U	0.27 J	8.1	< 1 U	< 1 U
HR-3	10/20/2005	< 1.0 U	18	< 1.0 U	11	1.5	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	10	< 1.0 U	< 2.0 U
HR-3	9/25/2006	< 1 U	10	< 1 U	8.2	0.99 J	< 1 U	< 1 U	< 1 U	< 1 U	7.2	< 1 U	< 2 U
GM-30	9/2/1999	<10	53.8J	<10	7.5J	<10	7030J	9.5J	6950J	<10	<10	<10	23300J
GM-30	9/20/2000	2.7	50.6	<1.0	<1.0	<1.0	2290	<1.0	98.9	<1.0	<1.0	<1.0	6770
GM-30	11/13/2001	< 25	31	< 25	< 12	< 12	840	< 25	5.0J	< 25	12J	< 25	2000
GM-30	9/27/2002	< 33	34	< 33	< 17	< 17	350	< 33	< 33	< 33	< 33	< 33	1400
GM-30	9/23/2003	< 120 U	< 120 U	< 120 U	< 62 U	< 62 U	1000	< 120 U	240	< 120 U	< 120 U	< 120 U	7000
GM-30	9/14/2004	< 40 U	33 J	< 40 U	< 20 U	< 20 U	530	< 40 U	< 40 U	< 40 U	< 40 U	< 40 U	3000
GM-30	10/17/2005	< 50 U	23 J	< 50 U	< 50 U	< 50 U	620	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	3800
GM-30	9/20/2006	< 33 U	25 J	< 33 U	< 33 U	< 33 U	570	< 33 U	5.8 J	< 33 U	< 33 U	< 33 U	2500
GM-23	9/2/1999	1.9	32.5	17.2	7530	54.5	<1.0	6250	<1.0	7.2	1460	2500	7.0
GM-23	9/20/2000	<1.0	16.3	5.1	5620	33.2	<1.0	3470	<1.0	2.0	609	801	<1.0
GM-23	11/12/2001	< 420	< 420	< 420	8400	< 210	< 420	15000	< 420	< 420	2200	1200	< 420
GM-23	9/26/2002	< 400	< 400	< 400	7700	< 200	< 400	10000	< 400	< 400	1700	540	< 400
GM-23	9/23/2003	< 500 U	< 500 U	< 500 U	5800	< 250 U	< 500 U	12000	< 500 U	< 500 U	1600	690	< 500 U
GM-23	9/14/2004	< 500 U	< 500 U	< 500 U	4600	< 250 U	< 500 U	6700	< 500 U	< 500 U	1100	870	< 500 U
GM-23	10/17/2005	< 560 U	< 560 U	< 560 U	19000	< 560 U	< 560 U	2300	< 560 U	< 560 U	490 J	2800	< 1100 U
GM-23	9/28/2006	< 330 U	< 330 U	< 330 U	11000	270 J	< 330 U	370	< 330 U	< 330 U	95 J	4100	< 670 U
GM-27	9/1/1999	<1.0	2.4	<1.0	20.6	<1.0	<1.0	1.7	<1.0	<1.0	121	<1.0	<1.0
GM-27	9/20/2000	<1.0	2.2	<1.0	13.9	<1.0	<1.0	1.2	<1.0	<1.0	112	<1.0	<1.0
GM-27	11/13/2001	< 3.3	1.8J	< 3.3	13	< 1.7	< 3.3	6.8	< 3.3	< 3.3	110	< 3.3	< 3.3
GM-27	9/26/2002	< 3.3	1.7J	< 3.3	14	< 1.7	< 3.3	< 3.3	< 3.3	< 3.3	100	< 3.3	< 3.3
GM-27	9/23/2003	< 5 U	1.9 J	< 5 U	12	< 2.5 U	< 5 U	2.1 J	< 5 U	< 5 U	100	< 5 U	< 5 U
GM-27	9/15/2004	< 3.3 U	2 J	< 3.3 U	13	< 1.7 U	< 3.3 U	1.8 J	< 3.3 U	< 3.3 U	81	< 3.3 U	< 3.3 U
GM-27	10/17/2005	< 2.5 U	2.2 J	< 2.5 U	14	0.49 J	< 2.5 U	0.94 J	< 2.5 U	< 2.5 U	76	0.82 J	< 5.0 U
GM-27	9/28/2006	< 2.5 U	2.6	< 2.5 U	14	1 J	< 2.5 U	1 J	< 2.5 U	< 2.5 U	80	< 2.5 U	< 5 U
GM-29	9/1/1999	<1.0	4.3	1.3	320	11.1	<1.0	<20	<1.0	37.8	878	3.8	<1.0
GM-29	9/21/2000	<1.0	16.6	3.1	2871	14.4	<1.0	20.0	2.2	24.5	289	788	<1.0
GM-29	11/13/2001	< 50	< 50	< 50	1800	26	21J	17J	< 50	< 50	270	230	52
GM-29	9/25/2002	< 40	< 40	< 40	1300	21	< 40	18J	< 40	16J	310	140	< 40
GM-29	9/24/2003	< 33 U	< 33 U	< 33 U	1200	20	< 33 U	18 J	< 33 U	18 J	390	150	< 33 U
GM-29	9/15/2004	< 50 U	< 50 U	< 50 U	1200	21 J	< 50 U	20 J	< 50 U	21 J	440	230	< 50 U
GM-29	10/17/2005	< 50 U	18 J	< 50 U	1600	27 J	< 50 U	15 J	< 50 U	19 J	390	490	< 100 U
GM-29	9/28/2006	< 33 U	15 J	< 33 U	1300	20 J	< 33 U	15 J	< 33 U	17 J	310	210	< 67 U
GM-28	9/1/1999	<1.0	3.3	<1.0	175	9.2	<1.0	316	<1.0	17.7	768	3.2	<1.0
GM-28	9/21/2000	<1.0	9.9	<1.0	37.0	22.3	<1.0	2.3	<1.0	5.0	1.6	12.4	<1.0

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-28	11/15/2001	< 10	< 10	< 10	< 5.0	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10
GM-28	9/24/2002	< 1	2.7	< 1	1.1	11	< 1	< 1	< 1.3 U	< 1	0.86J	< 1	< 1.2 U
GM-28	10/1/2003	< 1 U	3.3	< 1 U	0.58	4	< 1 U	< 1 U	< 1 U	< 1 U	1.6	0.53 J	< 1 U
GM-28	9/15/2004	< 1 U	3.3	< 1 U	0.41 J	1.2	< 1 U	0.88 J	< 1 U	< 1 U	1.4	0.44 J	< 1 U
GM-28	10/18/2005	< 1.0 U	4.0	< 1.0 U	0.32 J	0.63 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.66 J	1.1	< 2.0 U
GM-28	9/27/2006	< 1 U	4.2	< 1 U	0.26 J	0.66 J	< 1 U	< 1 U	< 1 U	< 1 U	0.43 J	0.42 J	< 2 U
GM-25	9/22/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-7	9/17/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.8	<1.0	<1.0
HR-7	9/19/2002	< 1.0	< 1.0	< 1.0	0.65	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	9.4	< 1.0	< 1.0
HR-5	9/16/1999	<1.0	<1.0	<1.0	10.5	1.1	<1.0	<1.0	<1.0	<1.0	12.0	<1.0	<1.0
HR-5	9/19/2000	<1.0	<1.0	<1.0	5.6	<1.0	<1.0	<1.0	3.0	<1.0	8.1	<1.0	2.0
HR-5	11/7/2001	< 1.0	0.55J	< 1.0	7.8	0.74	< 1.0	< 1.0	< 1.0	0.17J	11	< 1.0	< 1.0
HR-5	9/23/2002	< 1	0.55J	< 1	7.5	0.58	< 1	< 1	< 1	< 1	13	< 1	< 1
HR-5	9/18/2003	< 1 U	0.42 J	< 1 U	5	0.46 J	< 1 U	< 1 U	< 1 U	< 1 U	11	< 1 U	< 1 U
HR-5	9/13/2004	< 1 U	0.43 J	< 1 U	4.8	0.44 J	< 1 U	< 1 U	< 1 U	< 1 U	11	< 1 U	< 1 U
HR-5	10/18/2005	< 1.0 U	0.54 J	< 1.0 U	4.6	0.52 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	13	1.1	< 2.0 U
HR-5	9/22/2006	< 1 UJ	0.41 J	< 1 UJ	5.2 J	0.46 J	< 1 UJ	0.27 J	< 1 UJ	< 1 UJ	13 J	0.22 J	< 2 UJ
HR-6	9/16/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0	<1.0
HR-6	9/23/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	1.5	< 1	< 1
HR-1	9/16/1999	<1.0	2.4	<1.0	5.8	3.9	<1.0	44.3	<1.0	1.6	56.0	<1.0	<1.0
HR-1	9/25/2000	<1.0	2.4	<1.0	8.5	3.2	<1.0	32.6	<1.0	1.3	56.4	<1.0	<1.0
HR-1	11/8/2001	< 3.3	2.8J	< 3.3	9.9	2.8	< 3.3	36	< 3.3	2.2J	86B	< 3.3	< 3.3
HR-1	9/23/2002	< 2	2.8	< 2	4.5	3.2	< 2	33	< 2	< 2	33	< 2	< 2
HR-1	9/18/2003	< 2 U	2.6	< 2 U	2.3	3.2	< 2 U	27	< 2 U	1 J	56	< 2 U	< 2 U
HR-1	9/13/2004	< 1 UJ	2.5	< 1 U	24	2.3	< 1 U	23	< 1 U	0.56 J	30	0.55 J	< 1 U
HR-1	10/18/2005	< 1.0 U	2.7	< 1.0 U	19	2.3	< 1.0 U	28	< 1.0 U	1.2	43	1.1	< 2.0 U
HR-1	9/25/2006	< 1.7 U	1.7	< 1.7 U	14	1.4 J	< 1.7 U	< 1.7 U	< 1.7 U	0.57 J	50	< 1.7 U	< 3.3 U
W-1-S	9/22/1999	<1.0	<1.0	<1.0	8.0	1.1	<1.0	30.9	<1.0	<1.0	11.6	<1.0	<1.0
W-1-S	9/19/2002	< 2.0	0.97J	< 2.0	6.0	1.3	< 2.0	62	< 2.0	< 2.0	16	< 2.0	< 2.0
ME-6	8/31/1999	<1.0	<1.0	<1.0	255	<1.0	<1.0	213	<1.0	2.9	474	<1.0	<1.0
ME-6	9/21/2000	<1.0	<1.0	<1.0	98.8	2.5	<1.0	6.7	1.9	<1.0	19.0	6.1	<1.0
ME-6	11/15/2001	< 2.0	2.7	< 2.0	65	1.8	< 2.0	8.2	0.42J	2.2	23	13	< 2.0
ME-6	9/25/2002	< 10	< 10	< 10	5.2	< 5	< 10	< 10	6.6J	< 10	< 10	< 10	< 10
ME-6	10/1/2003	0.46 J	7.2	< 2 U	20	< 1 U	< 2 U	12	< 2 U	13	31	2.9	< 2 U
ME-6	9/15/2004	< 1 U	6.3	0.26 J	14	0.56	< 1 U	5.3	< 1 U	4.1	9.2	2.4	< 1 U
ME-6	10/18/2005	< 1.0 U	7.0	< 1.0 U	13	0.93 J	< 1.0 U	9.8	< 1.0 U	2.2	25	5.6	< 2.0 U
ME-6	9/27/2006	< 1.4 U	6.3	< 1.4 U	27	1.3 J	< 1.4 U	13	< 1.4 U	1.4	32	11	< 2.9 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
ME-1	8/31/1999	<1.0	2.4	<1.0	38.2	1.5	<1.0	83.6	<1.0	13.5	292	36	<1.0
GM-31	9/1/1999	<1.0	1.3	<1.0	7.8	<1.0	<1.0	1.3	<1.0	<1.0	27.2	<1.0	<1.0
GM-31	9/21/2000	<1.0	1.1	<1.0	40.2	<1.0	<1.0	<1.0	<1.0	<1.0	8.5	<1.0	<1.0
GM-31	11/15/2001	< 4.0	3.1J	< 4.0	120	1.8J	< 4.0	< 4.0	< 4.0	< 4.0	11	7.4	< 4.0
GM-31	9/24/2002	< 6	5.9J	< 6	200	3.5	< 6	< 6	< 6	< 6	10	19	< 6
GM-31	10/1/2003	< 5 U	6	< 5 U	170	3.5	< 5 U	< 5 U	< 5 U	< 5 U	28	10	< 5 U
GM-31	9/15/2004	< 5 U	4 J	< 5 U	120	2.7	< 5 U	2.5 J	< 5 U	1.4 J	29	2.4 J	< 5 U
GM-31	10/18/2005	< 2.0 U	6.2	0.42 J	120	3.7	< 2.0 U	< 2.0 U	< 2.0 U	3.4	67	3.1	< 4.0 U
GM-31	9/27/2006	< 4 U	5.1	< 4 U	110	2.9 J	< 4 U	< 4 U	< 4 U	2.3 J	65	1.2 J	< 8 U
ME-3	8/31/1999	<1.0	6.1	<1.0	5.7	<1.0	<1.0	57.9	<1.0	42.5	47.5	<1.0	<1.0
ME-3	9/21/2000	<1.0	3.4	<1.0	2.9	2.9	<1.0	<1.0	1.4	6.4	<1.0	2.1	<1.0
ME-3	11/15/2001	< 1.0	5.9	< 1.0	16	2.7	< 1.0	1.3	0.34J	1.6	3.8	7.3	< 1.0
ME-3	9/24/2002	< 2.5	< 2.5	< 2.5	< 1.2	< 1.2	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
ME-3	10/1/2003	0.6 J	24	< 1 U	0.96	< 0.5 U	< 1 U	< 1 U	< 1 U	0.31 J	1.5	< 1 U	< 1 U
ME-3	9/15/2004	< 1 U	18	< 1 U	2.2	< 0.5 U	< 1 U	0.21 J	< 1 U	0.53 J	1.5	1.1	< 1 U
ME-3	10/18/2005	< 1.0 U	15	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	1.9	1.6	< 2.0 U
ME-3	9/27/2006	< 1 U	8.5	< 1 U	3.5	0.34 J	< 1 U	1.9	< 1 U	1.1	2.4	2.2	< 2 U
GM-43	9/22/2006	< 5 UJ	3.7 J	< 5 UJ	120 J	5.7 J	< 5 UJ	21 J	< 5 UJ	< 5 UJ	98 J	< 5 UJ	< 10 UJ
GM-45	9/22/2006	< 8 UJ	3.1 J	< 8 UJ	54 J	2.7 J	< 8 UJ	230 J	< 8 UJ	3.5 J	230 J	< 8 UJ	< 16 UJ
HR-16	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.7	<1.0	<1.0
HR-16	9/18/2002	< 1.0	< 1.0	< 1.0	0.46J	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0
HR-17	9/23/1999	<1.0	<1.0	<1.0	6.2	<1.0	<1.0	15.5	<1.0	<1.0	7.4	<1.0	<1.0
HR-17	9/28/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.7	<1.0	1.9	4.4	<1.0	<1.0
HR-17	11/8/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	3.3	< 1.0	1.4	4.2B	< 1.0	< 1.0
HR-17	9/18/2002	< 1.0	1.5	< 1.0	5.1	1.4	< 1.0	22	< 1.0	0.39J	12	< 1.0	< 1.0
HR-17	9/25/2003	< 2 U	0.75 J	< 2 U	2.2	0.7 J	< 2 U	64	< 2 U	< 2 U	10	< 2 U	< 2 U
HR-17	9/17/2004	< 5 U	2 J	< 5 U	7.1	1.6 J	< 5 U	82	< 5 U	< 5 U	18	< 5 U	< 5 U
HR-17	10/19/2005	< 1.8 U	0.70 J	< 1.8 U	3.1	0.57 J	< 1.8 U	45	< 1.8 U	< 1.8 U	8.3	< 1.8 U	< 3.7 U
HR-17	9/18/2006	< 1 U	0.6 J	< 1 U	4.6	0.46 J	< 1 U	34	< 1 U	< 1 U	5.6	< 1 U	< 2 U
W-2-S	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9J	6.1	<1.0	<1.0
W-2-S	9/27/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	5.0	<1.0	<1.0
W-2-S	11/8/2001	< 1.0	0.58J	< 1.0	0.49J	< 0.50	< 1.0	< 1.0	< 1.0	1.7	5.2B	< 1.0	< 1.0
W-2-S	9/18/2002	< 1.0	0.98J	< 1.0	0.90	< 0.50	< 1.0	< 1.0	< 1.0	1.5	4.9	< 1.0	< 1.0
W-2-S	9/26/2003	< 1 U	0.99 J	< 1 U	0.74	< 0.5 U	< 1 U	< 1 U	0.25 J	1.4	5.5	< 1 U	< 1 U
W-2-S	9/17/2004	< 1 U	1.3	< 1 U	1.1	< 0.5 U	< 1 U	0.55 J	< 1 U	1.5	6	< 1 U	< 1 U
W-2-S	10/19/2005	< 1.0 U	1.2	< 1.0 U	0.78 J	< 1.0 U	< 1.0 U	0.36 J	< 1.0 U	1.6	5.4	< 1.0 U	< 2.0 U
W-2-S	9/18/2006	< 1 U	1.2	< 1 U	1.2	< 1 U	< 1 U	< 1 U	< 1 U	1.8	5.1	< 1 U	< 2 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
W-3-S	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	3.9	2.6	<1.0	<1.0
W-3-S	9/28/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	2.5	<1.0	<1.0
W-3-S	11/8/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	0.44J	< 1.0	1.6	1.5B	< 1.0	< 1.0
W-3-S	9/18/2002	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	0.61J	< 1.0	2.1	2.4	< 1.0	< 1.0
W-3-S	9/26/2003	< 1 U	< 1 U	< 1 U	0.34 J	< 0.5 U	< 1 U	0.81 J	< 1 U	1.8	2	< 1 U	< 1 U
W-3-S	9/17/2004	< 1 U	0.21 J	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.2	< 1 U	2.4	2.9	< 1 U	< 1 U
W-3-S	10/19/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	2.5	2.9	< 1.0 U	< 2.0 U
W-3-S	9/18/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.6 J	< 1 U	2.5	3.4	< 1 U	< 2 U
W-4-S	9/23/1999	<1.0	1.2	<1.0	4.4	<1.0	<1.0	30.5J	<1.0	3.3	14.7J	<1.0	<1.0
W-4-S	9/28/2000	<1.0	1.0	<1.0	4.0	<1.0	<1.0	15.4	<1.0	3.0	11.3	<1.0	<1.0
W-4-S	11/8/2001	< 1.0	1.1	< 1.0	3.3	0.43J	< 1.0	13	< 1.0	2.9	8.9B	< 1.0	< 1.0
W-4-S	9/18/2002	< 1.0	0.87J	< 1.0	3.6	0.60	< 1.0	17	< 1.0	2.3	9.8	< 1.0	< 1.0
W-4-S	9/26/2003	< 1 U	0.92 J	< 1 U	3.6	0.78	< 1 U	24	0.25 J	2	13	< 1 U	< 1 U
W-4-S	9/17/2004	< 1 U	1.2	< 1 U	4.4	0.97	< 1 U	18	< 1 U	2.3	13	< 1 U	< 1 U
W-4-S	10/19/2005	< 1.0 U	1.4	< 1.0 U	4.3	1.1	< 1.0 U	20	< 1.0 U	2.4	13	< 1.0 U	< 2.0 U
W-4-S	9/19/2006	< 1 U	1.3	< 1 U	4.3	1	< 1 U	18	< 1 U	1.7	12	< 1 U	< 2 U
GM-19S	9/20/1999	<1.0	7.7	1.0	34.6	2.3	<10	46.0	<1.0	16.0	71.1	<1.0	<10
GM-19S	9/22/2000	<1.0	4.4	<1.0	37.6	2.6	<1.0	68.0	<1.0	14.5	104	<1.0	<1.0
GM-19S	11/12/2001	< 3.3	2.9J	< 3.3	26	2.0	< 3.3	64	< 3.3	7.6	97	< 3.3	< 3.3
GM-19S	9/26/2002	< 4	6.3	< 4	39	2.7	< 4	52	< 4	6.3	110	5.2	< 4
GM-19S	9/25/2003	< 5 U	8.3	1.6 J	89	2.9	< 5 U	62	< 5 U	13	140	< 5 U	< 5 U
GM-19S	9/13/2004	< 4 U	8.1	1.9 J	61	2.4	< 4 U	71	< 4 U	14	120	< 4 U	< 4 U
GM-19S	10/18/2005	< 1.7 U	9.0	1.2 J	29	1.0 J	< 1.7 U	95	< 1.7 U	13	140	1.8	< 3.3 U
GM-19S	9/21/2006	< 22 U	7 J	< 22 U	660	10 J	< 22 U	9.1 J	< 22 U	9.7 J	11 J	< 22 U	< 44 U
EAST	9/21/1999	<1.0	5.4	<1.0	9.1	<1.0	<1.0	61.0	<1.0	21.0	56.1	<1.0	<1.0
EAST	9/22/2000	<1.0	7.7	1.2	77.3	1.8	<1.0	55.8	<1.0	22.2	97.2	3.0	<1.0
EAST	11/12/2001	< 3.3	6.2	0.90J	51	2.7	< 3.3	56	< 3.3	13	92	1.5J	< 3.3
EAST	9/23/2002	< 2	3.9	0.73J	8.8	< 1	< 2	49	< 2	10	46	< 2	< 2
EAST	9/25/2003	< 2 U	2.3	< 2 U	4.3	< 1 U	< 2 U	47	< 2 U	7.1	35	< 2 U	< 2 U
EAST	9/13/2004	< 1 U	0.72 J	0.34 J	1.6	< 0.5 U	< 1 U	40	< 1 U	5.7	23	< 1 U	< 1 U
EAST	10/18/2005	< 1.0 U	3.0	< 1.0 U	3.1	< 1.0 U	< 1.0 U	47	< 1.0 U	5.9	23	1.2	< 2.0 U
EAST	9/21/2006	< 1.4 U	3.2	0.59 J	4.1	< 1.4 U	< 1.4 U	41	< 1.4 U	10	29	< 1.4 U	< 2.9 U
WEST	9/21/1999	<1.0	25.6	<1.0	125	<1.0	<1.0	41.3	<1.0	24.8	37.3	<1.0	<1.0
GM-33	9/25/2003	< 2.5 U	8.4	1 J	19	0.72 J	< 2.5 U	37	< 2.5 U	21	75	< 2.5 U	< 2.5 U
GM-33	9/13/2004	< 2 U	5.4	1.1 J	9.5	0.45 J	< 2 U	37	< 2 U	17	55	< 2 U	< 2 U
GM-33	10/18/2005	< 1.0 U	6.4	0.69 J	7.4	0.36 J	< 1.0 U	50	< 1.0 U	18	71	1.0	< 2.0 U
GM-33	9/21/2006	< 1.7 U	4.5	1.1 J	6.9	0.44 J	< 1.7 U	37	< 1.7 U	18	64	< 1.7 U	< 3.3 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-35	9/25/2003	< 8 U	46	4 J	300	12	< 8 U	21	< 8 U	17	270	59	< 8 U
GM-35	9/13/2004	< 11 U	36	4.1 J	270	9.1	< 11 U	21	< 11 U	17	230	50	< 11 U
GM-35	10/18/2005	< 5.0 U	36	1.8 J	190	9.3	< 5.0 U	29	< 5.0 U	12	240	23	< 10 U
GM-35	9/22/2006	< 5 UJ	26 J	< 5 UJ	160 J	11 J	< 5 UJ	14 J	< 5 UJ	5.5 J	130 J	13 J	< 10 UJ
GM-32	9/22/1999	<1.0	3.3	<1.0	2.6	4.2	<1.0	1.2	1.0	<1.0	3.2	3.0	<1.0
GM-32	9/25/2000	<1.0	35.9	<1.0	<1.0	20.3	<1.0	<1.0	10.4	<1.0	<1.0	<1.0	<1.0
GM-32	11/12/2001	4.3J	6.2	< 5.0	< 2.5	2.9	0.79J	< 5.0	12	< 5.0	< 5.0	1.1J	3.0J
GM-32	9/20/2002	< 10	9.7J	< 10	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 10	< 10
GM-32	10/1/2003	1.5 J	5.5	< 2 U	< 1 U	1	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
GM-32	9/14/2004	< 10 U	3 J	< 10 U	< 5 U	< 5 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
GM-32	10/19/2005	< 10 U	4.9 J	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 20 U
GM-32	9/19/2006	< 10 U	3.7 J	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 20 U
GM-22	9/1/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6	<1.0	<1.0	4.0	<1.0	<1.0
GM-22	9/21/2000	<1.0	2.4	<1.0	1.9	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0
GM-22	11/13/2001	< 1.0	6.8	0.58J	8.5	0.17J	< 1.0	4.9	< 1.0	4.4	7.5	0.60J	< 1.0
GM-22	9/25/2002	< 2	< 2	< 2	< 1	< 1	< 2	2.3	< 2	0.93J	7.6	< 2	< 2
GM-22	9/24/2003	< 1 U	1	< 1 U	0.45 J	< 0.5 U	< 1 U	2.9	< 1 U	1.2	7.6	< 1 U	< 1 U
GM-22	9/14/2004	< 1 U	2.1	< 1 U	0.9	< 0.5 U	< 1 U	2.9	< 1 U	1.7	10	< 1 U	< 1 U
GM-22	10/17/2005	< 1.0 U	1.0	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	0.96 J	4.7	< 1.0 U	< 2.0 U
GM-22	9/20/2006	< 1 U	1.1	< 1 U	0.28 J	< 1 U	< 1 U	3.2	< 1 U	0.47 J	3	< 1 U	< 2 U
GM-21	9/22/1999	<1.0	9.0	3.9	66.4	7.8	<1.0	<1.0	<1.0	53.1	28.7	<1.0	<1.0
GM-21	9/22/2000	<1.0	5.6	1.6	38.7	12.9	<1.0	<1.0	<1.0	15.7	189	<1.0	<1.0
GM-21	11/13/2001	< 5.0	3.8J	< 5.0	39	15	< 5.0	< 5.0	< 5.0	6.9	160	< 5.0	< 5.0
GM-21	9/25/2002	< 6.7	5J	2.6J	43	5.1	< 6.7	< 6.7	< 6.7	31	230	< 6.7	< 6.7
GM-21	9/24/2003	< 8 U	6.9 J	2 J	100	2.9 J	< 8 U	< 8 U	< 8 U	31	200	< 8 U	< 8 U
GM-21	9/14/2004	< 9.1 U	4.2 J	3.1 J	56	7.9	< 9.1 U	< 9.1 U	< 9.1 U	26	180	< 9.1 U	< 9.1 U
GM-21	10/17/2005	< 1.0 U	3.4	< 1.0 U	20	22	< 1.0 U	< 1.0 U	< 1.0 U	4.3	1.8	13	< 2.0 U
GM-21	9/20/2006	< 1 U	8.6	0.19 J	14	4.3	< 1 U	< 1 U	< 1 U	12	5.9	9.3	< 2 U
GM-8	9/20/1999	3.4	30.2	<1.0	26.2	12.0	20.7	14.8	<1.0	1.9	30.4	8.4	2.3
GM-8	9/26/2000	1.1	36.5	<1.0	1.5	5.4	12.5	<1.0	<1.0	<1.0	6.6	2.4	1.9
GM-8	11/9/2001	0.78J	40	< 1.0	2.0	3.6	0.40J	< 1.0	< 1.0	0.40J	4.4	1.9	0.39J
GM-8	9/20/2002	5.5	63	< 2	5.5	9	7.5	< 2	1.8J	< 2	< 2	5.8	1.5J
GM-8	10/1/2003	5.4	48	< 2 U	< 1 U	4.4	11	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
GM-8	9/14/2004	4.2	15	< 1 U	< 0.5 U	1.1	19	< 1 U	< 1 U	< 1 U	< 1 U	0.48 J	1.1
GM-8	10/19/2005	3.5	16	< 1.0 U	0.24 J	0.99 J	29	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	0.73 J	< 2.0 U
GM-8	9/19/2006	2.1 J	18	< 5 U	2.1 J	1 J	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	3.2 J	< 10 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-6	9/20/1999	<1.0	33.2	1.2	52.9	2.0	<10	81.4	<1.0	24.6	78.2	1.6	<10
GM-6	9/26/2000	<1.0	13.0	<1.0	41.0	2.2	<1.0	51.5	<1.0	12.1	56.6	3.7	<1.0
GM-6	11/9/2001	< 2.0	14	< 2.0	8.2	1.8	< 2.0	14	< 2.0	3.9	48	1.9J	< 2.0
GM-6	9/20/2002	2.2	60	< 2	43	8.6	< 2	14	< 2	1.4J	33	12	< 2
GM-6	10/2/2003	1	20	< 1 U	13	2.5	0.22 J	11	< 1 U	0.19 J	23	3.3	< 1 U
GM-6	9/14/2004	1.7	18	< 1 U	10	1.9	< 1 U	2.6	< 1 U	< 1 U	5.7	3	< 1 U
GM-6	10/19/2005	0.49 J	21	< 1.0 U	20	2.1	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	1.4	11	< 2.0 U
GM-6	9/19/2006	< 1 U	16	< 1 U	18	1.6	< 1 U	< 1 U	< 1 U	< 1 U	0.35 J	7.3	< 2 U
Downgradient of the Site													
TW-2	9/26/2000	<1.0	27.8	<1.0	22.5	2.9	10.4	5.0	<1.0	4.5	43.1	5.9	3.2
TW-2	11/9/2001	< 2.0	20	< 2.0	8.8	2.4	0.38J	8.5	< 2.0	3.9	48	2.7	< 2.0
TW-2	9/20/2002	< 2	9	< 2	26	1.4	< 2	5.9	< 2	2.2	70	2.5	< 2
TW-2	10/2/2003	1.5	5.7	< 1 U	8.3	0.59	0.86 J	4.7	< 1 U	0.66 J	24	1.4	< 1 U
TW-2	9/14/2004	2.9	22	< 1 U	5.5	2	< 1 U	< 1 U	< 1 U	< 1 U	1.5	2.5	< 1 U
TW-2	10/20/2005	2.5	12	< 1.0 U	5.3	1.4	12	< 1.0 U	3.4	< 1.0 U	< 1.0 U	4.4	5.0
TW-2	9/19/2006	< 1 U	3.4	< 1 U	11	0.38 J	< 1 U	7	< 1 U	0.55 J	32	0.27 J	< 2 U
4S	9/20/1999	1.6	1.6	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<10
4S	10/2/2003	1.6 J	7	< 2 U	< 1 U	1.7	1.7 J	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4S	9/14/2004	4.5 J	7.5	< 5 U	< 2.5 U	< 2.5 U	4.7 J	< 5 U	1.1 J	< 5 U	< 5 U	< 5 U	2.4 J
4S	10/19/2005	1.6 J	2.3 J	< 4.0 U	< 4.0 U	0.95 J	1.6 J	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 8.0 U
4S	9/20/2006	0.7 J	5.6	< 1 U	0.25 J	0.75 J	0.52 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U
GM-2	9/20/1999	<1.0	1.4	<1.0	8.4	<1.0	<10	6.0	<1.0	5.5	61.6	<1.0	<10
GM-2	9/25/2000	<1.0	3.7	<1.0	39.2	1.3	<1.0	7.7	<1.0	5.7	82.8	1.7	<1.0
GM-2	11/9/2001	< 3.3	6.1	< 3.3	26	1.1J	< 3.3	8.4	< 3.3	6.1	65	< 3.3	< 3.3
GM-2	9/20/2002	< 1	3.4	< 1	7.6	0.37J	< 1	8.7	< 1	0.75J	26	< 1	< 1
GM-2	10/2/2003	< 1 U	1.7	< 1 U	4.7	< 0.5 U	0.21 J	5.7	< 1 U	0.21 J	13	0.46 J	< 1 U
GM-2	9/14/2004	< 1 U	1.6	< 1 U	5.6	0.23 J	< 1 U	4	< 1 U	< 1 U	6.2	< 1 U	< 1 U
GM-2	10/19/2005	< 1.0 U	2.0	< 1.0 U	6.8	0.26 J	< 1.0 U	3.6	< 1.0 U	< 1.0 U	4.6	0.24 J	< 2.0 U
GM-2	9/20/2006	< 1 U	2.1	< 1 U	7.7	0.34 J	< 1 U	2.6	< 1 U	< 1 U	5.1	0.61 J	< 2 U
GM-16	9/21/1999	<1.0	<1.0	<1.0	1.7	<1.0	<1.0	44.1	<1.0	2.2	8.5	<1.0	<1.0
GM-16	9/26/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	16.2	<1.0	2.5	3.5	<1.0	<1.0
GM-16	11/8/2001	< 1.0	0.31J	< 1.0	0.39J	< 0.50	< 1.0	17	< 1.0	2.2	3.6	< 1.0	< 1.0
GM-16	9/24/2002	< 2	4.1	< 2	6.2	1.6	< 2	63	< 2	1.4J	28	< 2	< 2
GM-16	9/22/2003	< 4 U	2.8 J	< 4 U	5.8	1.1 J	< 4 U	110	< 4 U	1.9 J	57	< 4 U	< 4 U
GM-16	9/16/2004	< 3.3 U	4.3	< 3.3 U	7.4	1 J	< 3.3 U	130	< 3.3 U	3.1 J	90	< 3.3 U	< 3.3 U
GM-16	10/19/2005	< 3.3 U	1.1 J	< 3.3 U	2.8 J	0.90 J	< 3.3 U	100	< 3.3 U	1.7 J	55	< 3.3 U	< 6.7 U
GM-16	9/18/2006	< 1.4 U	1.1 J	< 1.4 U	3.8	1 J	< 1.4 U	98	< 1.4 U	2.1	51	< 1.4 U	< 2.9 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-17	9/21/1999	<1.0	26.4	<1.0	30.0	2.6	<1.0	<1.0	<1.0	6.4	28.7	1.4	<1.0
GM-17	9/27/2000	<1.0	23.9	<1.0	41.6	2.5	<1.0	24.6	<1.0	6.7	48.4	<1.0	<1.0
GM-17	11/8/2001	< 3.3	7.3	< 3.3	16	1.8	< 3.3	48	< 3.3	6.8	79	< 3.3	< 3.3
GM-17	9/19/2002	< 1.2	6.0	< 1.2	13	0.67	< 1.2	22	< 1.2	2.3	39	0.79J	< 1.2
GM-17	9/24/2003	< 1 U	1.2	< 1 U	2.9	< 0.5 U	< 1 U	12	< 1 U	1.3	24	< 1 U	< 1 U
GM-17	9/15/2004	< 1 U	4	< 1 U	11	0.64	< 1 U	3.6	< 1 U	1.1	22	0.49 J	< 1 U
GM-17	10/20/2005	< 1.0 U	5.5	< 1.0 U	9.0	0.57 J	< 1.0 U	8.1	< 1.0 U	1.4	29	2.0	< 2.0 U
GM-17	9/27/2006	< 1 U	3.2	< 1 U	9.5	0.49 J	< 1 U	11	< 1 U	0.46 J	24	0.54 J	< 2 U
GM-18	9/22/1999	<1.0	22.6	1.3	35.3	2.2	<1.0	4.9	<1.0	42.6	131	<1.0	<1.0
GM-18	9/27/2000	<1.0	10.4	<1.0	23.9	1.8	<1.0	7.8	<1.0	31.8	115	<1.0	<1.0
GM-18	11/8/2001	< 3.3	3.3	1.3J	14	1.6J	< 3.3	12	< 3.3	23	93	< 3.3	< 3.3
GM-18	9/19/2002	< 3.3	6.0	< 3.3	15	1.6J	< 3.3	28	< 3.3	18	98	< 3.3	< 3.3
GM-18	9/22/2003	< 2 U	3.7	< 2 U	8.8	< 1 U	< 2 U	24	< 2 U	10	77	0.75 J	< 2 U
GM-18	9/15/2004	< 2 U	2.2	0.46 J	5.9	< 1 U	< 2 U	20	< 2 U	5.2	53	< 2 U	< 2 U
GM-18	10/20/2005	< 1.0 U	15	0.30 J	14	1.2	< 1.0 U	21	< 1.0 U	7.0	70 J	3.0	< 2.0 U
GM-18	9/27/2006	< 2.9 U	17	< 2.9 U	21	2 J	< 2.9 U	15	< 2.9 U	6.2	72	2.5 J	< 5.7 U
WSU-24	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	2.4	17.0	<1.0	<1.0
WSU-24	9/26/2000	<1.0	<1.0	<1.0	2.7	<1.0	<1.0	1.2.	<1.0	2.1	16.8	<1.0	<1.0
WSU-24	11/9/2001	< 1.0	0.81J	< 1.0	4.0	< 0.50	< 1.0	1.6	< 1.0	2.4	18	< 1.0	< 1.0
WSU-24	9/24/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	1.2	< 1	1.4	13	< 1	< 1
WSU-24	9/22/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1	< 1 U	0.67 J	7.9	< 1 U	< 1 U
WSU-24	9/16/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.3	< 1 U	0.58 J	8	< 1 U	< 1 U
WSU-24	10/20/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	1.5	11	< 1.0 U	< 2.0 U
WSU-24	9/26/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.81 J	< 1 U	0.65 J	10	< 1 U	< 2 U
GM-10	9/21/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	14.8	<1.0	<1.0
GM-10	9/27/2000	<1.0	1.4	<1.0	5.7	<1.0	<1.0	1.4	<1.0	2.5	23.2	<1.0	<1.0
GM-10	11/8/2001	< 1.0	3.4	< 1.0	16	0.93	< 1.0	1.9	< 1.0	2.7	27	1.2	< 1.0
GM-10	9/18/2002	< 1.0	0.61J	< 1.0	2.3	< 0.50	< 1.0	1.1	< 1.0	1.8	19	< 1.0	< 1.0
GM-10	9/24/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.2	< 1 U	0.96 J	33	< 1 U	< 1 U
GM-10	9/14/2004	< 1 U	< 1 U	< 1 U	0.38 J	< 0.5 U	< 1 U	1.5	< 1 U	1.2	15	< 1 U	< 1 U
GM-10	10/20/2005	< 1.0 U	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	1.2	< 1.0 U	1.6	12	< 1.0 U	< 2.0 U
GM-10	9/27/2006	< 1 U	0.29 J	< 1 U	0.77 J	< 1 U	< 1 U	0.98 J	< 1 U	0.9 J	11	< 1 U	< 2 U
GM-26	9/22/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-26	9/27/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-26	11/12/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	1.1	< 1.0	0.19J	< 1.0	< 1.0	< 1.0
GM-26	9/25/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	0.92J	< 1	< 1	< 1	< 1	< 1
GM-26	10/1/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	0.85 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-26	9/16/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.3	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
GM-26	10/20/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-26	9/21/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.91 J	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U

All concentrations presented in ug/l.
1,1-DCA - 1,1-Dichloroethane.
1,1-DCE - 1,1-Dichloroethene.
cis-1,2-DCE - cis-1,1-Dichloroethene.
trans-1,2-DCE - trans-1,2-Dichloroethene.
PCE - Tetrachloroethene.
1,1,1-TCA - 1,1,1-Trichloroethane.
TCE - Trichloroethene.
VOCs - Volatile Organic Compounds.

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Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
Upgradient of the Site													
HR-10	9/15/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-10	9/29/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-10	11/14/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HR-10	9/27/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
HR-10	9/17/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-10	9/20/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-10	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U'	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
HR-10	9/26/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U
HR-12	9/14/1999	1.2	2.7	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	<1.0UJ	<1.0	1.7	<1.0
HR-12	9/28/2000	<1.0	2.2	<1.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.5	<1.0
HR-12	11/14/2001	< 1.0	3.6	< 1.0	2.7	0.23	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0
HR-12	11/14/2001	< 1.0	3.6	< 1.0	2.7	0.23J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0
HR-12	9/26/2002	< 1	2.4	< 1	2.1	< 0.5	< 1	< 1	< 1	< 1	< 1	1.7	< 1
HR-12	9/18/2003	< 1 U	1.7	< 1 U	1.4	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.6	< 1 U
HR-12	9/21/2004	< 1 U	1.8	< 1 U	1.2	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.1	< 1 U
HR-12	10/24/2005	< 1.0 U	2.1	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.36 J	< 2.0 U
HR-12	9/26/2006	< 1 U	2.1	< 1 U	1.3	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U
On-Site													
HR-14	9/15/1999	<1.0	<1.0	<1.0	7.9	<1.0	<1.0	<1.0	<1.0	<1.0	3.4	11.5	<1.0
HR-14	9/30/2002	< 1	< 1	< 1	3.6	< 0.5	< 1	< 1	< 1	< 1	1.2	< 1	< 1
HR-15	9/15/1999	<1.0	<1.0	<1.0	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	11.0	<1.0
HR-15	9/29/2000	<1.0	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	11.2	<1.0
HR-15	11/14/2001	< 1.0	< 1.0	< 1.0	0.86	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HR-15	9/30/2002	< 1	< 1UJ	< 1	1	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
HR-15	9/17/2003	< 1 U	< 1 U	< 1 U	2.2	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	0.29 J	14	< 1 U
HR-15	9/21/2004	< 1 U	< 1 U	< 1 U	2.5	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	0.38 J	19	< 1 U
HR-15	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.40 J	14	< 2.0 U
HR-15	9/25/2006	< 1 U	< 1 U	< 1 U	2.2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.5 J	13	< 2 U
HR-13	9/15/1999	<1.0	41.4	<1.0	20.8	3.1	<1.0	<1.0	<1.0	1.6	3.4	<1.0	<1.0
HR-13	9/29/2000	<1.0	39.5	<1.0	14.1	2.5	<1.0	<1.0	<1.0	1.7	2.0	<1.0	<1.0
HR-13	11/14/2001	0.18J	15	< 1.0	6.5	0.65	< 1.0	< 1.0	< 1.0	0.74J	1.2	< 1.0	< 1.0
HR-13	9/30/2002	< 1	25	< 1	11	1.4	< 1	< 1	< 1	1.4	3.6	< 1	< 1
HR-13	9/16/2003	< 1 U	33	< 1 U	12	1.8	< 1 U	< 1 U	< 1 U	2.2	5.7	< 1 U	< 1 U
HR-13	9/21/2004	< 1 U	30	0.27 J	12	1.5	< 1 U	< 1 U	< 1 U	2.6	21	0.43 J	< 1 U
HR-13	10/25/2005	< 1.0 U	25	0.25 J	11	1.5	< 1.0 U	0.20 J	< 1.0 U	2.3	20	< 1.0 U	< 2.0 U
HR-13	9/25/2006	< 1 U	22	0.18 J	9	1.4	< 1 U	0.2 J	< 1 U	2	15	< 1 U	< 2 U
31	9/29/2000	<1.0	7.4	<1.0	8.4	<1.0	<1.0	<1.0	<1.0	<1.0	12.9	4.4	<1.0
31	11/15/2001	< 1.0	3.1	< 1.0	2.4	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	5.1	2.5	< 1.0

Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
39	9/27/2002	< 1	1.6	< 1	1.3	< 0.5	< 1	< 1	< 1	< 1	3.8	0.51J	< 1
39	9/24/2003	< 1 U	0.58 J	< 1 U	0.71	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	0.89 J	< 1 U	< 1 U
GM-39	12/10/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	0.18 J	< 1 U	< 1 U	1.3	< 1 U
GM-39	9/20/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.8	< 1 U
GM-39	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.77 J	< 2.0 U
GM-39	9/27/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.7	< 2 U
GM-40	12/10/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	3.1	< 1 U
GM-40	9/20/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	3.2	< 1 U
GM-40	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.9	< 2.0 U
GM-40	9/26/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	3.9	< 2 U
GM-41	12/10/2003	< 1 U	< 11 U	< 11 U	10	< 5.6 U	< 11 U	< 11 U	< 11 U	< 11 U	320	< 11 U	< 11 U
GM-41	9/21/2004	< 6.2 U	< 6.2 U	< 6.2 U	24	< 3.1 U	< 6.2 U	< 6.2 U	< 6.2 U	< 6.2 U	180	< 6.2 U	< 6.2 U
GM-41	10/24/2005	< 10 U	< 10 U	< 10 U	16	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	250	< 10 U	< 20 U
GM-41	9/18/2006	< 4 U	< 4 U	< 4 U	11	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	210	< 4 U	< 8 U
GM-42	12/9/2003	< 1 U	0.46 J	< 1 U	11	0.34 J	< 1 U	0.27 J	< 1 U	< 1 U	0.37 J	1	< 1 U
GM-42	9/20/2004	< 1 U	0.7 J	0.25 J	16	0.44 J	< 1 U	< 1 U	< 1 U	< 1 U	0.43 J	0.92 J	< 1 U
GM-42	10/25/2005	< 1.0 U	0.64 J	0.21 J	17	0.59 J	< 1.0 U	0.19 J	< 1.0 U	< 1.0 U	0.85 J	0.56 J	< 2.0 U
GM-42	9/26/2006	< 1 U	0.5 J	< 1 U	14	0.44 J	< 1 U	< 1 U	< 1 U	< 1 U	0.64 J	0.45 J	< 2 U
GM-19D	9/28/1999	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	13.5	1.5	<1.0
GM-19D	10/2/2000	<1.0	<1.0	<1.0	3.5	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	15.7	<1.0
GM-19D	11/14/2001	< 1.0	< 1.0	< 1.0	0.92	< 0.50	< 1.0	< 1.0	0.38J	0.18J	3.7	13	< 1.0
GM-19D	9/26/2002	< 1	< 1	< 1	0.81	< 0.5	< 1	< 1	< 1	< 1	3.1	0.36J	< 1
GM-19D	9/25/2003	< 1 U	< 1 U	< 1 U	1.8	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	0.24 J	17	< 1 U
GM-19D	9/20/2004	< 1 U	< 1 U	< 1 U	2	< 0.5 U	< 1 U	< 1 U	< 1 U	0.31 J	3.5	18	< 1 U
GM-19D	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	15	< 2.0 U
GM-19D	9/26/2006	< 1 U	< 1 U	< 1 U	2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.4	18	< 2 U
GM-7R	9/28/1999	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	4.2	76.1	<1.0	<1.0
Downgradient of the Site													
GM-3	9/28/1999	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	1.2	<1.0	1.7	7.5	<1.0	<1.0
GM-3	10/2/2000	<1.0	2.1	<1.0	8.3	1.1	<1.0	1.5	<1.0	1.0	9.4	<1.0	<1.0
GM-3	11/14/2001	< 1.0	0.95J	< 1.0	2.6	0.25J	< 1.0	0.48J	< 1.0	0.16J	2.9	< 1.0	< 1.0
GM-3	10/1/2002	< 1	1.8	< 1	8.9	1.2	< 1	1.4	< 1	0.74J	9.5	0.63J	< 1
GM-3	10/2/2003	< 1 U	1.6	< 1 U	5.5	0.77	0.26 J	1.7	< 1 U	0.96 J	12	< 1 U	< 1 U
GM-3	9/21/2004	< 1 U	1.8	< 1 U	4.9	0.75	< 1 U	2	< 1 U	1	13	< 1 U	< 1 U
GM-3	10/25/2005	< 1.0 U	1.6	< 1.0 U	4.7	0.66 J	< 1.0 U	2.0	< 1.0 U	0.83 J	14	< 1.0 U	< 2.0 U
GM-3	9/22/2006	< 1 UJ	2 J	< 1 UJ	6.1 J	1 J	< 1 UJ	2.1 J	< 1 UJ	0.59 J	13 J	0.27 J	< 2 UJ
GM-4	9/28/1999	<1.0	<1.0	<1.0	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	13.4	<1.0	<1.0
GM-5	9/28/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.9	<1.0	1.3	<1.0	<1.0
GM-1	9/28/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	5.2	1.1	30.6	<1.0	<1.0

Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-1	10/2/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	<1.0	2.2	37.2	<1.0	<1.0
GM-1	11/14/2001	< 1.0	0.29J	< 1.0	< 0.50	< 0.50	< 1.0	1.3	< 1.0	0.80J	19	< 1.0	< 1.0
GM-1	10/1/2002	< 1.4 U	0.48 J	< 1.4 U	0.95	< 0.72 U	< 1.4 U	2.3	< 1.4 U	1.3 J	39	< 1.4 U	< 1.4 U
GM-1	10/2/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2	< 1 U	1.2	34	< 1 U	< 1 U
GM-1	9/21/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.1	< 1 U	1.2	35	< 1 U	< 1 U
GM-1	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	0.95 J	34	< 1.0 U	< 2.0 U
GM-1	9/20/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2.1	< 1 U	0.76 J	34	< 1 U	< 2 U
GM-15	9/24/1999	<1.0	2.4	<1.0	4.3	<1.0	<1.0	<1.0	<1.0	<1.0	4.1	<1.0	<1.0
GM-15	10/2/2000	<1.0	2.3	<1.0	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	4.7	<1.0	<1.0
GM-15	11/14/2001	< 1.0	1.4	< 1.0	1.2	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	4.9	< 1.0	< 1.0
GM-15	9/27/2002	< 1	1.6	< 1	1.8	< 0.5	< 1	< 1	< 1	< 1	4.7	< 1	< 1
GM-15	9/22/2003	< 1 U	1.7	< 1 U	1.6	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	5.9	< 1 U	< 1 U
GM-15	9/20/2004	< 1 U	1.8	< 1 U	1.4	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	5.8	< 1 U	< 1 U
GM-15	10/26/2005	< 1.0 U	1.7	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5.9	< 1.0 U	< 2.0 U
GM-15	9/18/2006	< 1 U	1.6	< 1 U	1.2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	6.3	< 1 U	< 2 U
GM-14	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-13	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6	<1.0	1.9	31.0	<1.0	<1.0
GM-11	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	14.5	<1.0	<1.0
GM-11	10/2/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.0	<1.0	1.4	41.3	<1.0	<1.0
GM-11	11/14/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	1.0	< 1.0	0.33J	12	< 1.0	< 1.0
GM-11	10/1/2002	< 1	0.34J	< 1	0.62	< 0.5	< 1	2.2	< 1	1	35	< 1	< 1
GM-11	9/24/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.2	< 1 U	0.96 J	33	< 1 U	< 1 U
GM-11	9/21/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.1	< 1 U	0.89 J	33	< 1 U	< 1 U
GM-11	10/26/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	0.75 J	32	< 1.0 U	< 2.0 U
GM-11	9/25/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2	< 1 U	0.75 J	34	< 1 U	< 2 U
GM-20D	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-20D	10/3/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.2	<1.0	1.6	14.3	<1.0	<1.0
GM-20D	11/14/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	2.0	< 1.0	0.64J	5.9	< 1.0	< 1.0
GM-20D	9/30/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	1.3	< 1	< 1	3.8	< 1	< 1
GM-20D	9/22/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	3.6	< 1 U	0.89 J	12	< 1 U	< 1 U
GM-20D	9/21/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.9	< 1 U	0.96 J	11	< 1 U	< 1 U
GM-20D	10/26/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	0.73 J	11	< 1.0 U	< 2.0 U
GM-20D	9/26/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2.1	< 1 U	0.51 J	11	< 1 U	< 2 U
DN-13	11/14/2001	< 1.0	2.5	< 1.0	6.2	0.37J	< 1.0	< 1.0	< 1.0	1.1	5.0	1.2	< 1.0
DN-13	9/27/2002	< 1	2.5	< 1	7.3	0.48J	< 1	< 1	< 1	1.1	6.1	1.3	< 1
DN-13	9/22/2003	< 1 U	2.4	< 1 U	6.8	0.4 J	< 1 U	0.31 J	< 1 U	1.1	6.4	1.1	< 1 U
DN-13	9/16/2004	< 1 U	2.2	< 1 U	6.7	0.49 J	< 1 U	0.44 J	< 1 U	0.84 J	6.8	2.1	< 1 U
DN-13	10/20/2005	< 1.0 U	2.0	< 1.0 U	5.5	< 1.0 U	< 1.0 U	0.38 J	< 1.0 U	1.5	7.2	2.6	< 2.0 U
DN-13	9/27/2006	< 1 U	1.5	< 1 U	6.1	0.41 J	< 1 U	0.33 J	< 1 U	0.51 J	5.7	2.3	< 2 U

Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2006, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-9	9/24/1999	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	13.8	<1.0	<1.0
GM-9	10/3/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	17.2	<1.0	<1.0
GM-9	11/14/2001	< 1.0	0.58J	< 1.0	1.1	< 0.50	< 1.0	0.38J	< 1.0	0.48J	8.6	< 1.0	< 1.0
GM-9	9/30/2002	< 1	0.48J	< 1	0.66	< 0.5	< 1	< 1	< 1	0.99J	16	< 1	< 1
GM-9	9/24/2003	< 1 U	0.45 J	< 1 U	0.56	< 0.5 U	< 1 U	< 1 U	< 1 U	1.3	20	< 1 U	< 1 U
GM-9	9/21/2004	< 1 U	0.6 J	< 1 U	0.97	< 0.5 U	< 1 U	< 1 U	< 1 U	1.1	16	< 1 U	< 1 U
GM-9	10/26/2005	< 1.0 U	0.59 J	< 1.0 U	0.99 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.85 J	15	< 1.0 U	< 2.0 U
GM-9	9/25/2006	< 1 U	0.48 J	< 1 U	0.85 J	< 1 U	< 1 U	< 1 U	< 1 U	0.44 J	6.6	< 1 U	< 2 U
MT-69	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MT-69	10/3/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MT-69	11/15/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MT-69	9/30/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
MT-69	10/1/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
MT-69	9/27/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
MT-69	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
MT-69	9/26/2006	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U

All concentrations presented in ug/l.
1,1-DCA - 1,1-Dichloroethane.
1,1-DCE - 1,1-Dichloroethene.
cis-1,2-DCE - cis-1,1-Dichloroethene.
trans-1,2-DCE - trans-1,2-Dichloroethene.
PCE - Tetrachloroethene.
1,1,1-TCA - 1,1,1-Trichloroethane.
TCE - Trichloroethene.
VOCs - Volatile Organic Compounds.

Appendix B

Groundwater Sampling Data for 2007

ARCADIS

Table B-1. Annual Groundwater Sampling Event Field Parameter Data Sheet for 2007, General Motors Corporation, Moraine, Ohio.

	Sample ID	Depth to Water Before (ft)	Well Volume (gal)	pH (s.u)	Temp (°C)	ORP (mV)	Conductivity (mS/cm)	DO (mg/L)	Purge Rate (ml/min)	Time - Start Purge	Time - End Purge	Volume Purged (gal)	Time - Start Sampling	Time - End Sampling	Sample Date	Sample Matrix	Depth to Water After (ft)	Total Depth (ft)	Constituents	Sampling Method	Well Description (inches)	Purge Equipment	Weather (°F)	Sampler	Notes
Upper Aquifer Wells																									
W-2-N	W-2-N/092507/	24.15	23	6.71	17.1	-107	1.27	0.37	700	12:11	12:27	3	0:00	12:28	9/25/2007	WG	24.15	59.66	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Overcast 70s	April Jacobs	
W-3-N	W-3-N/092607/	26.21	20.33	6.81	17.6	-142	1.19	0.3	800	9:46	10:02	5	0:00	10:03	9/26/2007	WG	26.21	57.48	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Rain 70's	Trey Fortner	
W-4-N	W-4-N/092607/	24.1	27.53	6.7	15.7	-64	1.32	0.47	800	8:50	9:08	6	0:00	9:09	9/26/2007	WG	24.12	66.46	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Cloudy 70s	Trey Fortner	
HR-2	HR-2/092607/	27.21	5	6.45	14.9	79	1.32	0.78	625	9:50	10:06	4	13:22	10:07	9/26/2007	WG	27.21	58.75	VOCs	Low Flow	2" PVC Stickup	Submersible Pump	Overcast 70s	April Jacobs	
HR-1	HR-1/092407/	26.71	5.2	6.66	17.8	88	1.38	0.6	550	14:49	15:04	2.5	12:10	15:05	9/24/2007	WG	26.71	59.36	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 90s	April Jacobs	
HR-4	HR-4/092507/	34.56	5.2	6.5	16.5	133	1.47	1.02	550	9:02	9:18	2.5	15:09	9:19	9/26/2007	WG	34.56	66.87	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Overcast 70s	April Jacobs	MS/MSD
HR-5	HR-5/092407/	27.16	4.9	6.66	16.4	-27	1.31	0.59	650	13:50	14:07	5	17:10	14:08	9/24/2007	WG	27.16	57.89	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 90s	April Jacobs	
HR-9	HR-9/092507/	34.77	5.6	6.49	16.4	76	1.44	0.47	700	14:41	15:01	4	15:27	15:02	9/25/2007	WG	34.77	69.77	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Rainy 70s	April Jacobs	
HR-11	HR-11/091907/	34.35	5.7	6.78	18.1	40	1.20	1.03	750	16:00	16:15	3.5	13:35	16:16	9/18/2007	WG	34.35	69.95	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 80s	April Jacobs	
HR-17	HR-17/092507/	20.78	17.76	6.67	16.7	87	1.21	0.65	800	8:36	8:48	2.5	12:56	8:48	9/25/2007	WG	20.79	48.11	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Cloudy 70s	Trey Fortner	
W-2-S	W-2-S/092407/	21.87	7.25	6.84	16.3	-16	1.25	0.29	600	13:33	13:54	5.5	0:00	13:55	9/24/2007	WG	21.88	67.21	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Clear 90s	Trey Fortner	
W-3-S	W-3-S/092407/	24.4	31.95	7	18.4	76	0.96	1.1	800	14:47	15:05	5	0:00	15:06	9/24/2007	WG	24.4	73.55	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Clear 90s	Trey Fortner	
W-4-S	W-4-S/092407/	22.89	31.21	6.84	17.3	86	1.32	0.4	800	15:53	16:11	6	17:10	16:12	9/24/2007	WG	22.91	70.91	VOCs and BioGeo	Low Flow	4" PVC Stick up	Submersible Pump	Clear 90s	Trey Fortner	
GM-2	GM-2/091807/	30.79	4.1	6.92	17.2	48	1.40	1.86	650	14:53	15:08	3	15:23	15:09	9/18/2007	WG	30.79	56.32	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 80s	April Jacobs	
GM-6	GM-6/091807/	25.97	3.2	6.84	17.5	-86	2.13	0.51	600	11:32	11:48	4	17:09	11:49	9/18/2007	WG	25.97	46	VOCs and BioGeo	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 80s	April Jacobs	
GM-8	GM-8/091807/	30.61	3.33	7.21	17	-125	2.30	0.7	550	9:48	10:05	2.5	11:08	10:06	9/18/2007	WG	30.61	51.42	VOCs and BioGeo	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 70s	April Jacobs	
GM-10	GM-10/091907/	19.89	4.7	6.88	16	95	1.42	2.75	750	10:00	10:17	3	0:00	10:17	9/19/2007	WG	19.91	49.54	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 70s	April Jacobs	DUP-2 and EB-2 on pump
GM-16	GM-16/092507/	21.26	5.69	6.7	17.3	56	1.43	0.28	600	16:15	16:30	2.5	0:00	16:31	9/25/2007	WG	21.25	56.85	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Cloudy 90s	Trey Fortner	
GM-17	GM-17/091807/	18.49	4.8	7	16.7	44	1.48	0.55	600	17:00	17:16	3	0:00	17:17	9/18/2007	WG	18.49	49.45	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 80s	April Jacobs	
GM-18	GM-18/091907/	19.59	5.5	6.9	17.2	44	1.71	0.86	700	11:07	11:22	3	0:00	11:23	9/19/2007	WG	19.59	53.99	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 70s	April Jacobs	
GM-19S	GM-19S/091707/	25.41	4.94	7.03	17.5	-145	2.01	0.43	1000	17:10	17:26	4	0:00	17:27	9/17/2007	WG	25.41	56.3	VOCs and BioGeo	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 70s	April Jacobs	DUP-1,EB-1on tubing, and MS/MSD
WSU-24	WSU-24/091907/	20.19	7.2	6.88	16.6	102	1.43	5.22	525	14:02	14:18	3	11:46	14:19	9/19/2007	WG	20.19	65.48	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 60s	April Jacobs	
TW-2 (ON)	TW-2/091807/	33.21	20	7.11	16.8	-88	1.64	0.76	600	13:21	13:39	4.5	0:00	13:39	9/18/2007	WG	33.21	46.33	VOCs	Low Flow	10" SS Stick up	Submersible Pump	Sunny 70s	April Jacobs	
GM-21	GM-21/092607/	19.79	5.4	6.64	17.2	-126	1.87	0.46	575	12:38	12:56	2.5	9:10	12:56	9/26/2007	WG	19.84	53.44	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Rain 70s	April Jacobs	Fizzed with addition to Na_3PO_4
GM-22	GM-22/092607/	25.45	4.9	6.78	18.1	79	2.17	1.18	900	13:29	13:47	4	10:05	13:48	9/26/2007	WG	25.45	56.39	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Rainy 70s	April Jacobs	
GM-23	GM-23/092707/	23.92	1	6.34	17.5	-91	2.47	0.44	500	14:48	15:03	2.5	15:02	15:04	9/27/2007	WG	23.72	29.99	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Cloudy 70s	April Jacobs	
GM-26	GM-26/092707/	18.97	6.4	6.61	15.5	119	1.15	5.8	600	13:19	13:34	3	14:08	13:35	9/27/2007	WG	18.97	58.41	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Overcast 70s	April Jacobs	
GM-27	GM-27/092707/	22.81	4	6.45	16.4	16	1.58	0.49	700	14:10	14:27	4	9:19	14:28	9/27/2007	WG	22.81	46.51	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Overcast 70s	April Jacobs	
GM-28	GM-28/092007/	26.87	1.3	6.72	17.1	-152	1.95	0.64	575	11:53	12:09	3	10:07	12:10	9/20/2007	WG	28.87	36.9	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Cloudy 70s	April Jacobs	DUP-3 and MS/MSD
GM-29	GM-29/092607/	23.63	1.5	6.63	18	-139	2.35	0.4	650	15:58	16:13	3.5	16:54	16:14	9/26/2007	WG	23.62	33.12	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Raining 70s	April Jacobs	
GM-30	GM-30/092607/	27	1.5	6.31	17	-93	2.71	0.46	600	17:10	17:27	4	15:54	17:28	9/26/2007	WG	26.81	36.24	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Raining 70s	April Jacobs	Sheen; odor; PID of headspace 41.5 ppm
GM-31	GM-31/092007/	26.02	6	6.67	18	-6	2.28	1.07	600	10:58	11:15	3.5	15:05	11:16	9/20/2007	WG	26.02	63.23	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Overcast 70s	April Jacobs	
GM-32	GM-32/091807/	26.76	4.8	7	16.7	-161	4.24	0.45	850	8:39	8:58	4	9:35	8:59	9/18/2007	WG	26.76	56.49	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 70s	April Jacobs	
GM-33	GM-33/092407/	24	4.9	6.75	17.1	86	2.55	0.62	700	16:53	17:08	5	10:06	17:09	9/24/2007	WG	24	54.46	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 90s	April Jacobs	
GM-35	GM-35/092707/	26.11	6.4	8.39	18.5	-233	6.74	0.49	750	15:43	15:58	3.5	14:47	15:59	9/24/2007	WG	26.11	65.81	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 90s	April Jacobs	
GM-47	GM-47/092507/	22.36	5.89	6.75	17.4	-9	1.25	0.31	800	14:17	14:40	5	9:35	14:41	9/25/2007	WG	22.36	59.2	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Cloudy 90s	Trey Fortner	
GM-50	GM-50/092507/	22.22	2.76	6.68	18	24	1.45	0.44	600	15:07	15:20	2.5	9:52	15:21	9/25/2007	WG	22.22	39.5	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	Cloudy 90s	Trey Fortner	
GM-51	GM-51/092707/	24.56	3.128	6.58	16.5	129	1.16	1.54	600	9:38	9:51	2	9:45	9:52	9/27/2007	WG	24.56	44.11	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Raining 70s	April Jacobs	
GM-52	GM-52/092707/	24.35	3.136	6.43	16.2	110	1.44	0.51	625	10:13	10:27	2.5	10:57	10:28	9/27/2007	WG	24.35	43.95	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Raining 70s	April Jacobs	
GM-63	GM-63/092507/	21.07	2.88	6.65	17.4	53	1.54	0.52	600	10:07	10:22	3	11:16	10:23	9/25/2007	WG	21.07	39.09	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	P.Cloudy 80s	Trey Fortner	
GM-64	GM-64/092507/	21.22	6.05	6.79	18.6	280	1.49	0.54	800	10:50	11:02	2.5	17:28	11:03	9/25/2007	WG	21.24	59.04	VOCs and BioGeo	Low Flow	2" PVC Flushmount	Submersible Pump	P.Cloudy 90s	Trey Fortner	
ME-3	ME-3/092007/	25.61	1.7	6.94	18	-70	2.23	10.43	100	9:47	10:04	5.2	11:23	10:05	9/20/2007	WG	25.61	36.51	VOCs and BioGeo	Bailer + Peristaltic	2" IRZ Flushmount	Bailer	Overcast 70s	April Jacobs	
ME-6	ME-6/092007/	26.58	1.4	6.38	17.1	-76	1.76	10.09	100	8:40	9:00	4.3	17:17	9:10	9/20/2007	WG	26.58	35.5	VOCs and BioGeo	Bailer + Peristaltic	2" IRZ Flushmount	Bailer	Overcast 70s	April Jacobs	
Lower Aquifer Wells																									
GM-1	GM-1/091807/	30.99	11.33	6.9	17.4	73	1.17	1.8	700	14:14	14:31	3.5	13:39	14:32	9/18/2007	WG	30.99	101.85	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 80s	April Jacobs	
3	GM-3/091807/	26.21	11.8	6.81	16.7	60	1.23	0.53	850	10:49	11:07	4.5	16:16	11:08	9/18/2007	WG	26.21	99.97	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 70s	April Jacobs	
GM-9	GM-9/091907/	20.46	12.6	6.99	15.2	60	1.19	0.66	700	9:19	9:34	4	16:14	9:35	9/19/2007	WG	20.46	99.41	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 70s	April Jacobs	
GM-11	GM-11/091807/	20.02	12.7	6.96	16.4	48	1.14	1.8	650	16:24	16:39	3	0:00	16:40	9/18/2007	WG	20.02	99.21	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 80s	April Jacobs	
GM-15	GM-15/092507/	22.48	12.13	6.78	18.9	-67	1.26	0.42	800	16:50	17:02	2.7	0:00	17:03	9/25/2007	WG	22.48	98.31	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Rain 90s	Trey Fortner	
GM-19D	GM-19D/091707/	25.41	20.09	6.72	18.1	-50	1.35	0.58	1050	15:55	16:50	5	0:00	16:39	9/17/2007	WG	25.41	151	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Sunny 70s	April Jacobs	
GM-20D	GM-20D/091907/	22.59	50.1	6.96	16.6	81	1.13	1.92	600	13:16	13:32	3	12:57	13:22	9/19/2007	WG	22.59	99.66	VOCs	Low Flow	4" PVC Stickup	Submersible Pump	Sunny 80s	April Jacobs	
GM-39	GM-39/092607/	23.24	14.9	6.5	16.7	-131	1.69	0.89	600	10:54	11:10	3.5	11:49	11:11	9/26/2007	WG	23.24	116.6	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Rainy 70s	April Jacobs	DUP-6 and EB-6 on pump
GM-40	GM-40/092507/	21.68	20.6	6.6	17.6	-116	1.44	0.69	550	10:41	10:56	3	15:52	11:21	9/25/2007	WG	21.71	150.86	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Partly Sunny 70s	April Jacobs	
GM-41	GM-41/092007/	27.11	14.2	6.53	18	-36	1.41	0.75	650	14:42	14:59	3	16:54	15:00	9/20/2007	WG	27.11	116.05	VOCs	Low Flow	2" PVC Stick up	Submersible Pump	Sunny 80s	April Jacobs	
GM-42	GM-42/092507/	24.08	20.2	6.57	17.4	-73	1.39	0.54	550	9:20	9:44	3.5	10:28	9:45	9/25/2007	WG	24.08	150.61	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Overcast 70s	April Jacobs	DUP-4 and EB-4 on pump
GM-54	GM-54/092007/	23.88	8.9	6.64	17.9	67	1.31	3.94	550	16:36	16:53	2.5	11:11	16:54	9/20/2007	WG	23.88	79.51	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 80s	April Jacobs	
GM-58	GM-58/092007/	28.79	8.4	6.64	17.1	95	1.35	4.3	550	15:36	15:51	2.5	15:59	15:52	9/20/2007	WG	28.79	81.56	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Sunny 80s	April Jacobs	
GM-61	GM-61/092607/	25.03	8.6	6.48	17.9	-55	1.70	0.52	600	14:29	14:46	3	6:59	14:47	9/26/2007	WG	25.16	78.51	VOCs	Low Flow	2" PVC Flushmount	Submersible Pump	Rainy 70s	April Jacobs	
HR-10	HR-10/092507/	34.06	14.7	6.65	17.3	-94	1.40	0.72	550	15:39	15:53	4	14:28	15:54	9/25/2007	WG	34.06	126.04	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Sunny 70s	April Jacobs	DUP-5 and EB-5 on pump
HR-12	HR-12/091907/	33.67	65.5	6.85	16.6	-68	1.26	0.79	550	16:37	16:53	3	15:04	16:54	9/18/2007	WG	33.67	134.5	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Sunny 80s	April Jacobs	
HR-15	HR-15/092607/	26.45	49.14	6.74	16.4	-121	1.21	0.27	800	10:20	10:32	2.5	13:48	10:33	9/26/2007	WG	26.45	102.05	VOCs	Low Flow	4" PVC Stick up	Submersible Pump	Cloudy 70s	Trey Fortner	
MT69	MT-69/092707/	19.57	290.34	7.81	15.5	-274	0.50	0.4	600	12:39	12:39	4	16:40	12:57	9/27/2007	WG	19.57	130.81	VOCs	Low Flow	8" Steel Stick up	Submersible Pump	Overcasrt 70s	April Jacobs	DUP-7 and EB-7 on pump - MS/MSD
DN-13 (ON)	DN-13/091907/	NM	NM	NM	NM	NM	NM	NM	6000	11:40	11:45	8	16:12	11:46	9/19/2007	WG	NM	NM	VOCs	Low Flow	20" Steel	Supply Pump	Sunny 70s	April Jacobs	

Notes:
Temp - temperature
ORP - Oxidation Reduction Potential
DO - Dissolved Oxygen
°C - degrees Celsius
°F - degrees Farenheit
mV - millivolts
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
gal - gallons
mL/min - milliliters per minute
ft - feet
mL - milliliters
VOCs - site specific volitile organic compounds
NM - not measured
WG - Groundwater
SS -Stainless Steel
PVC - polyvinyl chloride
PID - photoionization detector
ppm - parts per million
MS/MSD - matrix spike/matrix spike duplicate
DUP - duplicate sample
EB - equipment blank
BioGeo - total and dissolved manganese, total and dissolved iron, sulfate, sulfide, total organic carbon, chlorides, ethene, ethane, and methane

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Table B-2. Supplemental Groundwater Sampling Events Field Parameter Data Sheet for 2007, General Motors Corporation, Moraine, Ohio.

	Sample ID	Depth to Water Before	Well Volume (gal)	pH (s.u.)	Temp (°C)	ORP (mV)	Conductivity (mS/cm)	DO (mg/L)	Purge Rate (mL/min)	Time - Start Purge	Time - End Purge	Volume Purged (gal)	Sample Date	Time - Sample	Depth to Water After (ft)	Total Depth (ft)	Constituents	Sampling Method	Well Description (inches)	Purge Equipment	Weather (°F)	Sampler	Notes
Upper Aquifer Wells																							
GM-65S	GM-65S/050207/	16.91	5.61	7.08	15.44	92	0.84	8.66	1083	12:12	12:26	4	5/2/2007	12:27	16.92	NM	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 60s	April Jacobs	
GM-66	GM-66/050207/	22.66	5.17	6.88	16.34	-107	1.37	7.85	900	15:06	15:26	5	5/2/2007	15:27	22.67	NM	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 70s	April Jacobs	
GM-67S	GM-67S/050307/	21.22	5.24	6.91	17.36	-98	1.49	7.37	1181	15:57	16:13	5	5/3/2007	16:14	21.24	NM	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Sunny, 70s	April Jacobs	
GM-68S	GM-68S/050407/	21.53	4.48	6.82	18.92	-17	1.42	4.48	1302	10:10	10:26	5.5	5/4/2007	10:27	21.55	NM	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 60s	April Jacobs	
GM-71	GM-71/050307/	25.85	0.82	7.06	18.85	-96	1.8	7.61	1166	14:05	14:18	4	5/3/2007	14:19	25.90	NM	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Sunny, 70s	April Jacobs	
GM-72	GM-72/050307/	25.81	0.99	6.93	18.50	69	2.38	9.56	1018	14:36	14:49	3.5	5/3/2007	14:50	25.81	31.99	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Sunny, 70s	April Jacobs	
GM-74S	GM-74S/092707/	25.11	3.79	6.80	18.2	34	1.85	1.25	800	14:45	14:57	5	9/27/2007	14:58	25.11	48.79	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Cloudy, 70s	Trey Fortner	
GM-75S	GM-75S/092607/	30.49	3.33	6.70	19.2	37	1.43	0.83	600	14:15	14:30	3	9/26/2007	14:31	30.49	51.35	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 70s	Trey Fortner	
GM-76S	GM-76S/092307/	30.82	0.95	7.47	20.1	89	0.71	2.16	200	13:44	14:01	5	9/23/2007	14:01	30.83	36.78	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Clear, 70s	Trey Fortner	
GM-77S	GM-77S/092707/	33.81	1.34	7.86	20.1	110	0.42	8.01	800	12:40	12:52	3.5	9/27/2007	12:53	33.82	42.19	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 70s	Trey Fortner	
GM-78	GM-78/102307/	17.28	5.13	7.20	14.9	23	1.53	2.18	250	12:15	12:45	1.7	10/23/2007	12:50	17.30	49.37	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 50s	Lance Green	
GM-79	GM-79/102307/	14.54	6.32	7.02	17.4	323	1.43	0.0	400	11:20	11:50	2.75	10/23/2007	11:53	14.55	54.04	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 50s	Lance Green	
GM-80	GM-80/102307/	13.43	1.75	6.96	14.8	189	0.97	0.0	300	9:35	10:05	2	10/23/2007	10:08	13.43	24.36	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 50s	Lance Green	
GM-81	GM-81/102307/	12.81	7.50	7.13	13.8	-10	1.45	0.0	350	10:25	11:00	2.8	10/23/2007	11:03	12.79	59.82	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 50s	Lance Green	
Lower Aquifer Wells																							
GM-41	GM-41/050307/	23.60	14.46	6.73	17.43	-72	1.44	6.96	1083	11:32	11:46	4	5/3/2007	11:47	23.55	NM	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 70s	April Jacobs	
GM-54	GM-54/050207/	20.04	9.59	6.94	16.86	56	1.29	9.98	946	16:45	17:08	6	5/1/2007	17:09	20.05	NM	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 60s	April Jacobs	
GM-58	GM-58/050307/	25.04	9.11	6.84	16.67	109	1.28	8.12	1336	9:13	9:31	6	5/3/2007	9:32	25.11	NM	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 60s	April Jacobs	
GM65D	GM65D/050207/	16.91	12.52	6.92	16.06	-48	1.33	7.78	946	11:05	11:25	5	5/2/2007	11:26	16.90	95.19	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 60s	April Jacobs	DUP-1
GM-67D	GM-67D/050307/	21.68	9.33	6.76	17.08	-80	1.33	7.89	1393	16:46	16:59	4	5/3/2007	17:00	21.69	NM	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Sunny, 70s	April Jacobs	
GM-68D	GM-68D/050407/	22.11	8.30	6.50	18.25	-345	1.6	4.52	996	11:09	11:28	5	5/4/2007	11:29	22.12	NM	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 60s	April Jacobs	DUP-2
GM-69	GM-69/050307/	22.31	12.43	6.87	17.69	-126	1.53	6.46	996	17:29	17:48	5	5/3/2007	17:49	22.34	NM	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Sunny, 70s	April Jacobs	
GM-70	GM-70/050307/	26.47	8.88	6.97	17.45	-11	1.2	6.3	1181	10:20	10:36	5	5/3/2007	10:36	26.81	NM	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Overcast, 60s	April Jacobs	
GM-73	GM-73/102307/	30.15	10.47	6.85	17.0	-61	1.82	0.00	250	13:45	14:25	2.27	10/23/2007	14:30	30.15	95.58	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 50s	Lance Green	
GM-74D	GM-74D/092707/	25.30	8.62	6.82	17.7	-104	1.66	0.32	800	15:17	15:32	5	9/27/2007	15:33	25.30	79.18	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Cloudy, 70s	Trey Fortner	
GM-75D	GM-75D/092607/	30.31	10.20	6.58	17.2	-69	1.45	0.35	800	14:51	15:06	7	9/26/2007	15:07	30.31	94.10	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Rain, 70s	Trey Fortner	
GM-76D	GM-76D/092307/	31.09	7.72	6.73	17.6	-130	1.66	1.41	400	14:24	14:43	5	9/23/2007	14:44	31.08	79.33	VOCs and BioGeo	Low-flow	2" PVC Flushmount	Submersible Pump	Clear, 80s	Trey Fortner	DUP-1; MS/MSD
GM-77D	GM-77D/092707/	34.02	8.39	6.82	16.3	-35	1.34	1.60	800	13:23	13:35	4	9/27/2007	13:36	34.02	86.49	VOCs	Low-flow	2" PVC Flushmount	Submersible Pump	Cloudy, 70s	Trey Fortner	

Notes:

Temp - temperature
ORP - Oxidation Reduction Potential
DO - Dissolved Oxygen
°C - degrees Celsius
°F - degrees Farenheit
mV - millivolts
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
gal - gallons
mL/min - milliliters per minute
ft - feet
mL - millilliters
VOCs - volitile organic compounds
NM - not measured
WG - Groundwater
SS -Stainless Steel
PVC - polyvinyl chloride
PID - photoionization detector
ppm - parts per million
MS/MSD - matrix spike/matrix spike duplicate
DUP - duplicate sample
EB - equipment blank
BioGeo - total and dissolved manganese, total and dissolved iron, sulfate, sulfide, total organic carbon, chlorides, ethene, ethane, and methane

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Appendix C

Groundwater Analytical Database for 2007

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Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Upgradient of the Site		On-Site			
	Units	HR-9 9/25/2007 Upper Aquifer	HR-11 9/19/2007 Upper Aquifer	HR-4 9/26/2007 Upper Aquifer	W-2-N 9/25/2007 Upper Aquifer	W-3-N 9/26/2007 Upper Aquifer	W-4-N 9/26/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	8.9	< 1 U	< 1 U	< 1 U	< 4 U	0.34 J
1,1-Dichloroethane	ug/l	62	7.1	3.6	0.22 J	< 4 U	1.6
1,1-Dichloroethene	ug/l	0.56 J	< 1 U	< 1 U	< 1 U	< 4 U	< 1 U
Benzene	ug/l	< 2.5 U	< 1 U	< 1 U	< 1 U	< 4 U	< 1 U
cis-1,2-Dichloroethene	ug/l	25	< 1 U	< 1 U	1.6	110	2.6
Ethylbenzene	ug/l	< 2.5 U	< 1 U	< 1 U	< 1 U	< 4 U	< 1 U
Tetrachloroethene	ug/l	< 2.5 U	< 1 U	0.33 J	< 1 U	< 4 U	0.88 J
Toluene	ug/l	< 2.5 U	< 1 U	< 1 U	0.28 J	< 4 U	< 1 U
trans-1,2-Dichloroethene	ug/l	3.7	< 1 U	< 1 U	< 1 U	1.4 J	0.24 J
Trichloroethene	ug/l	12	< 1 U	0.31 J	0.88 J	< 4 U	10
Vinyl chloride	ug/l	0.66 J	< 1 U	< 1 U	< 1 U	5.6	0.96 J
Xylene (total)	ug/l	< 5 U	< 2 U	< 2 U	< 2 U	< 8 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	On-Site HR-2 9/26/2007 Upper Aquifer	HR-5 9/24/2007 Upper Aquifer	HR-1 9/24/2007 Upper Aquifer	GM-30 9/26/2007 Upper Aquifer	GM-23 9/27/2007 Upper Aquifer	GM-27 9/27/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	0.45 J	< 18 U	< 200 U	< 2 U
1,1-Dichloroethane	ug/l	5.3	0.51 J	2.2	16 J	< 200 U	2.3
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	0.21 J	< 18 U	< 200 U	< 2 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 18 U	< 200 U	< 2 U
cis-1,2-Dichloroethene	ug/l	5	5.4	9.5	< 18 U	4700	12
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	380	< 200 U	< 2 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	20	< 18 U	280	0.9 J
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 18 U	< 200 U	< 2 U
trans-1,2-Dichloroethene	ug/l	0.76 J	0.41 J	1.9	< 18 U	130 J	0.41 J
Trichloroethene	ug/l	0.45 J	13	40	< 18 U	82 J	70
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 18 U	2600	< 2 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	1300	< 400 U	< 4 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	GM-29 9/26/2007 Upper Aquifer	GM-28 9/20/2007 Upper Aquifer	DUP 9/20/2007 QAQC	On-Site ME-6 9/20/2007 Upper Aquifer	GM-31 9/20/2007 Upper Aquifer	ME-3 9/20/2007 Upper Aquifer	GM-22 9/26/2007 Upper Aquifer
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	15 J	< 1 U	< 1 U	0.61 J	3.7	2	0.66 J
1,1-Dichloroethane	ug/l	15 J	4.6	4.5	6.4	4.8	3.8	0.72 J
1,1-Dichloroethene	ug/l	< 50 U	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
Benzene	ug/l	< 50 U	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	1200	0.72 J	0.76 J	9.2	100	1.2	0.24 J
Ethylbenzene	ug/l	< 50 U	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	18 J	< 1 U	< 1 U	4.5	< 3.3 U	5.2	3.3
Toluene	ug/l	< 50 U	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	19 J	0.58 J	0.59 J	0.51 J	2.8 J	< 1 U	< 1 U
Trichloroethene	ug/l	350	0.51 J	0.56 J	12	90	3.6	3.3
Vinyl chloride	ug/l	290	1.2	1	4.5	1.1 J	0.82 J	< 1 U
Xylene (total)	ug/l	< 100 U	< 2 U	< 2 U	< 2 U	< 6.7 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	GM-19S 9/17/2007 Upper Aquifer	DUP 9/17/2007 QAQC	GM-33 9/24/2007 Upper Aquifer	On-Site GM-35 9/24/2007 Upper Aquifer	GM-32 9/18/2007 Upper Aquifer	GM-21 9/26/2007 Upper Aquifer	HR-17 9/25/2007 Upper Aquifer
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	0.59 J	0.72 J	15	5.8 J	< 5 U	8.5	< 2.5 U
1,1-Dichloroethane	ug/l	10	10	4.9	26	4.3 J	18	1.2 J
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	0.68 J	< 10 U	< 5 U	< 1.4 U	< 2.5 U
Benzene	ug/l	< 1 U	< 1 U	< 1.7 U	< 10 U	1.6 J	< 1.4 U	< 2.5 U
cis-1,2-Dichloroethene	ug/l	0.3 J	< 1 U	5.5	140	< 5 U	26	1.9 J
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1.7 U	< 10 U	< 5 U	< 1.4 U	< 2.5 U
Tetrachloroethene	ug/l	1.5	1.4	32	22	< 5 U	< 1.4 U	51
Toluene	ug/l	< 1 U	< 1 U	< 1.7 U	< 10 U	< 5 U	< 1.4 U	< 2.5 U
trans-1,2-Dichloroethene	ug/l	0.29 J	0.28 J	0.34 J	8 J	1 J	2.5	0.69 J
Trichloroethene	ug/l	0.46 J	< 1 U	49	110	< 5 U	2.8	16
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1.7 U	12	< 5 U	12	< 2.5 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 3.3 U	< 20 U	3.4 J	< 2.9 U	< 5 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		On-Site			Downgradient of the Site		
	Units	W-2-S 9/24/2007 Upper Aquifer	W-3-S 9/24/2007 Upper Aquifer	W-4-S 9/24/2007 Upper Aquifer	GM-63 9/25/2007 Upper Aquifer	GM-64 9/25/2007 Upper Aquifer	GM-47 9/25/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	1.4	1.4	1.5	2.7 J	< 3.3 U	2.2 J
1,1-Dichloroethane	ug/l	1.1	< 1 U	1.8	1.8 J	2.7 J	2.4 J
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
cis-1,2-Dichloroethene	ug/l	0.89 J	< 1 U	5.9	5 J	74	170
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
Tetrachloroethene	ug/l	< 1 U	0.72 J	26	130	11	71
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	< 3.3 U	< 7.1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	1.3	< 6.7 U	6.6	4.6 J
Trichloroethene	ug/l	5.3	2	16	120	4.5	53
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 6.7 U	18	< 7.1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 13 U	< 6.7 U	< 14 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site					
	Units	GM-50 9/25/2007 Upper Aquifer	GM-8 9/18/2007 Upper Aquifer	GM-6 9/18/2007 Upper Aquifer	TW-2 9/18/2007 Upper Aquifer	GM-2 9/18/2007 Upper Aquifer	GM-51 9/27/2007 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	1.4 J	< 2 U	< 1 U	< 1 U	< 1 U	0.61 J
1,1-Dichloroethane	ug/l	1.9 J	9.1	26	1.7	1.4	0.23 J
1,1-Dichloroethene	ug/l	< 5.9 U	< 2 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 5.9 U	2.4	0.42 J	0.81 J	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	130	< 2 U	16	7.9	4.9	1
Ethylbenzene	ug/l	< 5.9 U	1.7 J	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	100	< 2 U	< 1 U	1.9	1.6	7.2
Toluene	ug/l	< 5.9 U	< 2 U	< 1 U	< 1 U	< 1 U	0.29 J
trans-1,2-Dichloroethene	ug/l	2.5 J	0.9 J	2.6	0.25 J	0.28 J	< 1 U
Trichloroethene	ug/l	44	< 2 U	0.34 J	24	2.3	3.9
Vinyl chloride	ug/l	< 5.9 U	< 2 U	6.7	0.97 J	1.1	< 1 U
Xylene (total)	ug/l	< 12 U	0.9 J	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site						
	Units	GM-16 9/25/2007 Upper Aquifer	GM-17 9/18/2007 Upper Aquifer	GM-18 9/19/2007 Upper Aquifer	WSU-24 9/19/2007 Upper Aquifer	GM-52 9/26/2007 Upper Aquifer	GM-10 9/19/2007 Upper Aquifer	DUP 9/19/2007 QAQC
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	1.4 J	0.31 J	5.4	0.66 J	1.3 J	0.75 J	0.65 J
1,1-Dichloroethane	ug/l	1.5 J	1.5	13	< 1 U	1.5 J	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 4 U	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U	< 1 U
Benzene	ug/l	< 4 UJ	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	43	4	19	< 1 U	18	0.35 J	0.34 J
Ethylbenzene	ug/l	< 4 U	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	94	7.3	14	0.89 J	88	0.93 J	1
Toluene	ug/l	< 4 U	< 1 U	< 2.5 U	< 1 U	< 2.5 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	1.3 J	0.22 J	1.2 J	< 1 U	1 J	< 1 U	< 1 U
Trichloroethene	ug/l	52	15	64	7.9	47	8.8	8.3
Vinyl chloride	ug/l	< 4 U	< 1 U	1.1 J	< 1 U	< 2.5 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 8 U	< 2 U	< 5 U	< 2 U	< 5 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	Downgradient GM-26 9/27/2007 Upper Aquifer	Upgradient of the Site HR-10 9/25/2007 Lower Aquifer	DUP 9/25/2007 QAQC	HR-12 9/19/2007 Lower Aquifer	HR-15 9/26/2007 Lower Aquifer	On-Site GM-39 9/26/2007 Lower Aquifer	DUP 9/26/2007 QAQC
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	< 1 U	< 1 U	2.2	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	1.3	2.5	19 J	7.6 J
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	1.2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.23 J	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	0.37 J	< 1 U	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	15	1.6	2.5
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

	Units	GM-40 9/25/2007 Lower Aquifer	GM-61 9/26/2007 Lower Aquifer	GM-41 9/20/2007 Lower Aquifer	On-Site GM-58 9/20/2007 Lower Aquifer	GM-54 9/20/2007 Lower Aquifer	GM-42 9/25/2007 Lower Aquifer	DUP 9/25/2007 QAQC
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	< 1 U	0.59 J	< 6.7 U	< 3.3 U	< 5 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	1.6 J	< 6.7 U	< 3.3 U	< 5 U	0.67 J	0.64 J
1,1-Dichloroethene	ug/l	< 1 U	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	< 1 U	0.2 J
Benzene	ug/l	< 1 U	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	3.9	17	< 3.3 U	< 5 U	18	17
Ethylbenzene	ug/l	< 1 U	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	28	< 6.7 U	69	150	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1.7 U	< 6.7 U	< 3.3 U	< 5 U	0.18 J	0.3 J
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1.7 U	1.4 J	< 3.3 U	< 5 U	0.69 J	0.59 J
Trichloroethene	ug/l	< 1 U	56	230	< 3.3 U	2.4 J	2.2	2.1
Vinyl chloride	ug/l	4	< 1.7 U	1.9 J	< 3.3 U	< 5 U	0.44 J	0.49 J
Xylene (total)	ug/l	< 2 U	< 3.3 U	< 13 U	< 6.7 U	< 10 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site					
	Units	GM-19D 9/17/2007 Lower Aquifer	GM-3 9/18/2007 Lower Aquifer	GM-1 9/18/2007 Lower Aquifer	GM-15 9/25/2007 Lower Aquifer	GM-11 9/18/2007 Lower Aquifer	GM-20D 9/19/2007 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	0.25 J	0.67 J	0.74 J	< 1 U	0.6 J	0.5 J
1,1-Dichloroethane	ug/l	< 1 U	1.5	< 1 U	1.5	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	1.4	3.8	< 1 U	1.1	< 1 U	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	1.9	1.8	< 1 U	1.5	2.1
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	0.77 J	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/l	3.2	14	32	5.1	35	9.2
Vinyl chloride	ug/l	16	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site				Equipment Blanks		
	Units	DN-13 9/19/2007 Lower Aquifer	GM-9 9/19/2007 Lower Aquifer	MT-69 9/27/2007 Lower Aquifer	DUP 9/27/2007 QAQC	EB 9/17/2007 QA/QC	EB 9/19/2007 QA/QC	EB 9/20/2007 QA/QC
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	0.48 J	1.2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	2	0.48 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	6.4	0.71 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	0.4 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/l	3.3	18	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/l	2.6	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Equipment Blanks				Trip Blanks		
	Units	EB 9/25/2007 QA/QC	EB 9/25/2007 QA/QC	EB 9/26/2007 QA/QC	EB 9/27/2007 QA/QC	TB 9/17/2007 QA/QC	TB 9/17/2007 QA/QC	TB 9/19/2007 QA/QC
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2007, General Motors Corporation, Moraine, Ohio.

		Trip Blanks					
	Units	TB 9/19/2007 QA/QC	TB 9/20/2007 QA/QC	TB 9/24/2007 QA/QC	TB 9/25/2007 QA/QC	TB 9/26/2007 QA/QC	TB 9/27/2007 QAQC
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Appendix D

Soil Boring and Well Construction Logs for the 2007 Supplemental Investigation

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Appendix D

Soil Boring and Well Construction Logs for the 2007 Supplemental Investigation

KEY TO SYMBOLS

Symbol **Description**

Strata symbols

High plasticity clay (CH -- C)

Inorganic silts and clays (CH-MH -- MC)

Low plasticity clay (CL -- O)

Low-high plasticity clays (CL-CH -- CO)

Silty low plasticity clay (CL-ML -- CZ)

Fill (FILL -- F)

Clayey gravel (GC -- O8)

Clayey sand and gravel (GC-SC -- DO8)

Silty gravel (GM -- Z8)

Silty clayey gravel (GM-GC -- ZO8)

Silty sand and gravel (GM-SM -- 08)

Poorly graded gravel (GP -- G)

Poorly graded gravel with clay (GP-GC -- DGO3)

Poorly graded gravel with silt (GP-GM -- DGZ3)

Poorly graded gravel and sand (GP-SP -- :G)

Well graded gravel (GW -- 83)

Symbol **Description**

Well graded gravel with clay (GW-GC -- 83O)

Well graded gravel with silt (GW-GM -- 83Z)

Well graded gravel/ clayey gravel (GW-GP -- 83G)

Well graded gravel and sand (GW-SW -- 83D)

Elastic silt (MH -- M)

Silt (ML -- Z)

High plasticity organic clays (OH -- 5)

Low plasticity organic silts (OL -- 4)

Basalt (or generic rock) (ROCK --])

Clayey sand (SC -- DO)

Silty sand (SM -- 0)

Poorly graded clayey silty sand (SM-SC -- :ZO)

Poorly graded silty fine sand (SM-ML -- :Z)

Poorly graded sand (SP -- :)

Poorly graded sand with clay (SP-SC -- :R)

Poorly graded sand with silt (SP-SM -- :=)

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Well graded sand (SW -- D)
	Well graded sand with clay (SW-SC -- DR)
	Well graded sand with silt (SW-SM -- D=)
	Interlayered well/poorly graded sand (SW-SP -- D:)
	Silty sandy clay (VC -- 0C)
	Variable gravel and silty sand mix (VG -- 0G)
	Variable sand and silt mix (VS -- 0Y)
	Agglomerate (\)
	Blank (E)
	CH fraction (U)
	CL fraction (R)
	Claystone (H)
	Cobble frac (A)
	Cobbles (B)
	Competent (K)
	Dolomite (()

Symbol	Description
	Extra fine gravel (3)
	Fine gravel (Y)
	Frac rock (X)
	Granite (/)
	Gravel (8)
	Gravel frac (9)
	Intrusive (V)
	Limestone (L)
	Metamorphic rocks ())
	MH fraction (?)
	ML fraction (=)
	Mudstone (7)
	Organics (J)
	Paving (P)
	Peat (Q)
	Sand (S)
	Sandstone (N)
	Schist ($)

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Sediment (2)
	Shale (>)
	Shell fragments (&)
	Siltstone (I)
	Topsoil (T)
	Weathered (W)
	EXTRA: alternating dot-dash pattern (|)
	EXTRA: dashed horizontal lines (%)
	EXTRA: medium closely-spaced dots (6)
	EXTRA: narrow-spaced horizontal dashed lines (-)
	EXTRA: random dot pattern (1)
	EXTRA: regularly spaced "V"'s (<)

Symbol	Description
	EXTRA: very narrow cross-hatching (!)
	EXTRA: dashed lines with 3 dots above each dash (.)
	EXTRA: large widely-spaced dots (*)
	EXTRA: small filled triangles ([)
	EXTRA: semi-random dot pattern (:)
	EXTRA: semi-random triangle pattern (')
	EXTRA: zigzag lines (#)
	EXTRA: grass pattern ({)
	EXTRA: tilde sign (})
	EXTRA: randomly arranged square boxes (;)
Misc. Symbols	
	Drill rejection (BOTTOM)
	Boring continues (CONTINUE)
	Water table during drilling (LWATERNF)
	Water table at boring completion (LWATER)

KEY TO SYMBOLS

Symbol	Description
Misc. Symbols	
	Water table during drilling (WATER)
	Water table at boring completion (FWATER)
	Water table during drilling (RWATERNF)
	Water table at boring completion (RWATER)
	(RTARROW)
	Depth to caving (CAVED)
	(CIRCLE)
	(FCIRCLE)
	(HATCHED)
	(XHATCHED)
	(FILLED)
	(BARGRAPH)
	(NOMARKER)
Soil Samplers	
	Auger (A)
	Bulk sample taken from 6 in. auger (B)
	California sampler (C)

Symbol	Description
	Direct Push (D)
	Corps of Engineers sampler (E)
	Bulk/Grab sample (F)
	Piston (I)
	Pitcher (L)
	Denison (O)
	Standard penetration test (P)
	Rock core (R)
	Undisturbed thin wall Shelby tube (S)
	No recovery (X)
	EXTRA: (downward pointing white triangle on black background) (G)
	EXTRA: (double vertical lines) (H)
	EXTRA: (downward pointing outline arrow) (J)
	EXTRA: (downward pointing filled arrow) (K)
	EXTRA: (split diagonally left to right, white on left, black on right) (N)
	EXTRA: (diagonal line from right to left) (T)

KEY TO SYMBOLS

Symbol Description

Soil Samplers

EXTRA: (generic sampling interval)
(U)

EXTRA: (generic sampling interval)
(V)

Monitor Well Details

flush-mount cover
(COVER -- FLUSH,)

riser with cover and protective casing
(CASED RISER -- PROTECT,)

pipe riser
(RISER -- BLANKPVC,)

covered riser
(COVERED RISER -- CAPPED,)

recessed cover set in concrete
(RECESSED -- RECESSED, 13)

top of well, recessed pipe
(SUNKEN -- SUNKEN, 13)

protective casing set in concrete
(CASED -- CASED, 13)

concrete seal
(CONCRETE -- BLANKPVC, 13)

gravel backfill
(GRAVEL -- BLANKPVC, *1)

pipe set in cement grout w/ protective casing
(CEMENT CASED -- CASED, E)

unknown backfill type, blank PVC
(INDETERMINATE -- BLANKPVC, E)

assorted cuttings
(CUTTINGS -- BLANKPVC, O)

bentonite slurry
(BENTONITE -- BLANKPVC, P)

Symbol Description

bentonite pellets
(PELLETS -- BLANKPVC, I)

silica sand, blank PVC
(SAND -- BLANKPVC, 6)

slotted pipe w/ sand
(SLOTTED -- SLOTDPVC, 6)

slotted pipe, unknown backfill
(SLOT/NO FILL -- SLOTDPVC, E)

stylized slotted pipe with no back-fill
(STYLIZED SLOT -- ALTSLOT, E)

endcap on pipe packed in sand
(ENDCAP -- ENDCAP, 6)

no pipe, filler material
(END -- ,])

no pipe, sealed
(SEALED -- , P)

silica sand, no pipe (end plug)
(SAND PLUG -- , 6)

end of well installation
(BLANK -- , E)

Sample Destinations

Composite Sample to Lab
(C)

Grab Sample to Lab
(G)

Split-Spoon not Analyzed
(S)

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Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	24	0.0				CL	CLAY Dark yellowish brown (10 yr 4/4), trace gravel, trace silt, medium plasticity, dry	
2	N/A	24	0.0						
4	N/A	24	0.0						
6	N/A	24	0.0						
							SP	SAND Brown (10 yr 5/3), poorly graded, medium- coarse, trace gravel, dry	
8	N/A	24	1.2						
10	N/A	24	2.2						
12	N/A	24	3.8				SP	Note: 3-4" cobbles @ 12'	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/10/2007
Driller: Gerald Sealey
Total Depth: 108
End Drilling: 4/13/2007
Drilling Method: Rotosonic
Surface Elev.: 723.828
Converted to Well: Y Well I.D.: GM-65D
Drilling Fluid: Water
North Coor.: -1491.41443
East Coor.: 4311.00936
Remarks: Hand auger to 11.5'
Project No.: OH000294.0010
Datum: TOC: 723.537
Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
14	N/A	24	1.1						
16	N/A	24	1.2						
18	N/A	24	3.3				GW	GRAVEL WITH SAND Grayish brown (10 yr 5/2), well graded, fine-medium, 30% coarse sand, 5% silt, wet	▼
20	N/A	24	4.7				SP	SAND Grayish brown (10 yr 5/2), poorly graded, medium coarse, 10% gravel (subangular-subround), wet	
22	N/A	24	4.9						
24	N/A	24	5.6						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/10/2007
Driller: Gerald Sealey
Total Depth: 108
End Drilling: 4/13/2007
Drilling Method: Rotosonic
Surface Elev.: 723.828
Converted to Well: Y Well I.D.: GM-65D
Drilling Fluid: Water
North Coor.: -1491.41443
East Coor.: 4311.00936
Remarks: Hand auger to 11.5'
Project No.: OH000294.0010
Datum: TOC: 723.537
Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
								Water sample 25-30' @ 10:40	
26	N/A	24	6.2						
28	N/A	24	7.1						
30	N/A	24	3.4						
32	N/A	24	3.2						
34	N/A	24	3.4						
36	N/A	24	3.2				GP	GRAVEL Light yellowish brown (10 yr 6/4), poorly graded, trace silt, 5% sand, subangular-angular, wet	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/10/2007
Driller: Gerald Sealey
Total Depth: 108
End Drilling: 4/13/2007
Drilling Method: Rotosonic
Surface Elev.: 723.828
Converted to Well: Y Well I.D.: GM-65D
Drilling Fluid: Water
North Coor.: -1491.41443
East Coor.: 4311.00936
Remarks: Hand auger to 11.5'
Project No.: OH000294.0010
Datum: TOC: 723.537
Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
38	N/A	24	2.0	SP	SAND Light yellowish brown (10 yr 6/4), poorly graded, coarse, <5% gravel, trace silt	
				GP	GRAVEL Light yellowish brown (10 yr 6/4), poorly graded, trace silt, 5% sand, subangular-angular, wet	
40	N/A	24	0.7	SP	SAND Light yellowish brown (10 yr 4/6), medium-coarse, 10% gravel (subangular-subround), 10% silt, wet	
42	N/A	24	0.6			
44	N/A	24	0.5		Note: No silt @ 44'	
					Water sample 45-50' @ 11:40	
46	N/A	24	0.9			
48	N/A	24	0.7			
50						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/10/2007

Driller: Gerald Sealey | Total Depth: 108 | End Drilling: 4/13/2007

Drilling Method: Rotosonic | Surface Elev.: 723.828 | Converted to Well: Y | Well I.D.: GM-65D

Drilling Fluid: Water | North Coor.: -1491.41443 | East Coor.: 4311.00936

Remarks: Hand auger to 11.5'

Project No.: OH000294.0010 | Datum: TOC: 723.537 | Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	3.3				SW	SAND Brown (11 yr 5/3), well graded, 20% gravel (subangular-subround), fine-coarse, wet	
52	N/A	24	3.0						
54	N/A	24	3.4						
							SP	SAND Grayish brown (10 yr 5/2), poorly graded, 5% gravel, 5% silt, coarse grained, wet	
56	N/A	24	3.4						
58	N/A	24	2.4						
60	N/A	24	1.7						
62	N/A	24	1.5				SP	SAND Yellowish brown (10 yr 5/4), poorly graded, fine-coarse, 15% gravel, 5% silt,	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: Gerald Sealey
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: L. Greene
Total Depth: 108
Surface Elev.: 723.828
North Coor.: -1491.41443

Begin Drilling: 4/10/2007
End Drilling: 4/13/2007
Converted to Well: Y Well I.D.: GM-65D
East Coor.: 4311.00936

Remarks: Hand auger to 11.5'

Project No.: OH000294.0010
Datum: TOC: 723.537
Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
								wet	
64	N/A	24	2.2						
66	N/A	24	1.5						
68	N/A	24	0.6				SP	SAND Grayish brown (10 yr 5/2), poorly graded, fine-coarse, 20% gravel (subangular-subround), wet	
70	N/A	24	0.5					Note: gray (10 yr 5/1), 15% fine gravel, trace silt @ 70'	
72	N/A	24	1.3					Water sample 72-77' @ 1345	
74	N/A	24	0.9						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/10/2007
Driller: Gerald Sealey
Total Depth: 108
End Drilling: 4/13/2007
Drilling Method: Rotosonic
Surface Elev.: 723.828
Converted to Well: Y Well I.D.: GM-65D
Drilling Fluid: Water
North Coor.: -1491.41443
East Coor.: 4311.00936
Remarks: Hand auger to 11.5'
Project No.: OH000294.0010
Datum: TOC: 723.537
Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
76	N/A	24	1.0						
78	N/A	24	1.8						
80	N/A	24	1.0						
82	N/A	24	0.0						
84	N/A	24	0.8				SP	SAND Brown (10 yr 5/3), poorly graded, fine coarse, 20% gravel (fine-coarse, subangular-subround), trace silt, wet	
86	N/A	24	0.7					Water sample 87-92' @ 10:10	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/10/2007

Driller: Gerald Sealey | Total Depth: 108 | End Drilling: 4/13/2007

Drilling Method: Rotosonic | Surface Elev.: 723.828 | Converted to Well: Y | Well I.D.: GM-65D

Drilling Fluid: Water | North Coor.: -1491.41443 | East Coor.: 4311.00936

Remarks: Hand auger to 11.5'

Project No.: OH000294.0010 | Datum: TOC: 723.537 | Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
88	N/A	24	0.0				SW	SAND Brown (10 yr 5/3), well graded, fine-coarse, 15% gravel (subangular-subround), wet	
90	N/A	24	0.0						
92	N/A	24	0.0						
94	N/A	24	0.0						
96	N/A	24	0.0						
98	N/A	24	0.5						
100	N/A	24	0.0						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/10/2007
Driller: Gerald Sealey
Total Depth: 108
End Drilling: 4/13/2007
Drilling Method: Rotosonic
Surface Elev.: 723.828
Converted to Well: Y Well I.D.: GM-65D
Drilling Fluid: Water
North Coor.: -1491.41443
East Coor.: 4311.00936
Remarks: Hand auger to 11.5'
Project No.: OH000294.0010
Datum: TOC: 723.537
Filename: April 2007

ARCADIS

Log of Boring: GM-65D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
102	N/A	24	0.0				SW	SAND Grayish brown (10 yr 5/2), well graded, medium-coarse, 5-10% gravel (subround), wet Water sample 102-107' @ 11:00	
104	N/A	24	0.0						
106	N/A	24	0.0						
108								End of boring	
110									
112									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/10/2007

Driller: Gerald Sealey | Total Depth: 108 | End Drilling: 4/13/2007

Drilling Method: Rotosonic | Surface Elev.: 723.828 | Converted to Well: Y | Well I.D.: GM-65D

Drilling Fluid: Water | North Coor.: -1491.41443 | East Coor.: 4311.00936

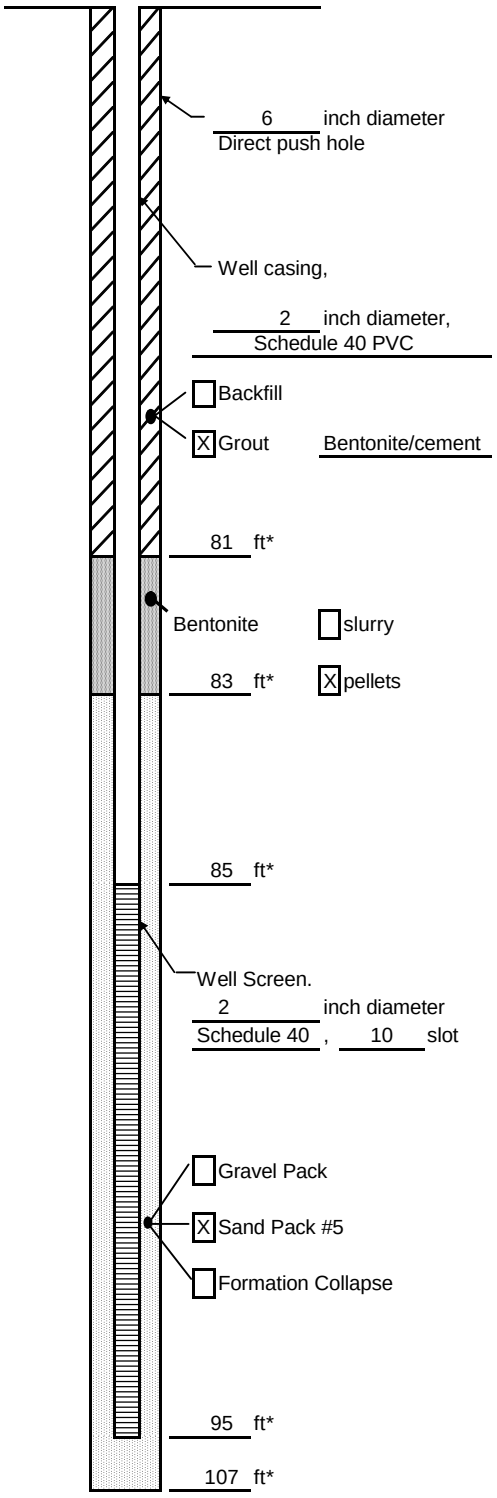
Remarks: Hand auger to 11.5'

Project No.: OH000294.0010 | Datum: TOC: 723.537 | Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-65D

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

723.828 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/18/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water removed during vertical aquifer profiling

Development Technique(s) and Date(s)

Submersible pump - surge with pump

4/24/07 by Jim Wallace

Fluid Loss During installation NM gallons

Water Removed During Development 80 gallons

Static Depth to Water NM feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 2.50 hours

Yield NM gpm Date 4/24/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Note; formation collapse to 95'

Remarks Time: 1630, 1635, 1640, 1645

pH: 7.30, 7.27, 7.21, 7.21

Conductivity: 1.30, 1.30, 1.31, 1.31

Turbidity: 10, 10, 7, 8

Temperature: 17.7, 16.8, 16.7, 16.3

Prepared by L. Greene

ARCADIS

Log of Boring: GM-65S

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
50								See boring log GM-65D for lithologic description	
52								End of boring	
54									
56									
58									
60									
62									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: Gerald Sealey
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: L. Greene
Total Depth: 52
Surface Elev.: 723.939
North Coor.: -1488.33143

Begin Drilling: 4/18/2007
End Drilling: 4/18/2007
Converted to Well: Y Well I.D.: GM-65S
East Coor.: 4312.28876

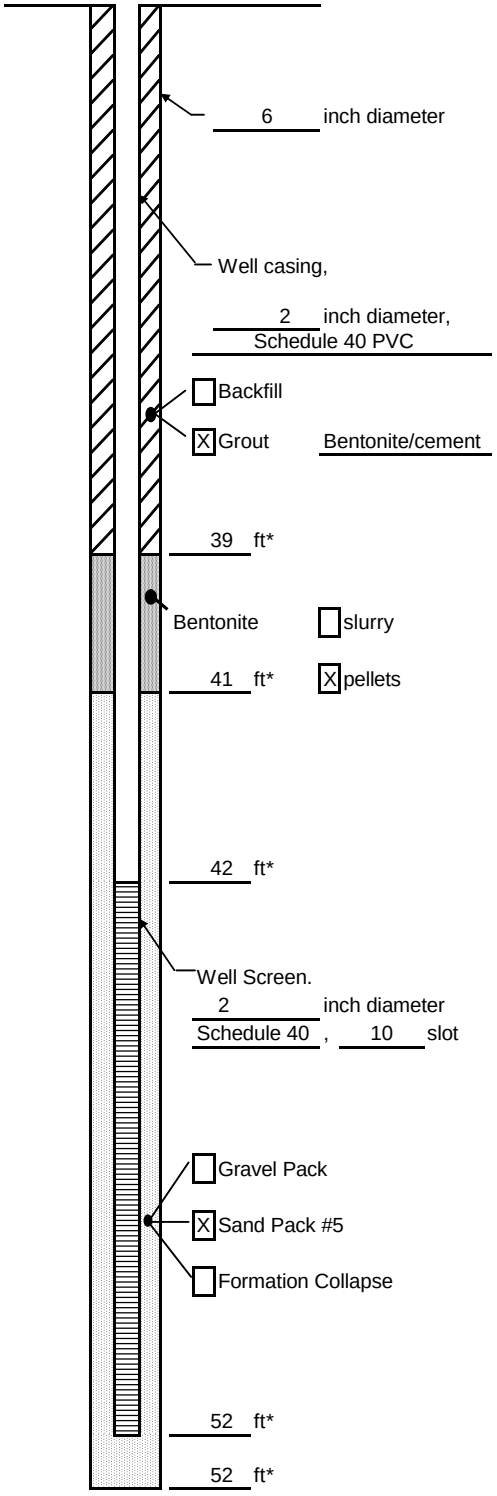
Remarks:

Project No.: OH000294.0010
Datum: TOC: 723.580
Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-65S

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

723.939 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/18/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water removed during vertical aquifer profiling

Development Technique(s) and Date(s)

Submersible pump - surge with pump

4/24/07 by Jim Wallace

Fluid Loss During installation NM gallons

Water Removed During Development 55 gallons

Static Depth to Water NM feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.5 hours

Yield NM gpm Date 4/24/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks Time: 1755, 1800, 1805

pH: 7.22, 7.21, 7.19

Conductivity: 1.02, 1.02, 1.01

Turbidity: 10, 10, 10

Temperature: 17.3, 17.1, 17.0

Prepared by L. Greene

ARCADIS

Log of Boring: GM-66

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	N/A	N/A					CONCRETE	
4	N/A		0.0				CL	SANDY CLAY Yellowish brown, 30% sand, <10% gravel, dry (fill)	
	N/A	24	0.0						
6	N/A	24	0.0						
8	N/A	24	0.0				SP	SAND Yellowish brown (10 yr 5/4), poorly graded, fine-medium, 15% gravel, dry	
10	N/A	24	0.0						
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/6/2007

Driller: Gerald Sealey | Total Depth: 57 | End Drilling: 4/6/2007

Drilling Method: Rotosonic | Surface Elev.: 733.499 | Converted to Well: Y | Well I.D.: GM-66

Drilling Fluid: Water | North Coor.: 4377.28928 | East Coor.: 5714.48647

Remarks: Water sample 30-35' @ 0945; 50-55' @ 1125

Project No.: OH000294.0010 | Datum: TOC: 733.220 | Filename: April 2007

ARCADIS

Log of Boring: GM-66

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
14	N/A	24	0.0						
16	N/A	24	0.0						
	N/A	24	0.0					Note: gravel subrounded	
18									
20	N/A	24	0.0				SP	SAND Yellowish brown (10 yr 5/4), poorly graded, fine-medium, 15% gravel (subround), dry	
22	N/A	24	0.0						
24	N/A	24	0.0					Note: black staining @ 23'	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/6/2007

Driller: Gerald Sealey | Total Depth: 57 | End Drilling: 4/6/2007

Drilling Method: Rotosonic | Surface Elev.: 733.499 | Converted to Well: Y | Well I.D.: GM-66

Drilling Fluid: Water | North Coor.: 4377.28928 | East Coor.: 5714.48647

Remarks: Water sample 30-35' @ 0945; 50-55' @ 1125

Project No.: OH000294.0010 | Datum: TOC: 733.220 | Filename: April 2007

ARCADIS

Log of Boring: GM-66

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description
26	N/A	24	0.0		
	N/A	24	0.0	SW	SAND Grayish brown (10 yr 5/2), well graded, fine-coarse, <5% gravel, moist
28	N/A	24	0.0		
30	N/A	24	0.0		
32	N/A	24	0.0	SW	SAND Grayish brown (10 yr 5/2), well graded, fine-coarse, <5% gravel, moist
34	N/A	24	0.0	GP	GRAVEL WITH SAND Grayish brown (10 yr 5/2), 10% coarse sand
36	N/A	24	0.0	CL	SILTY CLAY Dark gray (10 yr 4/1), 5% gravel (angular-subangular), very stiff, low plasticity

Depth to Water

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/6/2007

Driller: Gerald Sealey | Total Depth: 57 | End Drilling: 4/6/2007

Drilling Method: Rotosonic | Surface Elev.: 733.499 | Converted to Well: Y | Well I.D.: GM-66

Drilling Fluid: Water | North Coor.: 4377.28928 | East Coor.: 5714.48647

Remarks: Water sample 30-35' @ 0945; 50-55' @ 1125

Project No.: OH000294.0010 | Datum: TOC: 733.220 | Filename: April 2007

ARCADIS

Log of Boring: GM-66

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
38									
	N/A	24	0.0						
40									
	N/A	24	0.0						
42									
	N/A	24	0.0				SW	SAND WITH GRAVEL Grayish brown (10 yr 5/2), well graded, fine-coarse, 30% gravel (subangular-subround), trace silt, wet	
44									
	N/A	24	0.0				SP	SAND WITH GRAVEL Grayish brown, poorly graded, fine-coarse, 15% gravel, trace silt, wet	
46									
	N/A	24	0.0				SW	SAND WITH GRAVEL Grayish brown (10 yr 5/2), well graded, fine-coarse, 30% gravel, trace silt, wet	
48									
	N/A	24	0.0						
50									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/6/2007

Driller: Gerald Sealey | Total Depth: 57 | End Drilling: 4/6/2007

Drilling Method: Rotosonic | Surface Elev.: 733.499 | Converted to Well: Y | Well I.D.: GM-66

Drilling Fluid: Water | North Coor.: 4377.28928 | East Coor.: 5714.48647

Remarks: Water sample 30-35' @ 0945; 50-55' @ 1125

Project No.: OH000294.0010 | Datum: TOC: 733.220 | Filename: April 2007

ARCADIS

Log of Boring: GM-66

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
52	N/A	24	0.0						
54	N/A	24	0.0						
56	N/A	24	0.0				CL	SILTY CLAY Dark grayish brown (10 yr 4/2), 5% gravel (subangular-angular), stiff, very stiff, dry	
58								End of boring	
60									
62									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/6/2007

Driller: Gerald Sealey | Total Depth: 57 | End Drilling: 4/6/2007

Drilling Method: Rotosonic | Surface Elev.: 733.499 | Converted to Well: Y | Well I.D.: GM-66

Drilling Fluid: Water | North Coor.: 4377.28928 | East Coor.: 5714.48647

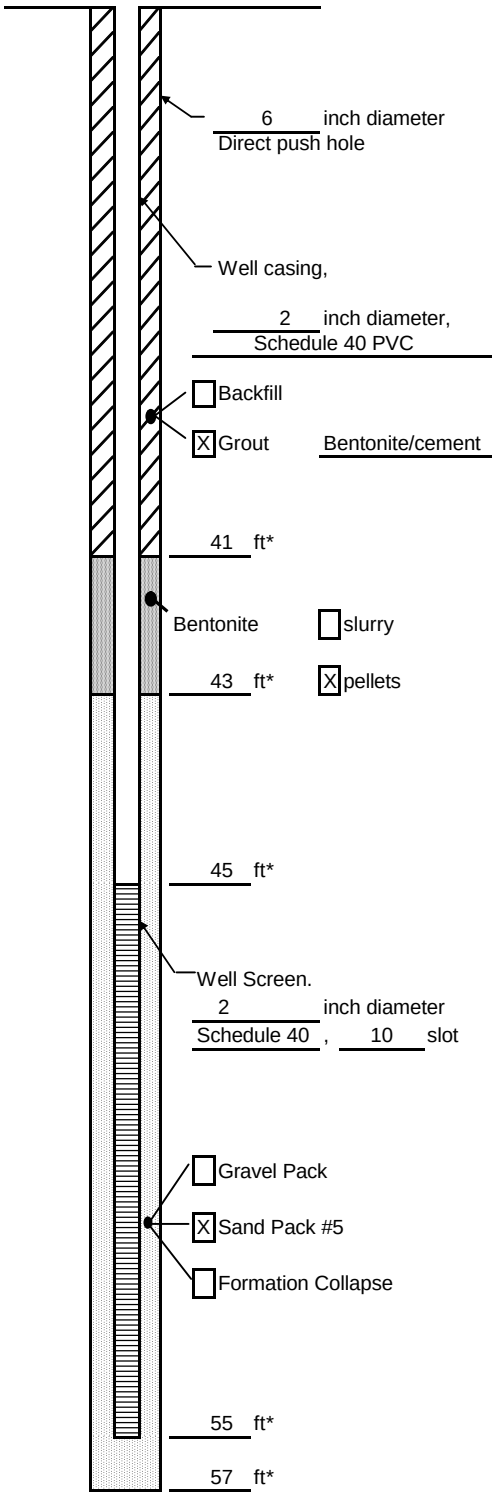
Remarks: Water sample 30-35' @ 0945; 50-55' @ 1125

Project No.: OH000294.0010 | Datum: TOC: 733.220 | Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-66

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

733.499 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/12/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump - surge with pump

4/12/2007

Fluid Loss During installation 50 gallons

Water Removed During Development 171 gallons

Static Depth to Water 22.3 feet below M.P.

Pumping Depth to Water 52 feet below M.P.

Pumping Duration 1.00 hours

Yield 3 gpm Date 4/12/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks Time: 1533, 1536, 1539, 1542, 1545, 1548

pH: 8.33, 8.23, 8.10, 8.06, 8.09, 8.09

Conductivity: 1.18, 1.21, 1.24, 1.28, 1.26, 1.26

Turbidity: 40, 63, 459, 10+, 10+, 10+

Temperature: 12.9, 12.5, 12.6, 13.6, 13.9, 13.7

Prepared by L. Greene

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	24	N/A					ASPHALT	
							FILL	CONCRETE WITH REBAR	
2	N/A	24	0.0				SW	SAND WITH GRAVEL Brown, fine-coarse, well graded, subrounded to subangular, 20% fine-coarse gravel, rounded, dry (fill)	
4	N/A	24	0.0						
6									
	N/A	24	0.0						
8								Note: concrete @ 8'	
	N/A	24	0.0					Note: Light brown, 10% gravel, damp @ 9'	
10									
	N/A	24	0.0						
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/27/2007
Driller: Gerald Sealey
Total Depth: 121
End Drilling: 3/27/2007
Drilling Method: Rotosonic
Surface Elev.: 732.644
Converted to Well: Y Well I.D.: GM-67D
Drilling Fluid: Water
North Coor.: 4744.47186
East Coor.: 6082.03970
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.188
Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
	N/A	24	0.0		Note: 5% fine-medium rounded gravel, dry	
14						
	N/A	24	0.0			
16						
	N/A	24	0.0			
18						
	N/A	24	0.0	SW	SAND Light brown, fine-coarse, well graded, 10% fine-coarse rounded gravel, moist	
				GW	GRAVEL WITH SAND Brown, fine-coarse, well graded, subround to rounded, 45% medium coarse sand, subround-subangular, wet	
20						
	N/A	24	0.0		GRAVEL WITH SAND Brown, fine-coarse, well graded, subround to rounded, 45% medium coarse sand, subround-subangular, wet	
22					GRAVEL WITH SAND Brown, fine-coarse, well graded, subround to round, 50% medium-coarse sand, subround-subangular.	
	N/A	24	0.0		Note: 2" sandy clay @ 22.1' and 22.5', soft, high plasticity, medium sand 30%, wet	
					Water sample 22.5-27.5' @ 1528	
24					GRAVEL WITH SAND Brown, fine-coarse, well graded, subround to round, 50% medium-coarse sand, subround-subangular	
				SW	SAND Brown, medium-coarse, well graded, subangular, 10% fine-medium	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/27/2007

Driller: Gerald Sealey | Total Depth: 121 | End Drilling: 3/27/2007

Drilling Method: Rotosonic | Surface Elev.: 732.644 | Converted to Well: Y | Well I.D.: GM-67D

Drilling Fluid: Water | North Coor.: 4744.47186 | East Coor.: 6082.03970

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.188 | Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	0.0					subrounded, gravel, wet	
26									
	N/A	24	0.0					Note: Gravel with subrounded-subangular, 10% fine medium subrounded sand @ 27-27.5'	
								Note: subrounded-subangular sand with 15% fine-medium subrounded gravel @ 27.5-29'	
28									
	N/A	24	0.0					Note: Cobble fossiliferous limestone 29- 29.5'	
							CL	SILTY CLAY Gray, very stiff, low plasticity, with 10% coarse subangular sand and fine subrounded gravel, dry	
30									
	N/A	24	0.0						
32									
	N/A	24	0.0						
34									
	N/A	24	0.0						
36									
	N/A	24	0.0				CL	SILTY CLAY Gray, stiff, medium plasticity, 5% coarse subangular sand and fine gravel,	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/27/2007

Driller: Gerald Sealey | Total Depth: 121 | End Drilling: 3/27/2007

Drilling Method: Rotosonic | Surface Elev.: 732.644 | Converted to Well: Y | Well I.D.: GM-67D

Drilling Fluid: Water | North Coor.: 4744.47186 | East Coor.: 6082.03970

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.188 | Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
38								moist-dry	
	N/A	24	0.0					Note: Gravel fine-medium grained, dry @ 39'	
40									
	N/A	24	0.0						
42									
	N/A	24	0.0						
44									
	N/A	24	0.0				GP	GRAVEL WITH SAND Olive gray, poorly graded, fine-medium, subangular, 25% coarse sand, wet	
46								Water sample 46-51' @ 1043	
	N/A	24	0.0				SW	SAND Olive gray, well graded, medium-coarse, subangular, 10% fine gravel, subrounded, wet	
48									
	N/A	24	0.0					SAND Olive gray, well graded, medium-coarse, subangular, 10% fine gravel, subrounded, wet	
50									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: Gerald Sealey
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 121
Surface Elev.: 732.644
North Coor.: 4744.47186

Begin Drilling: 3/27/2007
End Drilling: 3/27/2007
Converted to Well: Y Well I.D.: GM-67D
East Coor.: 6082.03970

Remarks:

Project No.: OH000294.0010 Datum: TOC: 732.188 Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
				GW	SANDY GRAVEL Olive gray, well graded, fine-coarse, subrounded with 10% medium-coarse subangular sand, wet	
	N/A	24	0.0	CL	SILTY CLAY Gray, medium-stiff, medium plasticity, 5% fine-medium gravel, moist	
52				SP	SAND Olive gray, poorly graded, fine with 5% coarse, wet	
	N/A	24	0.0		SAND Olive gray, poorly graded, fine with 5% coarse, wet	
54				CL	SILTY CLAY Gray, very stiff, medium plasticity, 5% fine-medium subangular gravel, dry	
	N/A	24	0.0			
56						
	N/A	24	0.8		SANDY CLAY Gray, very stiff, medium plasticity, 5% fine subangular gravel, sand in fine 20%, moist	
58						
	N/A	24	1.1		Note: gravel fine-medium, dry @ 59'	
60						
	N/A	24	0.3			
62						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/27/2007

Driller: Gerald Sealey | Total Depth: 121 | End Drilling: 3/27/2007

Drilling Method: Rotosonic | Surface Elev.: 732.644 | Converted to Well: Y | Well I.D.: GM-67D

Drilling Fluid: Water | North Coor.: 4744.47186 | East Coor.: 6082.03970

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.188 | Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
	N/A	24	0.5			
64					Note: Black organic material @ 64'. Fine sand 40% @ 64-65'.	
	N/A	24	3.7	GW	GRAVEL WITH SAND Gray, well graded, fine-medium subrounded-rounded, 25% medium-coarse sand, subrounded-subangular, wet	
66						
	N/A	24	1.9		Note: Olive gray, 40% coarse sand, subangular, wet @ 67'	
68						
	N/A	24	1.4			
70					Note: Gravel, fine-coarse @ 70' Water sample 70-75' @ 1348	
	N/A	24	0.7			
72						
	N/A	24	1.7	GW	GRAVEL WITH SAND Gray, well graded, fine-medium subrounded-rounded, 25% medium-coarse sand, subrounded-subangular, wet	
74				SW	SAND WITH GRAVEL	
				GW	Olive gray, well graded, medium coarse, subangular, 40% fine gravel, wet	
					GRAVEL WITH SAND	
	N/A	24	2.9	SW	Olive gray, well graded, fine medium, subrounded with 30% medium coarse sand, subangular, wet	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/27/2007
Driller: Gerald Sealey
Total Depth: 121
End Drilling: 3/27/2007
Drilling Method: Rotosonic
Surface Elev.: 732.644
Converted to Well: Y Well I.D.: GM-67D
Drilling Fluid: Water
North Coor.: 4744.47186
East Coor.: 6082.03970
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.188
Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
76					SAND Olive gray, well graded medium coarse, subangular with 15% fine subrounded gravel, wet	
				SC	CLAYEY SAND 10% medium, subrounded, well graded, fine, clay is soft, high plasticity, wet	
	N/A	24	6.3	SW	SAND Olive gray, well graded, medium-coarse subangular, 10% fine subrounded gravel, wet	
78						
	N/A	24	8.0			
80						
	N/A	24	1.5			
82						
				SM	SILTY SAND Olive gray, fine, poorly graded, wet	
	N/A	24	0.4			
84					SILTY SAND Olive gray, medium coarse well graded, subangular with 30% fine-medium subangular gravel, wet	
	N/A	24	0.4			
86						
	N/A	24	0.0	GW	GRAVEL WITH SAND Olive gray, well graded, fine-medium, subangular, with 20% coarse subangular sand, wet	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/27/2007

Driller: Gerald Sealey | Total Depth: 121 | End Drilling: 3/27/2007

Drilling Method: Rotosonic | Surface Elev.: 732.644 | Converted to Well: Y | Well I.D.: GM-67D

Drilling Fluid: Water | North Coor.: 4744.47186 | East Coor.: 6082.03970

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.188 | Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
88					Note: Coarse gravel @ 88.5'	
	N/A	24	0.5	SW	SAND WITH GRAVEL Olive gray, well graded, fine-medium, subangular, with 20% coarse subangular sand, wet	
90					Water sample 90-95' @ 1558	
	N/A	24	0.0			
92						
	N/A	24	0.0			
94						
	N/A	24	0.8			
96						
	N/A	24	0.0	GW	GRAVEL WITH SAND Olive gray-gray, well graded, fine-medium, subrounded-subangular, with 20% medium coarse subangular sand, wet	
98						
	N/A	24	0.0			
100						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/27/2007

Driller: Gerald Sealey | Total Depth: 121 | End Drilling: 3/27/2007

Drilling Method: Rotosonic | Surface Elev.: 732.644 | Converted to Well: Y | Well I.D.: GM-67D

Drilling Fluid: Water | North Coor.: 4744.47186 | East Coor.: 6082.03970

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.188 | Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
102	N/A	24	0.0						
	N/A	24	0.0					Note: trace cobbles @ 103'	
104	N/A	24	0.0						
106							SW	SAND Olive gray, well graded, medium coarse, subangular, 20% fine medium subrounded gravel, wet	
	N/A	24	0.0						
108	N/A	24	0.0						
110	N/A	24	0.0						
112									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/27/2007
Driller: Gerald Sealey
Total Depth: 121
End Drilling: 3/27/2007
Drilling Method: Rotosonic
Surface Elev.: 732.644
Converted to Well: Y Well I.D.: GM-67D
Drilling Fluid: Water
North Coor.: 4744.47186
East Coor.: 6082.03970
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.188
Filename: April 2007

ARCADIS

Log of Boring: GM-67D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
114	N/A	24	0.0			
116	N/A	24	0.0	GW	GRAVEL WITH SAND Greenish gray, well graded, fine-medium, subrounded-subangular, 40% medium-coarse subangular sand, wet Water sample 115-120' @ 0833	
118	N/A	24	0.0			
120	N/A	24	0.0		Note: 10% coarse subangular sand @ 119'	
122				CL	SANDY CLAY Mottled (green, olive, gray, brown) with 20% fine-coarse and fine gravel 20%, stiff, medium plasticity, moist	
124					End of boring	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/27/2007

Driller: Gerald Sealey | Total Depth: 121 | End Drilling: 3/27/2007

Drilling Method: Rotosonic | Surface Elev.: 732.644 | Converted to Well: Y | Well I.D.: GM-67D

Drilling Fluid: Water | North Coor.: 4744.47186 | East Coor.: 6082.03970

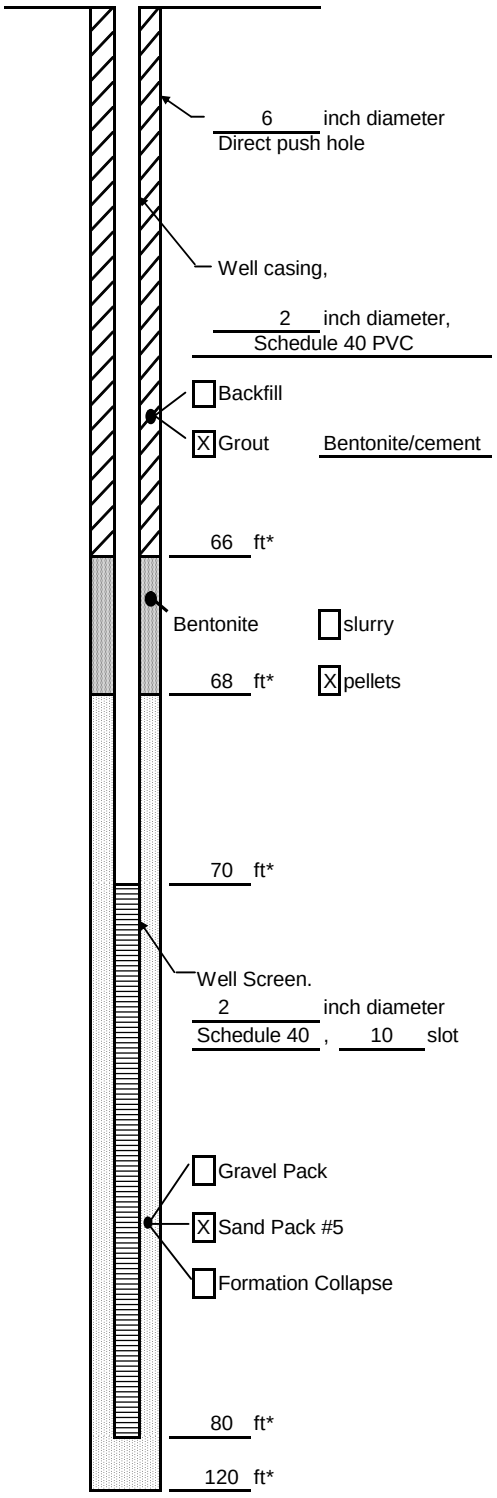
Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.188 | Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-67D

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

732.644 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/4/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water-removed during vertical aquifer profiling

Development Technique(s) and Date(s)

Submersible pump - surge with pump 4/13/07 by Paul Smith

Fluid Loss During installation 50 gallons

Water Removed During Development 135 gallons

Static Depth to Water 21.4 feet below M.P.

Pumping Depth to Water 77 feet below M.P.

Pumping Duration 0.30 hours

Yield 3 gpm Date 4/11/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Note: formation collapse (120' to 80')
Permanent 6" casing set at RCT

Remarks Time: 1330

pH: 7.48

Conductivity: 1.27

Turbidity: 237

Temperature: 14.1

Well purged dry

Prepared by L. Greene

ARCADIS

Log of Boring: GM-67S

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
50								See boring log GM-67D for lithologic description	
52									
54								End of boring	
56									
58									
60									
62									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: Gerald Sealey
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: L. Greene
Total Depth: 54
Surface Elev.: 732.541
North Coor.: 4744.20516

Begin Drilling: 4/4/2007
End Drilling: 4/4/2007
Converted to Well: Y Well I.D.: GM-67S
East Coor.: 6096.21832

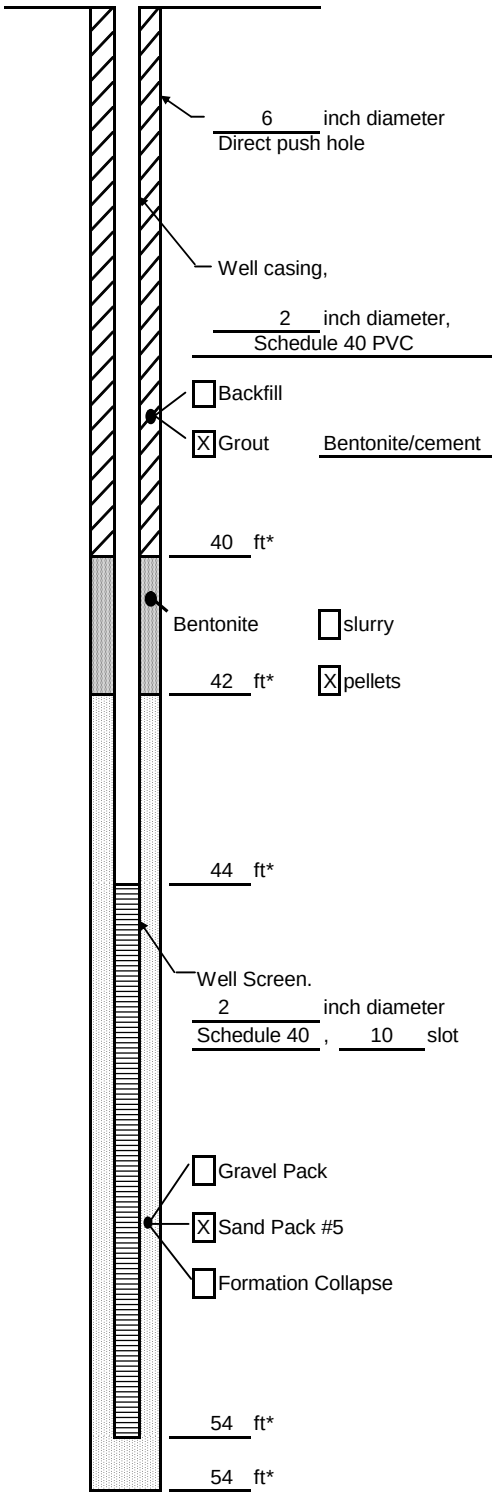
Remarks:

Project No.: OH000294.0010 Datum: TOC: 732.062 Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-67S

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

732.541 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/4/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water-removed during vertical aquifer profiling 50 gallons used during installation of well

Development Technique(s) and Date(s)

Submersible pump - surge with pump

Fluid Loss During installation 50 gallons

Water Removed During Development 108 gallons

Static Depth to Water 20.9 feet below M.P.

Pumping Depth to Water 51 feet below M.P.

Pumping Duration 0.6 hours

Yield 3 gpm Date 4/12/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks Time: 0840, 0843, 0846, 0849, 0852, 0855

pH: 7.45, 7.72, 7.82, 7.83, 7.84, 7.80

Conductivity: 1.45, 1.45, 1.43, 1.44, 1.44, 1.43

Turbidity: 400, 335, 326, 107, 107, 19

Temperature: 14.5, 14.9, 15.0, 15.0, 15.0, 15.0

Prepared by L. Greene

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	24	N/A					ASPHALT	
								CONCRETE	
2									
	N/A	24	0.6				CL	SANDY CLAY Brown, fine to medium sand, soft, high plasticity, sand 5-10%, fine coarse subangular gravel (up to 3"), damp	
4								Note: Trace coal 3.5' (fill)	
	N/A	24	1.0						
6									
	N/A	24	0.0				GW	GRAVEL WITH SAND Light brown, well graded, fine-coarse subangular with medium sand, dry, (fill)	
8									
	N/A	24	0.0						
10									
	N/A	24	0.0						
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
14	N/A	24	0.0			
16	N/A	24	0.0			
18	N/A	24	9.9		Note: brown, saturated @ 18'	▼
20	N/A	24	7.7	GW	GRAVEL WITH SAND Brown, well graded, subangular to angular sand, wet	
22	N/A	24	8.5		Water sample 22-27' @ 1643	
24	N/A	24	1.2			

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:
Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description
26	N/A	24	0.4		
	N/A	24	0.2		
28				SW	SAND Brown, well graded, medium coarse, subangular with 15% fine subangular gravel, wet
	N/A	24	4.1		Note: Reddish brown (2.5 yr 5/3), with 5% subangular gravel
30				CL	SILTY CLAY Brown (11 yr 5/3), with 5% gravel (angular), very stiff, dry
					Note: Silt with clay, grayish brown (10 yr 5/1), trace gravel, brittle @ 30.5'
	N/A	24	3.0	CL	SILTY CLAY Dark gray (10 yr 4/1), ? gravel, stiff very stiff, moist
32					Note: Dry @ 32'
34					
	N/A	24	0.0		
36					
	N/A	24	7.0		

Depth to Water

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
38							SP	SAND Brown, poorly graded, medium-coarse, subround with 15% fine gravel, wet	
	N/A	24	5.7						
40									
	N/A	24	7.6						
42									
	N/A	24	3.5						
44								Water sample 44.5-49.5' @ 0905	
	N/A	24	2.2						
46									
	N/A	24	0.0						
48									
	N/A	24	0.0						
50							CL	CLAY Yellowish brown (10 yr 5/4), 5% angular gravel, low plasticity, very stiff, dry	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
52	N/A	24	0.0					Note: Grayish brown (10 yr 5/2) @ 51' Note: 3" silt lense @ 51.5'	
54	N/A	24	0.0						
56	N/A	24	0.0						
58	N/A	24	0.0						
60	N/A	24	0.0						
62	N/A	24	0.0						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/2/2007

Driller: Gerald Sealey | Total Depth: 150 | End Drilling: 4/2/2007

Drilling Method: Rotosonic | Surface Elev.: 732.459 | Converted to Well: Y | Well I.D.: GM-68D

Drilling Fluid: Water | North Coor.: 4063.53205 | East Coor.: 6357.84287

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.269 | Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
	N/A	24	4.4			
64				SW	SAND Brown (10 yr 5/3), well graded, medium coarse, 25% subangular-subround, wet	
	N/A	24	3.7		Water sample 65-70' @ 1120	
66						
	N/A	24	2.1			
68						
	N/A	24	2.2			
70						
	N/A	24	6.4	SP	SAND Brown (10 yr 5/3), poorly graded, medium, <5% gravel, wet	
72						
	N/A	24	0.7			
74						
	N/A	24	5.8			

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
76					Note: Yellowish brown (10 yr 5/4), poorly graded, fine @ 75.5' Note: 64'-77' fining downward sequence	
	N/A	24	1.8			
78				ML	SILT Grayish brown (10 yr 5/2), with 20% clay lamina, high plasticity, soft, moist), dense silt, wet	
	N/A	24	1.8			
80						
	N/A	24	2.2	SP	SAND Grayish brown (10 yr 5/2), poorly graded, medium-coarse, subangular, wet	
82				SW	SAND Grayish brown (10 yr 5/2), medium coarse, trace silt, subangular, well graded, 15% fine coarse gravel, wet	
	N/A	24	5.7			
84						
	N/A	24	8.7		Water sample 85-90' @ 1410	
86						
	N/A	24	3.6			
				GW	GRAVEL WITH SAND	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/2/2007

Driller: Gerald Sealey | Total Depth: 150 | End Drilling: 4/2/2007

Drilling Method: Rotosonic | Surface Elev.: 732.459 | Converted to Well: Y | Well I.D.: GM-68D

Drilling Fluid: Water | North Coor.: 4063.53205 | East Coor.: 6357.84287

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.269 | Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
88								Grayish brown (10 yr 5/2), well graded, fine coarse, 30% sand (medium coarse, subangular), with some slit, wet	
	N/A	24	6.9						
90									
	N/A	24	4.8						
92									
	N/A	24	6.9						
94								Note: Gray (multi colored gravel), 40% fine coarse grained sand (subangular), trace silt @ 94'	
	N/A	24	4.1						
96									
	N/A	24	4.7					Note: Gray (10 yr 5/1), 30% sand (fine coarse) @ 97'	
98									
	N/A	24	4.5						
100									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/2/2007

Driller: Gerald Sealey | Total Depth: 150 | End Drilling: 4/2/2007

Drilling Method: Rotosonic | Surface Elev.: 732.459 | Converted to Well: Y | Well I.D.: GM-68D

Drilling Fluid: Water | North Coor.: 4063.53205 | East Coor.: 6357.84287

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.269 | Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
102	N/A	24	4.6						
104	N/A	24	4.7						
106	N/A	24	4.6				SP	SAND WITH GRAVEL Gray (10 yr 5/1), poorly graded, 25% gravel, subangular-subrounded, medium-coarse, sand, wet	
108	N/A	24	4.4						
110	N/A	24	5.5						
112	N/A	24	4.6				GP	GRAVEL WITH SAND Yellowish brown (10 yr 5/6), poorly graded, 15% silt, 15% sand, wet	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
114	N/A	24	5.3						
	N/A	24	4.7					Water sample 115-120' @ 1615	
116	N/A	24	4.4						
118	N/A	12	4.7						
120	N/A	24	3.2				SM	SILTY SAND Brownish yellow (10 yr 6/6), fine-medium grained, 15% gravel, 20% silt, wet	
122	N/A	24	1.1						
124	N/A	24	2.7				SP	SAND Grayish brown (10 yr 5/2), poorly graded, fine coarse, trace gravel, wet	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
126	N/A	24	2.5						
128	N/A	24	3.4						
130	N/A	24	3.5						
132	N/A	24	2.5						
134	N/A	24	3.1						
136	N/A	24	1.7					Note: 5% silt, trace clay @ 136'	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/2/2007
Driller: Gerald Sealey
Total Depth: 150
End Drilling: 4/2/2007
Drilling Method: Rotosonic
Surface Elev.: 732.459
Converted to Well: Y Well I.D.: GM-68D
Drilling Fluid: Water
North Coor.: 4063.53205
East Coor.: 6357.84287
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Log of Boring: GM-68D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
138	N/A	24	2.9						
140	N/A	24	2.4				SW	SAND Grayish brown (10 yr 5/2), well graded, fine-coarse, firm, trace gravel, wet	
142	N/A	24	0.8						
144	N/A	24	1.5						
146	N/A	24	2.3				SP	SAND Grayish brown (10 yr 5/2), poorly graded, fine medium grained, trace gravel, wet	
148	N/A	24	1.1						
150								End of boring	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: Gerald Sealey
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: L. Greene
Total Depth: 150
Surface Elev.: 732.459
North Coor.: 4063.53205

Begin Drilling: 4/2/2007
End Drilling: 4/2/2007
Converted to Well: Y Well I.D.: GM-68D
East Coor.: 6357.84287

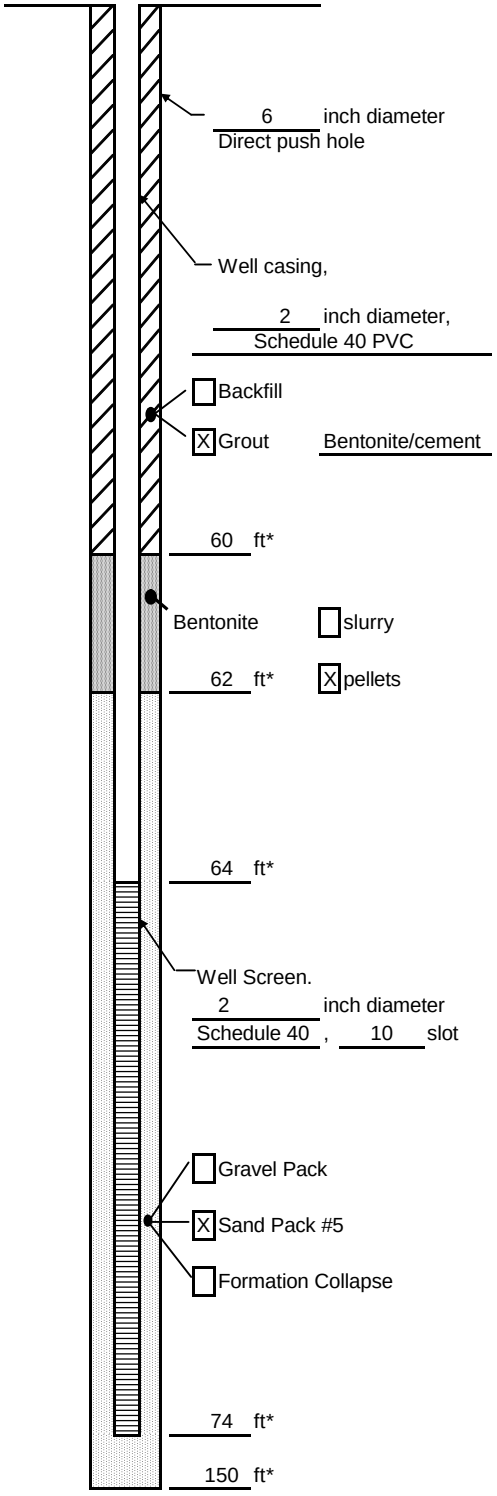
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.269
Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-68D

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

732.459 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/19/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water - removed during vertical aquifer profiling

Development Technique(s) and Date(s)

Submersible pump - surge with pump

4/13/07 Paul Smith

Fluid Loss During installation 700 gallons

Water Removed During Development 135 gallons

Static Depth to Water NM feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.00 hours

Yield NM gpm Date 4/13/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks Permanent 6" casing installed to a depth of 53'. Time: 1115, 1120, 1125, 1130, 1135, 1140

pH: 6.47, 6.63, 6.62, 6.64, 6.65, 6.64

Conductivity: 1.54, 1.44, 1.44, 1.44, 1.41, 1.41

Temperature: 17.0, 16.9, 17.0, 16.9, 17.1, 17.0

Turbidity: 14, 20, 17, 25, 19, 22

Prepared by L. Greene

ARCADIS

Log of Boring: GM-68S

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
46								See boring log GM-68D for lithologic descrption	
48									
50								End of boring	
52									
54									
56									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: Gerald Sealey
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: L. Greene
Total Depth: 49.5
Surface Elev.: 732.477
North Coor.: 4063.53205

Begin Drilling: 4/12/2007
End Drilling: 4/12/2007
Converted to Well: Y Well I.D.: GM-68S
East Coor.: 6357.84287

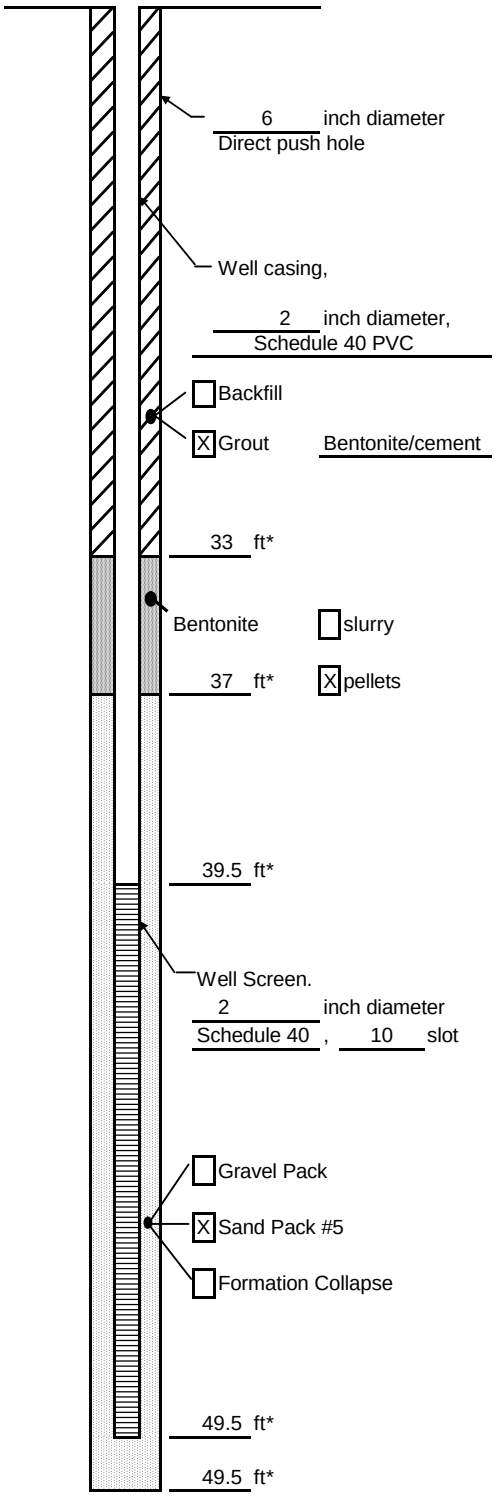
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.177
Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-68S

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

732.477 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/12/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump - surge with pump 4/13/07 by Paul Smith

Fluid Loss During installation 50 gallons

Water Removed During Development 195 gallons

Static Depth to Water 21.9 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.25 hours

Yield 3 gpm Date 4/13/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Note: formation collapse (150' to 49.5')

Remarks Time: 1325, 1328, 1331, 1334, 1337, 1340

pH: 12.04, 11.78, 11.39, 11.12, 10.98, 10.81

Conductivity: 0.688, 0.700, 0.721, 0.754, 0.760

Turbidity: 287, 10+, 10+, 10+, 10+, 10+

Temperature: 15.8, 16.0, 16.3, 16.4, 16.4, 16.4

Prepared by L. Greene

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description
0	N/A	N/A	N/A		ASPHALT
					CONCRETE
2					
	N/A	24	0.1	GW	GRAVEL Light gray, limestone, fine-coarse gravel with 20% coarse sand, some silt, moist (fill)
4					
	N/A	24	0.2		
6					
	N/A	24	1.7		
8					Note: Dark gray to black 3" layer of wood and metal @ 7.5'
	N/A	24	0.8		
10				SW	SAND WITH GRAVEL Brown, well graded, medium-coarse, subangular-subrounded with 20% fine-coarse subrounded-subangular gravel
	N/A	24	0.1		
12					

Depth to Water

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/29/2007
Driller: Gerald Sealey
Total Depth: 140
End Drilling: 3/30/2007
Drilling Method: Rotosonic
Surface Elev.: 732.416
Converted to Well: Y Well I.D.: GM-69
Drilling Fluid: Water
North Coor.: 3021.79146
East Coor.: 6352.18442
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.080
Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	0.0						
14									
	N/A	24	0.1						
16									
	N/A	24	0.0					Note: wet @ 17'	▼
18									
	N/A	24	0.0						
20									
	N/A	24	0.0						
22									
	N/A	24	0.0				SW	SAND Brown, well graded, medium coarse, subangular-subrounded with 5% fine-coarse subrounded gravel (trace cobbles up to 4"), wet	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/29/2007
Driller: Gerald Sealey
Total Depth: 140
End Drilling: 3/30/2007
Drilling Method: Rotosonic
Surface Elev.: 732.416
Converted to Well: Y Well I.D.: GM-69
Drilling Fluid: Water
North Coor.: 3021.79146
East Coor.: 6352.18442
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.080
Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	0.0					SAND WITH GRAVEL Brown, well graded, medium-coarse, subangular with 40% fine-coarse gravel, wet	
26									
	N/A	24	0.0				SP	SAND Brown, poorly graded, medium subangular with <5% fine subrounded gravel, wet	
							GW	GRAVEL WITH SAND Brown, well graded, fine coarse, subround with 30% medium-coarse subangular sand, wet	
28									
	N/A	24	0.0					Note: Brown to red brown, 10% coarse subangular sand with some silt @ 29'	
30								Water sample 30-35' @ 1358	
	N/A	24	0.0				SW	SAND Brown, well graded, medium coarse, subround gravel (trace cobbles up to 4") , wet	
32									
	N/A	24	0.0						
34									
	N/A	24	0.0						
36									
	N/A	24	0.0				GW	GRAVEL WITH SAND Yellowish brown (10 yr 5/4), well graded, fine-coarse subangular gravel up	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/29/2007
Driller: Gerald Sealey
Total Depth: 140
End Drilling: 3/30/2007
Drilling Method: Rotosonic
Surface Elev.: 732.416
Converted to Well: Y Well I.D.: GM-69
Drilling Fluid: Water
North Coor.: 3021.79146
East Coor.: 6352.18442
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.080
Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
38								to 2", with 30% medium coarse subangular sand, some silt, wet	
	N/A	24	0.0						
40									
	N/A	24	0.0						
42									
	N/A	24	0.0						
44									
	N/A	24	0.0					Note: Light brownish gray (10 yr 6/2)	
46									
	N/A	24	0.0					GRAVEL Light brownish gray, well graded, fine coarse, subrounded-subangular (up to 1.5") with 40% medium-coarse, subangular sand, wet	
48									
	N/A	24	0.0				GP	GRAVEL WITH SAND Light brown gray, poorly graded, fine, subangular-subrounded with 40% medium-coarse subangular sand, wet	
50									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/29/2007

Driller: Gerald Sealey | Total Depth: 140 | End Drilling: 3/30/2007

Drilling Method: Rotosonic | Surface Elev.: 732.416 | Converted to Well: Y | Well I.D.: GM-69

Drilling Fluid: Water | North Coor.: 3021.79146 | East Coor.: 6352.18442

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.080 | Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
52	N/A	24	0.0	SP	SAND Light brown gray, poorly graded, medium coarse, subangular, wet	
54	N/A	24	0.0			
56	N/A	24	0.0		Note: Gray, fine-medium @ 55.5'	
58	N/A	24	0.0		Water sample 57-62' @ 1623	
60	N/A	24	0.0	SW	SAND WITH GRAVEL Light brownish gray, well graded, some silt, medium-coarse, subangular, with 30% fine coarse subrounded gravel, wet	
62	N/A	24	0.0	GW	GRAVEL WITH SAND Light brownish gray, well graded, fine, subangular-subrounded with 40%	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/29/2007

Driller: Gerald Sealey | Total Depth: 140 | End Drilling: 3/30/2007

Drilling Method: Rotosonic | Surface Elev.: 732.416 | Converted to Well: Y | Well I.D.: GM-69

Drilling Fluid: Water | North Coor.: 3021.79146 | East Coor.: 6352.18442

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.080 | Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
	N/A	24	0.0	CL	medium-coarse sand. Note: Bottom 3" is dark gray with staining and strong odor	
					SILTY CLAY Dark grayish brown (10 yr 4/2), very stiff, medium plasticity with 3% fine subangular gravel, dry	
64					SILTY CLAY Dark gray (2.5 yr 4/1), high plasticity, with 5% subangular gravel (trace coarse, subangular gravel up to 1.5"), dry	
	N/A	24	0.0			
66						
	N/A	24	0.0		Note: Medium plasticity	
				SM	SILTY SAND	
68				SP	Mottled brown-gray, dense, wet	
					SAND Brown, poorly graded, medium coarse with some silt, wet	
	N/A	24	0.0	GW	GRAVEL WITH SAND Brown, well graded with trace silt, fine-coarse (cobbles up to 4") with 40% medium coarse subangular sand, wet	
70						
	N/A	24	0.0			
72					Water sample 72-77' @ 0828	
	N/A	24	0.0			
74						
	N/A	24	0.0			

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/29/2007

Driller: Gerald Sealey | Total Depth: 140 | End Drilling: 3/30/2007

Drilling Method: Rotosonic | Surface Elev.: 732.416 | Converted to Well: Y | Well I.D.: GM-69

Drilling Fluid: Water | North Coor.: 3021.79146 | East Coor.: 6352.18442

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.080 | Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
76									
	N/A	24	0.0				GW	Same as above	
78									
	N/A	24	0.0				SM	SILTY SAND Brownish yellow (10 yr 6/8), fine, dense, some silt, wet	
80									
							CL	SILTY CLAY Gray, high plasticity, soft, moist	
	N/A	24	0.0				SM	SILTY SAND Brownish yellow, fine, dense some silt, wet	
82							CL	SILTY CLAY Gray, soft, high plasticity, moist	
	N/A	24	0.0				SM	SILTY SAND Brownish yellow, poorly graded, fine medium, wet	
84									
	N/A	24	0.0				SP	SAND Grayish brown (10 yr 5/2), poorly graded, fine-medium, wet	
86									
	N/A	24	0.0						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/29/2007

Driller: Gerald Sealey | Total Depth: 140 | End Drilling: 3/30/2007

Drilling Method: Rotosonic | Surface Elev.: 732.416 | Converted to Well: Y | Well I.D.: GM-69

Drilling Fluid: Water | North Coor.: 3021.79146 | East Coor.: 6352.18442

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.080 | Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
88									
	N/A	24	0.0				GW	GRAVEL WITH SAND Grayish brown, well graded trace of silt, fine-coarse (up to 2"), subround with medium coarse subangular sand, wet	
90									
	N/A	24	0.0						
92								Water sample @ 92-97' @ 0943	
	N/A	24	0.0						
94									
	N/A	24	0.0						
96									
	N/A	24	0.0						
98									
	N/A	24	0.0						
100									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/29/2007
Driller: Gerald Sealey
Total Depth: 140
End Drilling: 3/30/2007
Drilling Method: Rotosonic
Surface Elev.: 732.416
Converted to Well: Y Well I.D.: GM-69
Drilling Fluid: Water
North Coor.: 3021.79146
East Coor.: 6352.18442
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.080
Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	0.0					Note: Gravel up 4" @ 101'	
102									
	N/A	24	0.0						
104									
	N/A	24	0.0						
106									
	N/A	24	0.0						
108									
	N/A	24	0.0						
110									
	N/A	24	0.0						
112									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/29/2007

Driller: Gerald Sealey | Total Depth: 140 | End Drilling: 3/30/2007

Drilling Method: Rotosonic | Surface Elev.: 732.416 | Converted to Well: Y | Well I.D.: GM-69

Drilling Fluid: Water | North Coor.: 3021.79146 | East Coor.: 6352.18442

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.080 | Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	0.0				SW	SAND WITH GRAVEL Brown (10 yr 5/3), well graded, medium-coarse, subangular with 30% fine coarse (up to 2") subrounded gravel, wet	
114									
	N/A	24	0.0					Water sample 115-120' @ 1053	
116									
	N/A	24	0.0						
118									
	N/A	12	0.0						
120	N/A	24	0.9				CL	SILTY CLAY Dark gray (10 yr 4/1), <5% gravel (angular), stiff, dry	
122	N/A	24	1.						
124	N/A	24	2.4					Note: 30% sand, <5% gravel (angular), moist @ 124'	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 3/29/2007

Driller: Gerald Sealey | Total Depth: 140 | End Drilling: 3/30/2007

Drilling Method: Rotosonic | Surface Elev.: 732.416 | Converted to Well: Y | Well I.D.: GM-69

Drilling Fluid: Water | North Coor.: 3021.79146 | East Coor.: 6352.18442

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 732.080 | Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
126	N/A	24	1.3						
128	N/A	24	4.3					Note: No sand @ 128'	
130	N/A	24	2.2						
132	N/A	24	0.0						
134	N/A	24	0.0						
136	N/A	24	1.4				SC	CLAYEY SAND	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/29/2007
Driller: Gerald Sealey
Total Depth: 140
End Drilling: 3/30/2007
Drilling Method: Rotosonic
Surface Elev.: 732.416
Converted to Well: Y Well I.D.: GM-69
Drilling Fluid: Water
North Coor.: 3021.79146
East Coor.: 6352.18442
Remarks:
Project No.: OH000294.0010
Datum: TOC: 732.080
Filename: April 2007

ARCADIS

Log of Boring: GM-69

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
138								Dark gray (10 yr 4/1), 30% silt, fine sand, moist	
							SM	SILTY SAND Dark gray (10 yr 4/1), trace clay, trace gravel (angular), moist	
140								End of boring	
142									
144									
146									
148									
150									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

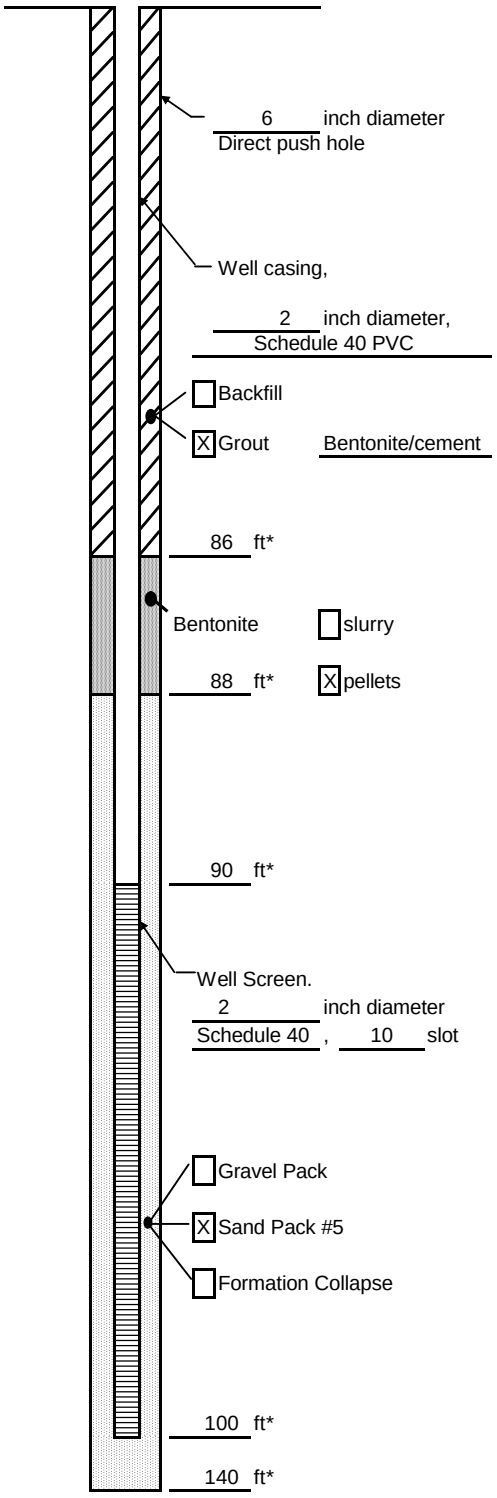
Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 3/29/2007
Driller: Gerald Sealey
Total Depth: 140
End Drilling: 3/30/2007
Drilling Method: Rotosonic
Surface Elev.: 732.416
Converted to Well: Y Well I.D.: GM-69
Drilling Fluid: Water
North Coor.: 3021.79146
East Coor.: 6352.18442
Remarks:

Project No.: OH000294.0010
Datum: TOC: 732.080
Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-69

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

732.416 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/9/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water - removed during vertical aquifer profiling, 50 gallons used during well installation

Development Technique(s) and Date(s)

Pumping, surge with pump

Fluid Loss During installation 50 gallons

Water Removed During Development 135 gallons

Static Depth to Water 22 feet below M.P.

Pumping Depth to Water 50 feet below M.P.

Pumping Duration 0.75 hours

Yield 3 gpm Date 4/12/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Note: Bentonite chip from 140-120', formation collapse from 120-100', permanent 6" casing installed at RCT.

Remarks Time: 1018, 1021, 1024, 1027, 1030

pH: 7.93, 7.91, 7.90, 7.88, 7.75

Conductivity: 1.33, 1.34, 1.33, 1.32, 1.34

Turbidity: 72, 17, 15, 130, 97

Temperature: 14.7, 14.6, 14.6, 14.7, 15.0

Prepared by L. Greene

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	N/A	N/A				FILL	FILL Utility cleared material	
10	N/A	24	7.8				SP	SAND Yellowish brown (10 yr 5/6), poorly graded, trace silt, fine-medium grained, 20% gravel (angular-subround), dry	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/5/2007
Driller: Gerald Sealey
Total Depth: 120
End Drilling: 4/5/2007
Drilling Method: Rotosonic
Surface Elev.: 737.470
Converted to Well: Y Well I.D.: GM-70
Drilling Fluid: Water
North Coor.: 3887.32724
East Coor.: 7282.84039
Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	7.0						
14									
	N/A	24	7.9					Note: Coarse sand, yellowish brown (10 yr 5/6), 30% gravel @ 15'	
16									
	N/A	24	7.2						
18									
	N/A	24	9.2						
20									
	N/A	24	6.2						
22									
	N/A	24	11.4						
24									
							SP	SAND Yellowish brown (10 yr 5/4), poorly graded, <5% gravel (subangular-	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/5/2007
Driller: Gerald Sealey
Total Depth: 120
End Drilling: 4/5/2007
Drilling Method: Rotosonic
Surface Elev.: 737.470
Converted to Well: Y Well I.D.: GM-70
Drilling Fluid: Water
North Coor.: 3887.32724
East Coor.: 7282.84039
Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	10.2					subround) , fine medium, dry Note: Yellowish brown (10 yr 5/6), 30% gravel, coarse, moist	
26									
	N/A	24	8.7				GP	GRAVEL WITH SAND Yellowish brown (10 yr 5/6), poorly graded, medium grained, 20% sand, subangular-angular, wet	
28									
	N/A	24	8.0						
30									
	N/A	24	6.9						
32									
	N/A	24	7.6						
34									
	N/A	24	8.0				SP	SAND Yellowish brown (10 yr 5/4), poorly graded, medium coarse, 10% gravel (subangular-subround), wet	
36									
	N/A	24	6.1				GW	GRAVEL WITH SAND Brown (10 yr 5/4), well graded, fine medium 10% sand, subangular-	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/5/2007

Driller: Gerald Sealey | Total Depth: 120 | End Drilling: 4/5/2007

Drilling Method: Rotosonic | Surface Elev.: 737.470 | Converted to Well: Y | Well I.D.: GM-70

Drilling Fluid: Water | North Coor.: 3887.32724 | East Coor.: 7282.84039

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 737.186 | Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
38								subround, wet	
	N/A	24	7.5						
40								Water sample 40-45' @ 1150	
	N/A	24	7.2						
42								Note: Fine-coarse, sandy gravel, 10% sand	
	N/A	24	6.8						
44									
	N/A	24	7.4						
46									
	N/A	24	1.5				CL	SILTY CLAY Dark grayish brown (10 yr 4/2), 5% gravel (angular-subangular), very stiff, low plasticity, dry	
48									
	N/A	24	4.7						
50									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/5/2007
Driller: Gerald Sealey
Total Depth: 120
End Drilling: 4/5/2007
Drilling Method: Rotosonic
Surface Elev.: 737.470
Converted to Well: Y Well I.D.: GM-70
Drilling Fluid: Water
North Coor.: 3887.32724
East Coor.: 7282.84039
Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description
52	N/A	24	3.9	ML	CLAYEY SILT Dark grayish brown (10 yr 4/2), <5% gravel (subround), moist
	N/A	24	4.3		
54				CL	SILTY CLAY Dark grayish brown (10 yr 4/2), 5% gravel (subangular-angular), very stiff, brittle, low plasticity, dry
56	N/A	24	4.8		
58	N/A	24	5.0		
60	N/A	24	4.6		
62	N/A	24	5.1		

Sample Analysis | Sample Type | Graphic Log | Depth to Water

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/5/2007
Driller: Gerald Sealey
Total Depth: 120
End Drilling: 4/5/2007
Drilling Method: Rotosonic
Surface Elev.: 737.470
Converted to Well: Y Well I.D.: GM-70
Drilling Fluid: Water
North Coor.: 3887.32724
East Coor.: 7282.84039
Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
64	N/A	24	5.6						
	N/A	24	4.7				SP	SAND Dark grayish brown (10 yr 4/2), poorly graded, fine-medium, <5% fine gravel, moist	
66							CL	SILTY CLAY Dark grayish brown (10 yr 4/2), 5% gravel, subangular-angular, very stiff, brittle, low plasticity, dry	
	N/A	24	3.4						
68									
	N/A	24	5.1						
70									
	N/A	24	4.8						
72							SP	SAND Yellowish brown (10 yr 5/4), poorly graded, 15% gravel (subangular-angular), medium-coarse, wet	
	N/A	24	4.4					Water sample 73-78' @ 1520	
74									
	N/A	24	5.2						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/5/2007

Driller: Gerald Sealey | Total Depth: 120 | End Drilling: 4/5/2007

Drilling Method: Rotosonic | Surface Elev.: 737.470 | Converted to Well: Y | Well I.D.: GM-70

Drilling Fluid: Water | North Coor.: 3887.32724 | East Coor.: 7282.84039

Remarks:

Project No.: OH000294.0010 | Datum: TOC: 737.186 | Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description
76					
	N/A	24	5.2		
78					
	N/A	24	7.0		Note: 25% gravel (subangular-subround) @ 79'
80					
	N/A	24	6.1	ML	CLAYEY SILT Yellowish brown (10 yr 5/4), orange mottling, dry
				SP	SAND Dark gray (1o yr 4/1), poorly graded, fine, wet
82					
	N/A	24	7.8		Note: Dark grayish brown (10 yr 4/2), <5% gravel @ 83'
84					
	N/A	24	4.5		
86					
	N/A	24	5.6		

Depth to Water

Sample Analysis | Sample Type | Graphic Log

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: Gerald Sealey
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: L. Greene
Total Depth: 120
Surface Elev.: 737.470
North Coor.: 3887.32724

Begin Drilling: 4/5/2007
End Drilling: 4/5/2007
Converted to Well: Y Well I.D.: GM-70
East Coor.: 7282.84039

Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
88								Note: 15-20% gravel @ 88'	
	N/A	24	7.5					Note: 5% Gravel, trace silt	
90									
	N/A	24	7.6						
92									
	N/A	24	6.7				SW	SAND Dark grayish brown (10 yr 4/2), well graded, fine-coarse, 5% gravel, moist, trace silt, seems of fine sand <2", wet Water sample 93-98' @ 1650	
94									
	N/A	24	3.6						
96									
	N/A	24	7.0						
98								Note: 15% gravel, no fine sand seams @ 98'	
	N/A	24	5.7						
100									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/5/2007
Driller: Gerald Sealey
Total Depth: 120
End Drilling: 4/5/2007
Drilling Method: Rotosonic
Surface Elev.: 737.470
Converted to Well: Y Well I.D.: GM-70
Drilling Fluid: Water
North Coor.: 3887.32724
East Coor.: 7282.84039
Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
	N/A	24	7.1						
102								Note: 25-30% fine gravel, fine-coarse, trace silt @ 102'	
	N/A	24	6.8						
104									
	N/A	24	5.4						
106									
	N/A	24	5.1						
108									
	N/A	24	4.2				SP	SAND Dark grayish brown (10 yr 4/2), poorly graded, fine-coarse, 5% gravel (subangular-subround), wet	
110									
	N/A	24	2.1						
112								Water sample 112-117' @ 1810	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/5/2007
Driller: Gerald Sealey
Total Depth: 120
End Drilling: 4/5/2007
Drilling Method: Rotosonic
Surface Elev.: 737.470
Converted to Well: Y Well I.D.: GM-70
Drilling Fluid: Water
North Coor.: 3887.32724
East Coor.: 7282.84039
Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Log of Boring: GM-70

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
114	N/A	24	3.7						
	N/A	24	3.5						
116									
	N/A	24	5.5				CL	SILTY CLAY Dark gray (10 yr 4/1), trace fine gravel (fossiliferous limestone), stiff, dry	
118									
	N/A	12	2.2						
120								End of boring	
122									
124									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

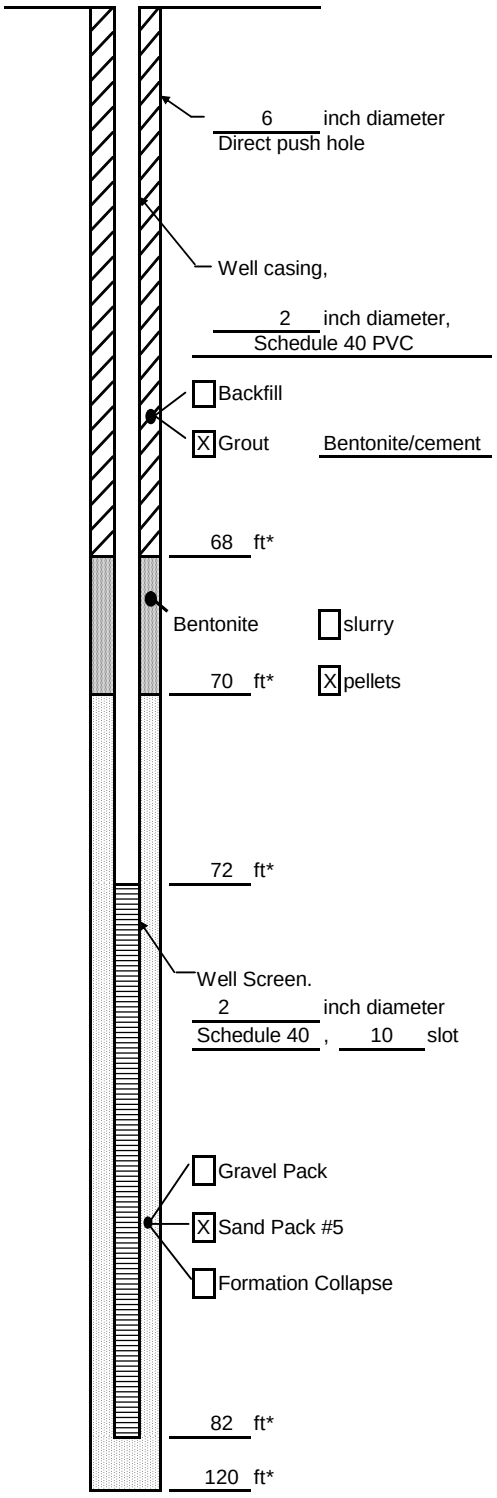
Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/5/2007
Driller: Gerald Sealey
Total Depth: 120
End Drilling: 4/5/2007
Drilling Method: Rotosonic
Surface Elev.: 737.470
Converted to Well: Y Well I.D.: GM-70
Drilling Fluid: Water
North Coor.: 3887.32724
East Coor.: 7282.84039
Remarks:

Project No.: OH000294.0010
Datum: TOC: 737.186
Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-70

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

737.470 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/12/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump, surge with pump

4/13/07 Paul Smith

Fluid Loss During installation 50 gallons

Water Removed During Development 60 gallons

Static Depth to Water 26.5 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.50 hours

Yield 3 gpm Date 4/13/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Note: formation collapse 120-82'

Remarks Time: 1219, 1222, 1225, 1228, 1231

pH: 7.49, 7.84, 7.94, 7.99, 8.01

Conductivity: 1.09, 1.08, 1.06, 1.05, 1.06

Turbidity: 17, 4, 10+, 10+, 10+

Temperature: 15.7, 15.7, 15.8, 15.9, 15.8

Prepared by L. Greene

ARCADIS

Log of Boring: GM-71

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	24	NM					CONCRETE	
							FILL	FILL Sand and gravel, fill	
10	N/A	24	10.4				SP	SAND Dark yellowish brown (10 yr 4/4), poorly graded, medium, 30% gravel (subround), dry	
12	N/A	24	5.9						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/16/2007
Driller: Chris
Total Depth: 36
End Drilling: 4/16/2007
Drilling Method: Rotosonic
Surface Elev.: 737.194
Converted to Well: Y Well I.D.: GM-71
Drilling Fluid: Water
North Coor.: 4493.83914
East Coor.: 6849.32868
Remarks: Water sample 26-31' @ 1020
Project No.: OH000294.0010
Datum: TOC: 736.817
Filename: April 2007

ARCADIS

Log of Boring: GM-71

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
14	N/A	24	3.8						
16	N/A	24	8.6						
18	N/A	24	5.0				SW	SAND Yellowish brown (10 yr 5/4), well graded, fine-coarse, 20% gravel/cobbles (angular-subround), dry	
20	N/A	24	21.0						
22	N/A	24	8.1						
24	N/A	24	5.4						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: L. Greene | Begin Drilling: 4/16/2007

Driller: Chris | Total Depth: 36 | End Drilling: 4/16/2007

Drilling Method: Rotosonic | Surface Elev.: 737.194 | Converted to Well: Y | Well I.D.: GM-71

Drilling Fluid: Water | North Coor.: 4493.83914 | East Coor.: 6849.32868

Remarks: Water sample 26-31' @ 1020

Project No.: OH000294.0010 | Datum: TOC: 736.817 | Filename: April 2007

ARCADIS

Log of Boring: GM-71

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
26	N/A	24	1.5						
28	N/A	24	8.0				SP	GRAVEL WITH SAND Brown (10 yr 5/3), poorly graded, fine medium gravel, (subround-subangular), 10% sand, wet	▼
30	N/A	24	1.7				CL	SILTY CLAY Grayish brown (10 yr 5/2), 5% gravel (angular-subround), dry	
32	N/A	24	2.2						
34	N/A	24	0.9						
36								End of boring	

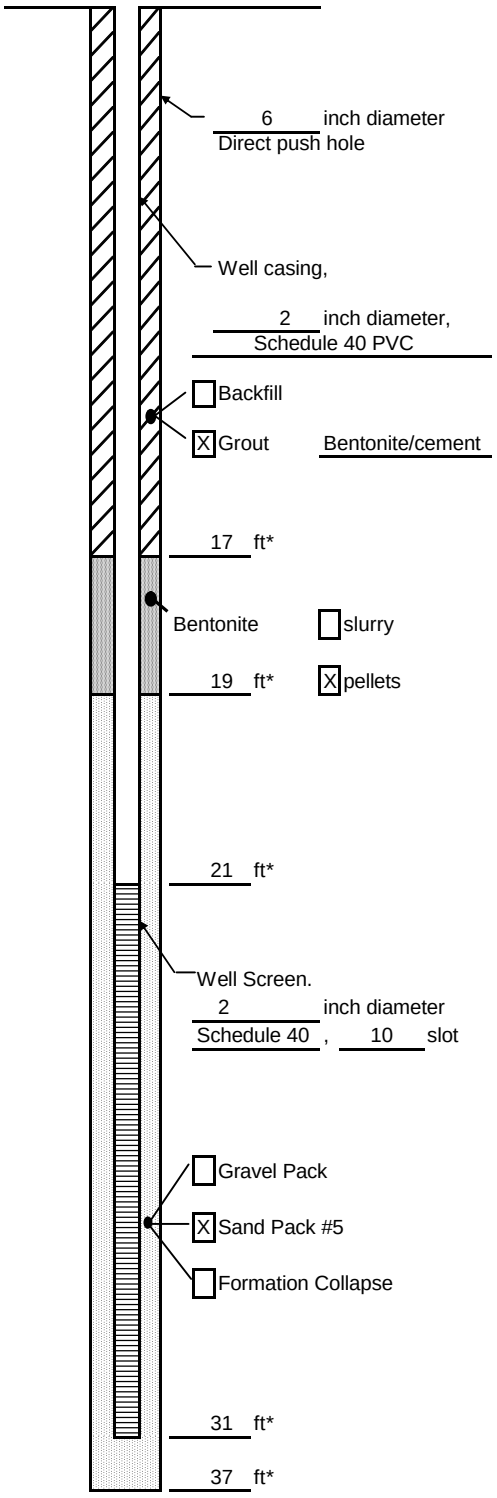
☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: L. Greene
Begin Drilling: 4/16/2007
Driller: Chris
Total Depth: 36
End Drilling: 4/16/2007
Drilling Method: Rotosonic
Surface Elev.: 737.194
Converted to Well: Y Well I.D.: GM-71
Drilling Fluid: Water
North Coor.: 4493.83914
East Coor.: 6849.32868
Remarks: Water sample 26-31' @ 1020
Project No.: OH000294.0010
Datum: TOC: 736.817
Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-71

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

737.194 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/20/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump, surge with pump

4/26/07 Jim Wallace

Fluid Loss During Drilling 200 gallons

Water Removed During Development 60 gallons

Static Depth to Water 25.62 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1 hours

Yield 1 gpm Date 4/26/07

Specific Capacity NM gpm/ft

Well Purpose Monitoring well

Remarks Time: 1125, 1130, 1135, 1140, 1145

pH: 6.81, 6.80, 6.74, 6.78, 6.80

Conductivity: 2.21, 214, 2.12, 2.12, 2.12

Turbidity: 58, 17, 10, 6, 10

Temperature: 17.2, 17.9, 17.8, 17.8, 17.7

Prepared by L. Greene

ARCADIS

Log of Boring: GM-72

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
								0-30 feet see boring log GM-71 for lithologic description	
30	N/A	24	2.3				CL	CLAY Light brown (10 yr 5/7), hard, 10% gravel, dry	
32	N/A	24	4.7					Note: Olive gray (10 yr 5/1) @ 32'	
34	N/A	24	3.1						
36	N/A	24	5.9						
							SW	SAND WITH GRAVEL Light brown (10 yr 6/4), medium-coarse, with 40% gravel (gravel up to 2"), loose, wet	
38	N/A	24	6.2						
40	N/A	24	5.4						

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: J. Wallace | Begin Drilling: 4/24/2007

Driller: Chris | Total Depth: 68 | End Drilling: 4/24/2007

Drilling Method: Rotosonic | Surface Elev.: 737.050 | Converted to Well: Y | Well I.D.: GM-72

Drilling Fluid: Water | North Coor.: 4496.04384 | East Coor.: 6860.84485

Remarks: Water sample 42-47' @ 0930; 57-62' @ 1325

Project No.: OH000294.0010 | Datum: TOC: 736.778 | Filename: April 2007

ARCADIS

Log of Boring: GM-72

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
42	N/A	24	5.9						
44	N/A	24	7.0						
46	N/A	24	3.6				GW	GRAVEL WITH SAND Light brown, loose, gravel up to 3", 20% sand, wet	
48	N/A	24	6.6				GP	GRAVEL Light brown to gray (10 yr 6/4), poorly graded, fine to medium gravel, loose, well rounded, with 10% sand, wet	
50	N/A	24	2.6					Note: Gravel up 1", 10% sand @ 50'	
52	N/A	24	5.1					Note: No gravel larger than 0.5" @ 52'	
54									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: J. Wallace | Begin Drilling: 4/24/2007

Driller: Chris | Total Depth: 68 | End Drilling: 4/24/2007

Drilling Method: Rotosonic | Surface Elev.: 737.050 | Converted to Well: Y | Well I.D.: GM-72

Drilling Fluid: Water | North Coor.: 4496.04384 | East Coor.: 6860.84485

Remarks: Water sample 42-47' @ 0930; 57-62' @ 1325

Project No.: OH000294.0010 | Datum: TOC: 736.778 | Filename: April 2007

ARCADIS

Log of Boring: GM-72

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Soil Class.	Description	Depth to Water
	N/A	24	5.6			
				GW	GRAVEL Light brown (10 yr 6/4) with fine sand, silt and some clay, wet	
56	N/A	24	9.4		Note: No clay @ 56'	
				SP	SAND Light brown (10 yr 4/4), fine to medium sand, loose, <10% gravel, wet	
58	N/A	24	26.4	GW	GRAVEL Light brown with 30% fine to medium sand, loose, wet	
60	N/A	24	7.7	SP	SAND Light brown (10 yr 5/2), medium sand with 30% gravel, loose, wet	
					Note: Fine sand @ 61'	
62	N/A	24	4.7	CL	CLAY Gray (10 yr 4/1), hard, with <10% gravel, dry	
64	N/A	24	4.1			
66	N/A	12	4.1			

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: J. Wallace | Begin Drilling: 4/24/2007

Driller: Chris | Total Depth: 68 | End Drilling: 4/24/2007

Drilling Method: Rotosonic | Surface Elev.: 737.050 | Converted to Well: Y | Well I.D.: GM-72

Drilling Fluid: Water | North Coor.: 4496.04384 | East Coor.: 6860.84485

Remarks: Water sample 42-47' @ 0930; 57-62' @ 1325

Project No.: OH000294.0010 | Datum: TOC: 736.778 | Filename: April 2007

ARCADIS

Log of Boring: GM-72

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
								End of boring	

68
70
72
74
76
78

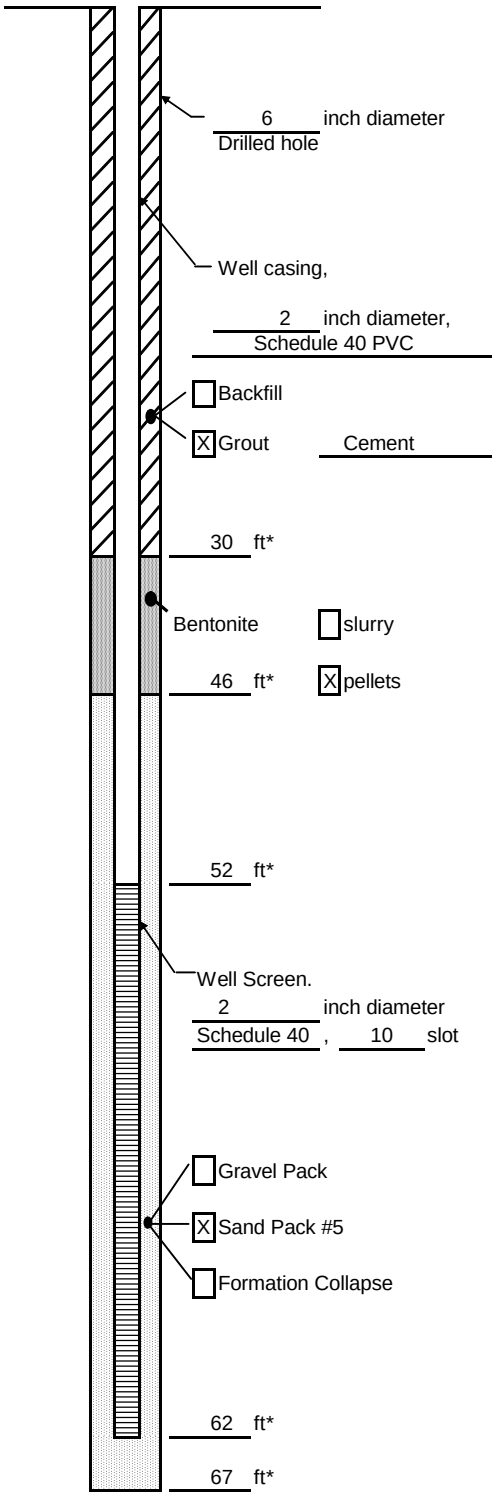
☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: J. Wallace
Begin Drilling: 4/24/2007
Driller: Chris
Total Depth: 68
End Drilling: 4/24/2007
Drilling Method: Rotosonic
Surface Elev.: 737.050
Converted to Well: Y Well I.D.: GM-72
Drilling Fluid: Water
North Coor.: 4496.04384
East Coor.: 6860.84485
Remarks: Water sample 42-47' @ 0930; 57-62' @ 1325
Project No.: OH000294.0010
Datum: TOC: 736.778
Filename: April 2007

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-72

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

737.050 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 4/26/2007

Drilling Method Sonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Fluid Loss During Drilling 15 gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Monitoring well

Remarks

Prepared by J. Wallace

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 1 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							See GM-71 and GM-72 logs for 0 to 67 feet.	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: SD=Sonic Drilling

Sampling Method: Core Barrel
Sampling Interval: 10 feet
Water Level Start: NA
Water Level Finish: NA
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 734.34 TOC=736.97
North Coor: 4494.3
East Coor: 6842.5

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 2 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
							See GM-71 and GM-72 logs for 0 to 67 feet.	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 3 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32							See GM-71 and GM-72 logs for 0 to 67 feet.	
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 4 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48							See GM-71 and GM-72 logs for 0 to 67 feet.	
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 5 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
64							See GM-71 and GM-72 logs for 0 to 67 feet.	
65								
66								
67			12		0.0		CLAY (CL), gray, hard, low plasticity, trace sand and gravel, dry.	
68			24		1.2			
69							SAND (SW), brown, well graded, loose, fine-coarse, trace subangular gravel, moist.	
70			24		0.9			
71							Note: Trace silt at 71 feet.	
72			24	GM-73, 70 to 75 feet, 10/11/07, 12:35	1.6		GRAVELLY SAND (SW), brown, well graded, loose, trace silt, wet.	
73								
74			24		2.2		SAND WITH GRAVEL (SW), brown, well graded, loose, trace silt, wet.	
75								
76			24		1.9		SANDY GRAVEL (GW), grayish brown, well graded, loose, trace silt, wet.	
77								
78			24		3.0			
79								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 6 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
80			24		2.5		SAND (SW), brown, well graded, fine-coarse, medium loose, wet.	
81							SAND (SP), brown, poorly graded, medium loose-medium dense, fine grained, moist.	
82			24	SD	3.6			
83								
84			24		5.2			
85								
86			24		4.8			
87								
88			24		3.6			
89								
90			24		5.6			
91							Note: 3 inch silt seam at 91 feet.	
92			24		3.2		GRAVELLY SAND (SW), brown, well graded, loose, fine-coarse, wet, medium gravel.	
93								
94			24		2.8		Note: Cobbles present at 94 - 96 feet.	
95								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 7 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
96			24		3.2		GRAVELLY SAND (SW), brown, well graded, loose, fine-coarse, wet, medium gravel. Note: Medium-coarse gravel at 96 feet.	
97								
98			24	GM-73, 95 to 100 feet, 10/11/07, 15:15	4.7			
99								
100			24		2.9			
101								
102			24	SD	0.5		SANDY GRAVEL (GW), grayish brown, well graded, loose, trace silt, wet.	
103								
104			24		2.3			
105								
106			24		3.0			
107								
108			24		2.9			
109								
110			24		1.7			
111								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-73

Sheet: 8 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/09/2007
Date Completed: 10/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Cloudy, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
112			24		2.2		SANDY GRAVEL (GW), grayish brown, well graded, loose, trace silt, wet.	
113								
114			24		3.1			
115								
116			24		1.2			
117								
118			24	GM-73, 115 to 120 feet, 10/11/07, 17:50 SD	2.8			
119								
120								
121								
122								
123								
124								
125								
126								
127								

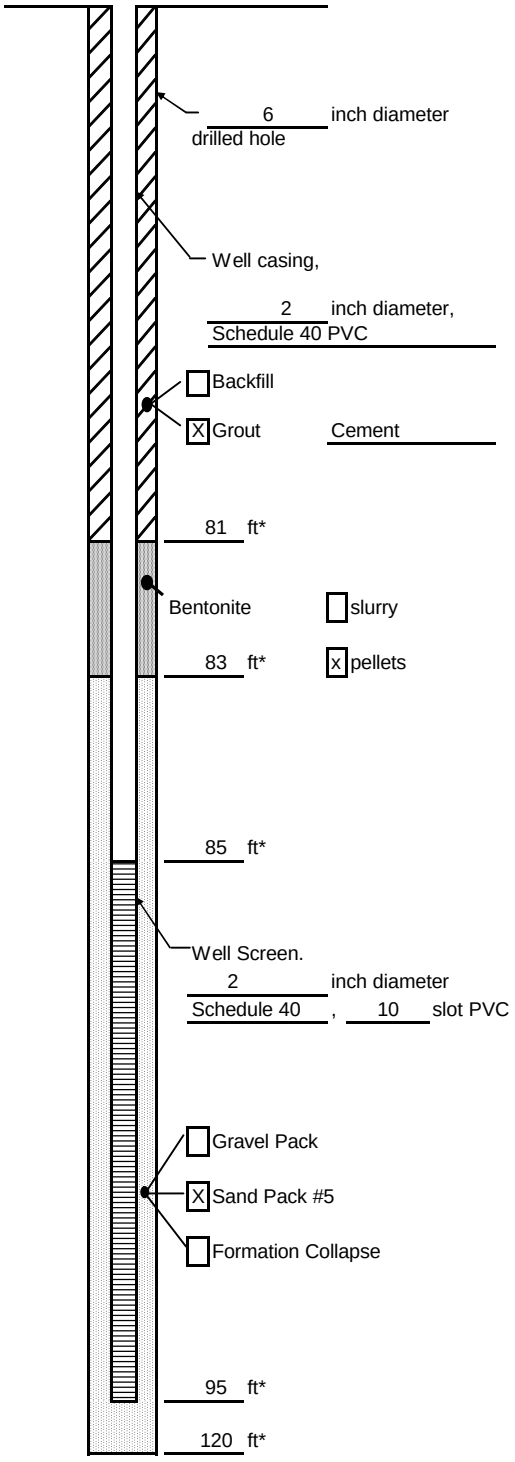
Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-73

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

737.34 feet [X] Surveyed [ ] Estimated

Installation Date(s) 9/21/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump and surge 10/22/07

Fluid Loss During Drilling 120 gallons

Water Removed During Development 142.3 gallons

Static Depth to Water 30.18 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.00 hours

Yield NM gpm Date 10/22/07

Specific Capacity NM gpm/ft

Well Purpose GW monitoring

Remarks Formation collapse from 120' to 95' ;
permanent casing set at 63'

	1V	2V	3V	4V	5V
Ph	6.83	6.87	6.90	6.89	6.88
Conductivity	1.82	1.82	1.83	1.82	1.84
Turbidity	1.9	1.2	0.9	1.8	1.1
Temperature:	18.5	18.4	18.4	18.3	18.3

Prepared by L. Greene

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 1 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							Utility clearance with water knife (8-27-07). CONCRETE	
2								
3								
4								
5			0				Material excavated	
6								
7			24	GP	>2000		SAND (SP), brownish gray, poorly graded, fine to medium, trace silt; medium dense, dry, cobbles present.	
8								
9			0	GP			No return.	
10								
11			0	GP			No return, cobble in tooling shoe.	
12								
13			12	GP	906		SAND (SP), brown, poorly graded, fine to medium, trace medium gravel, medium dense, dry.	
14								
15								

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Direct push/Rotosonic
Drilling Fluid: Water
Remarks: Permanent casing (10 inch) installed to 30.5 feet.
GP=Geoprobe
SD=Sonic Drilling

Sampling Method: 10 feet x 4 inch Core Barrel
Sampling Interval: 10 feet
Water Level Start: 26 feet
Water Level Finish: --
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 732.5
North Coor: 4203.3
East Coor: 6417.2

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 2 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
16			24	GP	570		SAND (SP), brown, poorly graded, fine to medium, trace medium gravel, medium dense, dry.	
17			6	GP	1024		No return.	
18							SAND (SP), brown, poorly graded, fine to medium, trace medium gravel, dense, dry. Note: broken up cobbles.	
19			24	GP	1201			
20								
21			3	GP	473			
22								
23			24	GP	512		SAND (SW), grayish brown, well graded, fine to coarse, trace silt, medium dense, dry; silt is oxidized.	
24								
25			12	GP	37.0		SAND (SW), grayish brown, well graded, fine to coarse, trace silt, medium dense, dry; wet at 26 feet; silt is oxidized.	
26								
27			24		269		SAND (SW), grayish brown, well graded, fine to coarse, trace silt, medium dense, dry silt is oxidized.	
28								
29			24	GM-74, 26 to 31 feet, 8/29/07, 17:30 GP	0.0		SILT (ML), dark gray, very stiff, hard, trace angular gravel, trace clay, dry.	
30								
31			12	GP	0.0			

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 3 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32			12		0.0		CLAYEY SILT (ML), dark gray, very stiff to hard, low plasticity, trace angular gravel, dry.	
33								
34			24		0.3			
35							SAND (SW), orangish brown, well graded, fine to coarse, little gravel, loose, damp.	
36			24	SD	0.5			
37								
38			24		1.6			
39								
40			24		0.0		SANDY GRAVEL (GW), gray, well graded, fine to coarse, loose, wet.	
41								
42			24		0.0			
43								
44			24		0.0			
45								
46			24		0.7		SAND (SW), brown, well graded, fine to coarse, medium loose, trace subrounded gravel, wet.	
47								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 4 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48			24	GM-74, 45 to 50 feet, (9/17/07, 14:34	1.7		SAND (SW), brown, well graded, fine to coarse, medium loose, trace subrounded gravel, wet.	
49								
50			24		0.0		SILTY SAND (SW), orangish brown, well graded, trace clay, cohesive, very stiff to hard, dry.	
51							CLAYEY SILT (ML), dark gray, very stiff, no plasticity, trace angular gravel, trace sand, dry.	
52			24		0.0			
53								
54			24		0.0			
55				SD			3 inch silt seam at 55 feet.	
56			24		0.0		SILT (ML), gray, cohesive, trace clay, medium stiff, dry.	
57								
58			24		0.0		CLAYEY SILT (ML), dark gray, very stiff, no plasticity, trace angular gravel, trace sand, dry.	
59								
60			24		0.0		CLAYEY SILT (ML), dark gray, very stiff hard, very low plasticity, trace angular gravel, trace sand, and organic material, dry.	
61								
62			24		0.0			
63								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 5 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
64							CLAYEY SILT (ML), dark gray, very stiff hard, very low plasticity, trace angular gravel, trace sand, and organic material, dry.	
65				SD			Wood at 65 feet (6 inches)..	
66			24		2.0			
67							SAND (SW), orangish brown, well graded, fine to coarse, some gravel (subround), loose, wet.	
68			24		1.8			
69								
70			24		0.0			
71								
72			24		0.0			
73								
74			24		0.0			
75				SD				
76			24		0.0			
77							SAND (SW), orangish brown, poorly graded, fine to medium grained, cohesive, medium loose, damp.	
78			24		0.0			
79							SILT (ML), gray, medium soft, dry.	

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 6 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
80							SILT (ML), gray, medium soft, dry.	
81			24		1.7		SAND (SP), gray, poorly graded, fine grained, trace silt, medium loose, wet.	
82			24		8.2			
83							SILT (ML), gray, medium soft to stiff, dry.	
84			24		12.6		SAND (SW), dark gray, well graded, fine to coarse, trace silt, loose, wet.	
85				SD				
86			24		13.8			
87								
88			24		6.1		Note: Some subrounded gravel at 88 feet.	
89								
90			24		2.0		Note: trace small cobbles.	
91								
92			24		1.7			
93							SAND (SW), brownish gray, well graded, fine to coarse, trace gravel, loose, wet.	
94			24		0.5			
95				SD				

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 7 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
96			24		1.1		SAND (SW), brownish gray, well graded, fine to coarse, trace gravel, loose, wet.	
97								
98			24		1.4			
99								
100			24		1.0		Note: trace small cobbles and some gravel.	
101								
102			24		0.0			
103								
104			24		0.0			
105				SD				
106			24		0.0			
107								
108			24		0.1			
109								
110			24		0.0		SAND (SW), dark gray, well graded, fine to medium, trace gravel, medium loose, wet.	
111								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-74D

Sheet: 8 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/17/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
112			24		0.7			
113							SANDY GRAVEL (SW), gray, fine to coarse, well graded, loose, wet.	
114			24		0.5			
115				SD			CLAYEY SAND (SW), brown, well graded, little gravel, fine to coarse, cohesive, medium loose to dense, wet.	
116			24		0.0			
117								
118			24		0.0			
119								
120								
121								
122								
123								
124								
125								
126								
127								

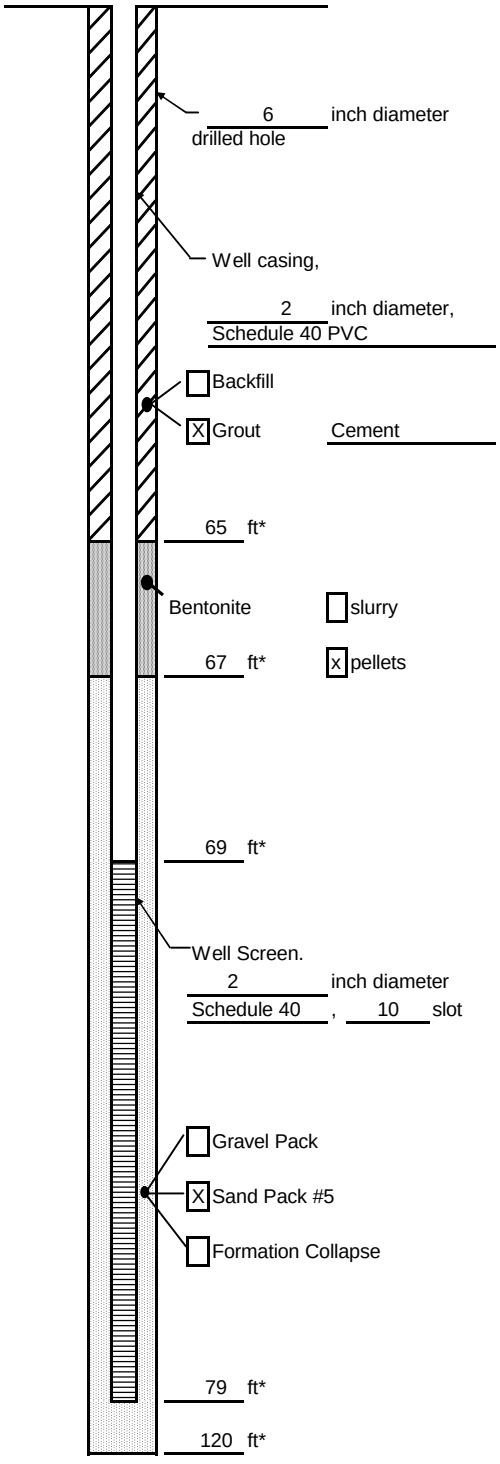
Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-74D

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

732.49 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 9/21/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump & surge - 9/24/2007.

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Monitoring Well

Remarks 8" permanent casing to 30.5 feet north well at GM-74 location

Prepared by L. Greene

ARCADIS

Soil Boring Log

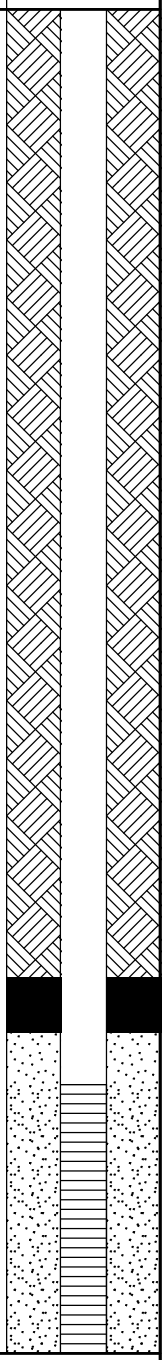
Boring No.: GM-74S

Sheet: 1 of 1

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/21/2007
Date Completed: 09/21/2007

Logger: L. Greene
Editor: J.Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1–50							See boring log GM-74D for lithologic description.	

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks:

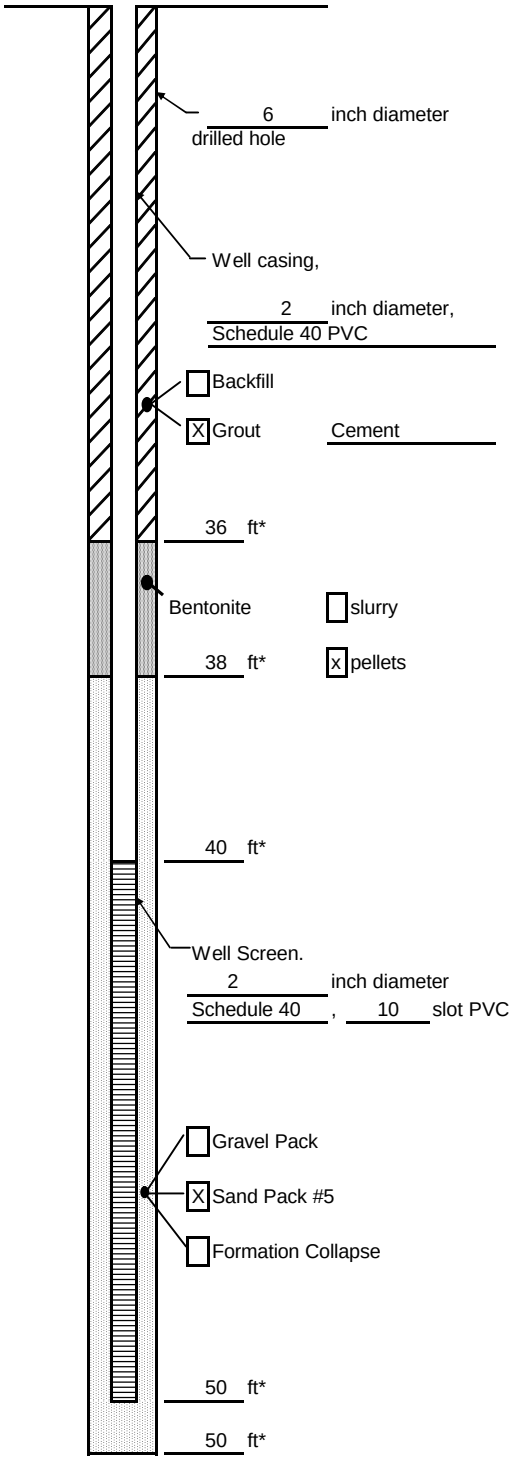
Sampling Method: Core Barrel
Sampling Interval: 10 feet
Water Level Start: NA
Water Level Finish: NA
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 732.52 TOC=732.17
North Coor: 4197.6
East Coor: 6416.5

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-74S

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

732.52 feet [X] Surveyed [ ] Estimated

Installation Date(s) 9/21/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump & surge - 9/24/2007. All drilling fluid removed during VAS.

Fluid Loss During Drilling N/A gallons

Water Removed During Development 60 gallons

Static Depth to Water 25.01 feet below M.P.

Pumping Depth to Water 45 feet below M.P.

Pumping Duration 0.30 hours

Yield 3 gpm Date 9/24/07

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

Remarks South well @ GM-74 location

Time:16:20, 16:23, 16:26, 16:29

pH: 6.66, 6.65, 6.62, 6.60

Conductivity: 2.17, 1.99, 2.01, 1.94

Turbidity: 78, 64, 60, 62

Temperature: 22.3, 22.6, 22.4, 22.0

Prepared by L. Greene

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 1 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							Utility clearing with water knife (8-27-07). CONCRETE	
2								
3								
4							Material excavated	
5								
6								
7								
8								
9								
10								
11	X		12	GP	2000		SAND (SP), dark brown, poorly graded, fine to medium, trace silt and clay, medium dense, dry.	
12								
13	X		10	GP			No return.	
14								
15	X							

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Direct push/Rotosonic
Drilling Fluid: Water
Remarks: GP=Geoprobe
SD=Sonic Drilling

Sampling Method: 10 feet x 4 inch Core Barrel
Sampling Interval: 10 feet
Water Level Start: 31.5 feet
Water Level Finish: --
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 738.13 TOC=737.68
North Coor: 4604.3
East Coor: 6622.7

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 2 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
16			12	GP	1150		GRAVELLY SAND (SP), brownish gray, poorly graded, medium to coarse, medium loose, 30% gravel (subangular to subrounded), dry.	
17			0	GP			No return.	
18								
19			24	GP	364		GRAVELLY SAND (SP), brownish gray, poorly graded, medium to coarse, medium loose, 30% gravel (subangular to subrounded), dry at 19.5 feet trace of silt, yellowish brown.	
20								
21			0	GP			No return.	
22								
23			24	GP	>2000		GRAVELLY SAND (SP), brownish gray, poorly graded, medium to coarse, medium loose, 30% gravel (subangular to subrounded), dry.	
24								
25			0	GP			No return.	
26								
27			24	GP	>2000		SAND (SP), with gravel, dark yellowish brown, poorly graded, fine to coarse, 15% gravel, medium loose, dry.	
28								
29			0	GP			No return.	
30								
31				GP				

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 3 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32			18		1043		SAND (SP), dark yellowish brown, fine to coarse, 5% to 10% gravel, poorly graded, medium loose, dry, wet at 31.5 feet.	
33			0	GP			No return.	
34								
35			15		>2000		SAND (SW), grayish brown well graded, fine to coarse, some gravel (10%), medium loose, wet.	
36								
37			0	GP GM-75, 35 to 40 feet, 8/29/07, 14:00			No return.	
38								
39			12	GP	155		SAND (SW), grayish brown well graded, fine to coarse, some gravel (10%), medium loose, wet.	
40								
41			24		1.0		GRAVELLY SAND (SW), brownish gray, well graded, trace cobbles, medium coarse, loose, wet.	
42			24		0.7			
43								
44			24		0.3			
45				SD				
46			24		0.2		Note: Trace of silt at 46 feet.	
47								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 4 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48			24		1.1		SAND (SW), brownish gray, well graded, trace cobbles, medium to coarse, loose, wet.	
49							GRAVELLY SAND (SW), brownish gray well graded, trace cobbles, medium to coarse, loose, wet.	
50								
51			24		0.8			
52			24		0.0		SILT (ML), dark gray, trace gravel, stiff to very stiff, dry (till), trace clay.	
53								
54			24		0.1			
55							SILT (ML), dark gray, black mottling (organic), medium loose to medium dense, dry.	
56			24		0.6		SAND (SP), brown, poorly graded, fine to coarse, medium loose, wet.	
57								
58			24	GM-75, 56 to 61 feet, 9/14/07, 12:00	1.1			
59								
60							Note: Brownish gray and damp at 60 feet.	
61			24		0.0			
62			24		0.0			
63								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 5 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
64			24		0.0		CLAYEY SILT (ML), dark gray, very stiff; hard, trace gravel and sand, dry.	
65				SD				
66			24		0.0			
67								
68			24		1.7			
69							GRAVELLY SAND (SW), yellowish brown, well graded, fine to coarse, loose, wet.	
70			24		0.0			
71								
72			24		0.0			
73								
74			24		0.0			
75				SD				
76			24		0.0			
77								
78			24		0.3			
79							SAND (SW), brownish gray, well graded, (20% gravel), medium loose, wet.	

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 6 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
80							SAND (SW), brownish gray, well graded, (20% gravel), medium loose, wet.	
81			24		39.7		SAND (SW), brown, poorly graded, fine to medium, medium loose, damp.	
82			24		59.2		Note: Brownish gray, and oxidation at 82 feet.	
83								
84			24		5.6		SILTY SAND (SW), gray, fine grained, medium loose to medium dense, damp.	
85				SD				
86			24		11.6		Note: Clayey silt seam at 86 feet (3 inches).	
87							SAND (SP), brownish gray, poorly graded, medium loose, damp.	
88			24		1.1		SAND (SW), brownish gray, well graded, fine to coarse, trace clay and gravel, dense, damp.	
89							GRAVELLY SAND (SW), brownish gray, fine to coarse, loose, wet.	
90								
91			24		1.0		SANDY GRAVEL (GW), gray, well graded, fine to coarse, loose, wet.	
92			24		2.7			
93								
94			24		3.4			
95				SD				

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 7 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
96			24		3.0		SANDY GRAVEL (GW), gray, well graded, fine to coarse, loose, wet.	
97								
98			24		1.2			
99								
100			24		0.0		Note: cobbles present at 100 feet.	
101								
102			24		0.9			
103								
104			24		0.0			
105				SD				
106			24		0.0			
107								
108			24		0.0			
109								
110			24		0.0			
111								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-75D

Sheet: 8 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 08/29/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
112			24		0.7		SAND (SW), gray, well graded, fine to coarse, trace gravel, medium loose, wet.	
113								
114			24		1.0		SAND (SW), grayish brown, poorly graded, fine grained, medium loose, damp.	
115				SD				
116			24		0.3			
117								
118			24		0.0		Note: Trace large gravel at 118 feet.	
119								
120								
121								
122								
123								
124								
125								
126								
127								

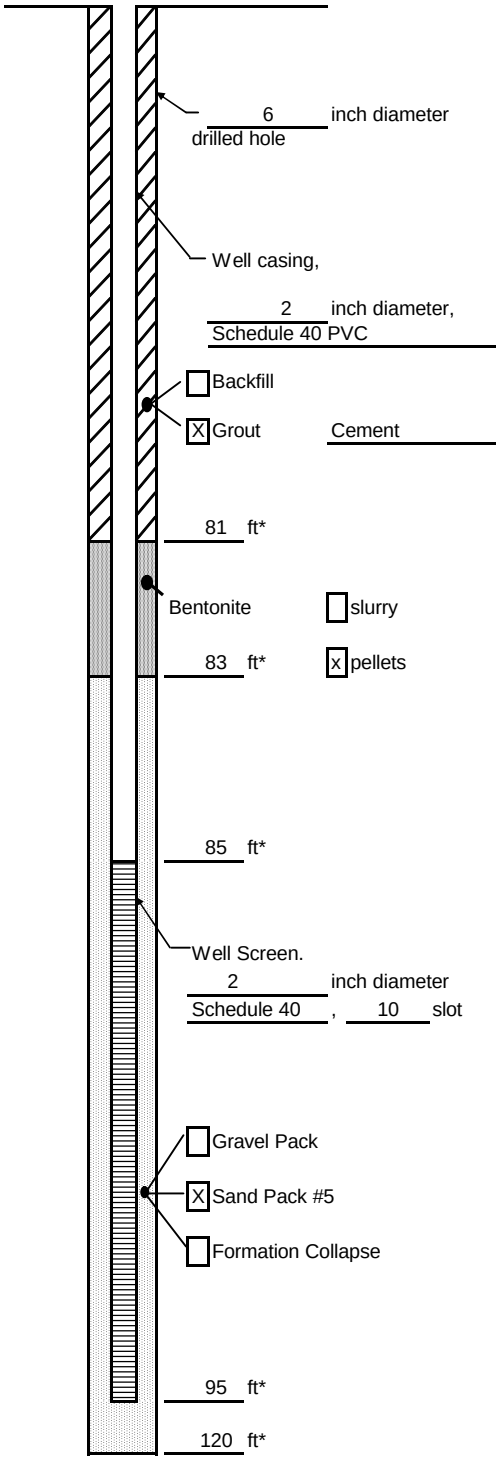
Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Project General Motors Corporation Well GM-75D

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

738.13 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 9/20/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump & surge - 9/25/2007. All drilling fluid removed during VAS.

Fluid Loss During Drilling N/A gallons

Water Removed During Development 60 gallons

Static Depth to Water 30.53 feet below M.P.

Pumping Depth to Water 90 feet below M.P.

Pumping Duration 0.30 hours

Yield 3 gpm Date 9/25/07

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

Remarks West well at GM-75 location

Time: 11:30, 11:33, 11:36, 11:39

pH: 6.34, 6.34, 6.31, 6.33

Conductivity: 1.70, 1.80, 1.77, 1.79

Turbidity: 338, 210, 10, 198

Temperature: 18.7, 18.7, 18.7, 18.5

Prepared by L. Greene

ARCADIS

Soil Boring Log

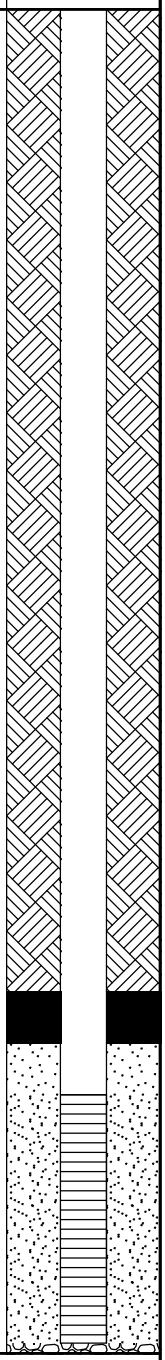
Boring No.: GM-75S

Sheet: 1 of 1

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/18/2007
Date Completed: 09/18/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1–52							See boring log GM-75D for lithologic description.	

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks:

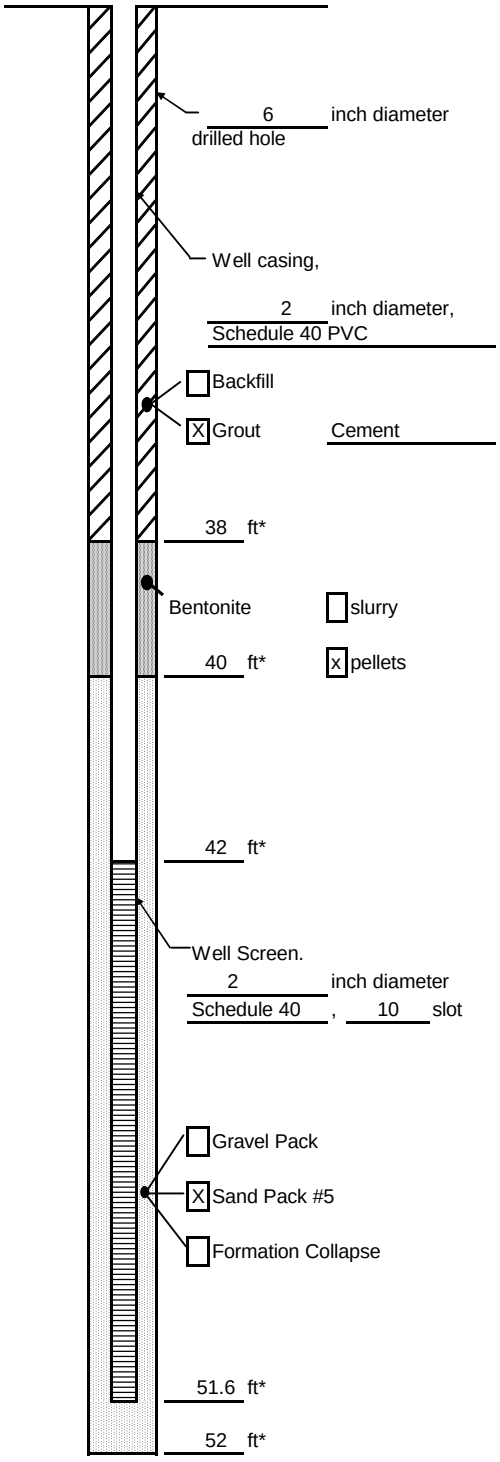
Sampling Method: Core Barrel
Sampling Interval: 10 feet
Water Level Start: NA
Water Level Finish: NA
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 738.26 TOC=737.69
North Coor: 4604.6
East Coor: 6634.7

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-75S

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

738.26 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 9/18/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump & surge - 9/25/2007. All drilling fluid removed during VAS.

Fluid Loss During Drilling NA gallons

Water Removed During Development 60 gallons

Static Depth to Water 30.44 feet below M.P.

Pumping Depth to Water 47 feet below M.P.

Pumping Duration 0.30 hours

Yield 3 gpm Date 9/25/07

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

Remarks East well @ GM-75 location

Time: 10:50, 10:53, 10:56, 10:59

pH: 6.52, 6.57, 6.50, 6.51

Conductivity: 1.45, 1.39, 1.37, 1.36

Turbidity: 435, 222, 113, 87

Temperature: 20.2, 20.1, 19.8, 19.8

Prepared by L. Greene

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 1 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							CONCRETE	
2							SAND WITH GRAVEL (SP), brown, poorly graded, medium-coarse, 25-30% gravel (subrounded), fine-coarse, dry.	
3								
4								
5								
6								
7								
8								
9								
10								
11			24		0.3		SAND WITH GRAVEL (SP), dark brown, poorly graded, fine-coarse, 15% gravel (subrounded), medium-loose, dry.	
12								
13			24		2.5			
14								
15			24		11.9			

Drilling Co.: Boart Longyear
Driller: Walter Tidwell
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: Non-invasive water knife/vac used to elevation to 10 feet.
SD=Sonic Drilling

Sampling Method: Core Barrel
Sampling Interval: 10 feet
Water Level Start: 34 feet
Water Level Finish: --
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 739.48 TOC=738.94
North Coor: 5391.8
East Coor: 6729.9

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 2 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
16			24	SD	10.0		SAND WITH GRAVEL (SP), dark brown, poorly graded, fine-coarse, 15% gravel (subrounded), medium-loose, dry.	
17							Note: pale brown (10 YR 6/3) at 17 feet.	
18			12		5.1			
19							No return.	
20								
21								
22								
23								
24								
25				SD				
26			24		6.0		SAND (SP), pale brown (10 YR 6/3), poorly graded, fine-coarse, trace gravel, medium-loose, dry.	
27								
28			24		2.5			
29								
30			24		1.5		CLAYEY SAND (SP), grayish brown, poorly graded (10 YR 5/2), low plasticity, fine-medium grained, 20% clay, medium-soft, moist.	
31								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 3 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32			24		0.8		CLAYEY SAND (SP), grayish brown, poorly graded (10 YR 5/2), low plasticity, fine-medium grained, 20% clay, medium-soft, moist.	
33							SAND (SP), dark gray (10 YR 4/1), poorly graded, trace clay and gravel, damp.	
34			24	GM-76, 32 to 36 feet, 7/6/07, 12:33	0.7		SAND AND GRAVEL (GW), gray (10 YR 5/1), well graded, fine-medium, 15% coarse sand, wet.	
35								
36			24		0.7		SILTY SAND (SP), brown (10 YR 5/3), poorly graded, fine, cohesive, slight dense, moist.	
37								
38			24		0.6		SAND (SP), dark gray 910 YR 4/1), poorly graded, trace clay and gravel, damp.	
39							CLAYEY SILT (ML), gray (10 YR 5/1), very stiff, trace gravel, low plasticity, dry.	
40			24		8.9			
41								
42			24		3.1			
43								
44			24		0.7			
45								
46			24		1.7			
47								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 4 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48			12		0.8		CLAYEY SILT (ML), gray (10 YR 5/1), very stiff, trace gravel, low plasticity, dry.	
49								
50							SAND (SP), very dark grayish brown (10 YR 3/2), poorly graded, fine-medium, loose, damp.	
			24	GM-76, 48 to 52 feet, 7/6/07, 18:45	1.1			
51							CLAYEY SAND (SP), very dark grayish brown (10 YR 3/2), poorly graded, fine, trace gravel, damp.	
52			24		0.2			
53								
54			24		0.7			
55				SD			SILT (ML), very dark grayish brown (10 YR 3/2), trace sand and gravel, stiff-very stiff, dry.	
56			24		1.7			
57							CLAYEY SILT, very dark grayish brown (10 YR 3/2), trace sand and gravel, stiff-very stiff, low plasticity, dry.	
58			24		2.3			
59								
60								
			24		32			
61								
62			24		50.1			
63								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 5 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
64			24		50.8		CLAYEY SILT, very dark grayish brown (10 YR 3/2), trace sand and gravel, stiff-very stiff, low plasticity, dry.	
65				SD				
66			24		48.7			
67								
68			24		35.1			
69								
70			24		13.5		SANDY GRAVEL (GW), grayish brown (10 YR 5/2), well graded, 30% sand, wet.	
71								
72			24	GM-76, 70 to 74 feet, 7/9/07, 08:55	2.6		SAND WITH GRAVEL (SW), grayish brown (10 YR 5/2), well graded, fine-coarse, wet.	
73								
74			24		7.6		GRAVEL (GP), grayish brown (10 YR 5/2), poorly graded, coarse, round-subround, wet.	
75							SAND (SP), grayish brown (10 YR 5/2), poorly graded, fine-medium grained, wet.	
76			24		1.4			
77								
78			24		11.7			
79								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 6 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
80							SAND (SP), grayish brown (10 YR 5/2), poorly graded, fine-medium grained, wet.	
81			24		25.9		SILTY SAND (SP), grayish brown (10 YR 5/2), poorly graded, fine, dense, damp.	
82			24		27.9		SAND (SP), grayish brown (10 YR 5/2), poorly graded, fine-medium, medium dense, damp.	
83								
84			24		31.8			
85								
86			24		33.3			
87								
88			24		33.7			
89								
90				GM-76, 88 to 92 feet, 7/9/07, 11:58			No return.	
91								
92								
93								
94								
95				SD				

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 7 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
96							No return.	
			24		1.7			
97							SANDY GRAVEL (GW), gray (10 YR 5/1), well sorted, medium-coarse, wet.	
98			24		0.9			
99								
100							No return.	
101								
102								
103								
104								
105				SD				
106			24		24.8		SAND (SW), dark grayish brown (10 YR 4/2), well sorted, fine-coarse, trace gravel, damp.	
107								
108			24		21.9			
109								
110								
			24		28.3		Note: Little gravel at 110 feet.	
111								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-76D

Sheet: 8 of 8

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/06/2007
Date Completed: 07/09/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoor

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
112			24		31.1		SAND (SW), dark grayish brown (10 YR 4/2), well sorted, fine-coarse, trace gravel, damp.	
113							GRAVELLY SAND (SP), grayish brown (10 YR 5/2), poorly graded, medium loose, damp.	
114			24		30.3			
115							SILTY SAND (SP), brown (10 YR 5/3), poorly graded, fine, medium dense, damp.	
116			24		25.6			
117								
118			24	GM-76, 116 to 120 feet, 7/9/07, 18:08	27.7			
119								
120								
121								
122								
123								
124								
125								
126								
127								

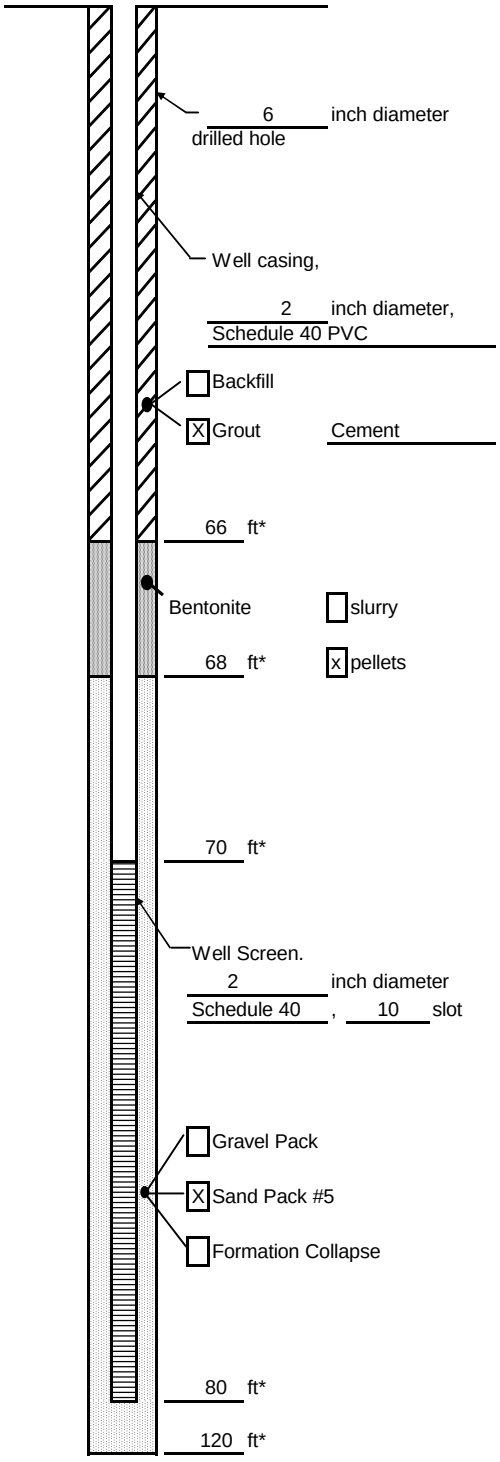
Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-76D

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

739.48 feet [X] Surveyed [ ] Estimated

Installation Date(s) 7/10/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pump and surge - 7/10/07

Fluid Loss During Drilling N/A gallons

Water Removed During Development ~45 gallons

Static Depth to Water 29.55 feet below M.P.

Pumping Depth to Water 87 feet below M.P.

Pumping Duration ~.5 hours

Yield ~1.5 gpm Date 7/10/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks GW Parameters (1V = 8.1 gallons)

	1V	2V	3V	4V	5V
pH:	7.64	7.17	7.10	7.11	7.01
Conductivity:	1.40	1.42	1.41	1.40	1.39
Turbidity:	0	37	0	5	6
Temperature:	20.8	20.5	20.9	20.4	20.4

Prepared by L. Greene

ARCADIS

Soil Boring Log

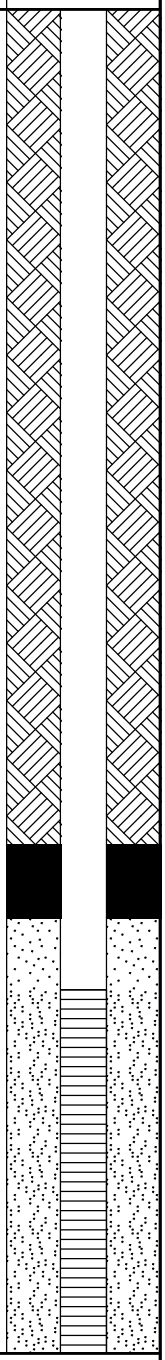
Boring No.: GM-76S

Sheet: 1 of 1

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 07/08/2007
Date Completed: 07/08/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Indoors

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							See boring log GM-76D for lithologic description.	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks:

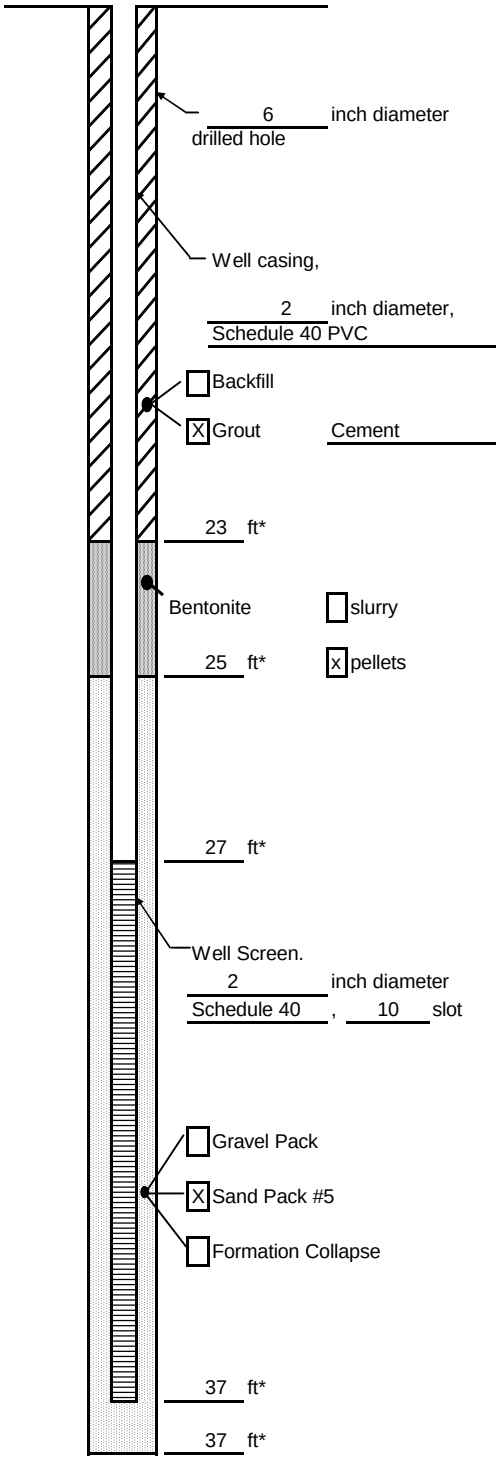
Sampling Method: Core Barrel
Sampling Interval: 10 feet
Water Level Start: NA
Water Level Finish: NA
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 739.49 TOC=739.00
North Coor: 5396.6
East Coor: 6730.8

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-76S

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

739.49 feet [X] Surveyed [ ] Estimated

Installation Date(s) 7/8/2007

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pump & surge - 7/10/07

Fluid Loss During Drilling 50 gallons

Water Removed During Development 50 gallons

Static Depth to Water 29.44 feet below M.P.

Pumping Depth to Water 35' feet below M.P.

Pumping Duration 7.00 hours

Yield ~1.5 gpm Date 9/25/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks GW Parameters (IV = 1.2 gallons)

	1V	2V	3V	4V	5V	6V
pH -	8.52	8.01	8.60	7.90	7.79	7.69
Conductivity:	.718	.619	.589	.640	.653	.651
Turbidity:	1	0	999	1	0	0
Temperature:	23.3	22.0	22.5	21.8	21.7	21.7

Prepared by L. Greene

ARCADIS

Soil Boring Log

Boring No.: GM-77D

Sheet: 1 of 7

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/05/2007
Date Completed: 09/07/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							Sand and Gravel - utility clearance with water knife (9/4/07).	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12			24		0.0		SAND WITH GRAVEL (SW), light grayish brown, well graded, fine to coarse, fine to coarse gravel, medium loose, dry.	
13								
14			24		0.0			
15								

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: SD=Sonic Drilling

Sampling Method: 10 feet x 6 inch Core Barrel
Sampling Interval: 10 feet
Water Level Start: 34 feet
Water Level Finish: --
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 741.52 TOC=740.93
North Coor: 3615.4
East Coor: 7740.8

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-77D

Sheet: 2 of 7

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/05/2007
Date Completed: 09/07/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
16			24	SD	0.0		SAND WITH GRAVEL (SW), light grayish brown, well graded, fine to coarse, fine to coarse gravel, medium loose, dry.	
17								
18			24		0.0			
19								
20			24		0.0		Note: Cobbles present at 20 feet.	
21								
22			24		0.0			
23								
24			24		0.0			
25				SD				
26			24		0.0			
27								
28			24		0.0			
29								
30			24		0.0			
31								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-77D

Sheet: 3 of 7

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/05/2007
Date Completed: 09/07/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32			24		0.0		SAND WITH GRAVEL (SW), light grayish brown, well graded, fine to coarse, fine to coarse gravel, medium loose, dry.	
33								
34			24		0.0		SANDY GRAVEL (GW), brown, well graded, medium grained, medium loose, wet.	
35							SAND (SP), brown, poorly graded, fine to coarse, medium loose, some gravel, wet.	
36			24		0.0			
37				GM-77, 35 to 40 feet, 9/6/07, 8:42				
38			24		0.0			
39								
40								
41			24		0.0		SANDY GRAVEL (GW), well graded, medium to coarse, loose, wet.	
42			24		0.0			
43							SANDY SILT (ML), brownish gray, little gravel, medium stiff, very moist.	
44			24		0.0			
45				SD				
46			24		0.0		SILT (ML), grayish brown with orange mottling, trace sand and gravel, stiff to very stiff, dry.	
47								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-77D

Sheet: 4 of 7

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/05/2007
Date Completed: 09/07/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48			24		0.0		CLAYEY SILT (ML), gray, trace coarse sand, clay and gravel (angular to subrounded), very stiff to hard, dry.	
49								
50			24		0.0			
51								
52			24		0.0			
53								
54			24		0.0			
55				SD				
56			24		0.0			
57								
58			24		0.0			
59								
60			24		0.0			
61								
62			24		0.0			
63								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-77D

Sheet: 5 of 7

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/05/2007
Date Completed: 09/07/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
64			24		0.0		CLAYEY SILT (ML), gray, trace coarse sand, clay and gravel (angular to subrounded), very stiff to hard, dry.	
65				SD				
66			24		0.0			
67								
68			24		0.0			
69								
70			24		0.0			
71								
72			24		0.0			
73							SAND (SP), brown, poorly graded, medium to coarse, trace gravel and trace silt, loose, wet.	
74			24		0.0		Note: Little gravel and silt at 74 feet.	
75				SD				
76			24		0.0		SAND (SP), brown, medium to coarse, some gravel and trace silt, well graded, loose, wet.	
77								
78			24		0.0		SAND (SP), brown, well graded, medium to coarse, with coarse gravel and trace cobbles (70 to 80 feet exhibits upward fining) trace silt, loose, wet.	
79								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-77D

Sheet: 6 of 7

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/05/2007
Date Completed: 09/07/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
80								
81			24		0.0		GRAVEL (GW), gray, well graded, medium to coarse, 15% coarse sand, loose, wet.	
82			24		0.0		SAND (SP), yellowish brown, poorly graded, fine (some medium), trace silt, medium loose, wet.	
83								
84			24		0.0			
85				SD				
86			24		0.0		SAND (SP), yellowish brown, poorly graded, fine (some medium), trace silt, medium loose, wet. Note: Gray mottling.	
87								
88			24		0.0		SAND (SP), grayish brown, poorly graded, fine (some medium), trace silt, medium loose, wet.	
89							SILTY SAND (SP), grayish brown, fine, medium loose, moist.	
90							CLAYEY SILT (ML), grayish brown, low plasticity, moist.	
91			24		0.0		SAND (SP), yellowish brown, poorly graded, fine to medium, loose to medium loose, wet.	
92			24		0.0		SILTY SAND (SP), yellowish brown, fine, medium to soft, wet.	
93							SAND (SW), grayish brown, well graded, fine to coarse, loose, wet.	
94			24		0.0			
95				SD			SAND (SW), dark gray, well graded, fine to coarse, loose, wet.	

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-77D

Sheet: 7 of 7

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/05/2007
Date Completed: 09/07/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
96			24		0.0		SAND (SW), dark gray, well graded, fine to coarse, loose, wet.	
97							SILT (ML), dark gray with black mottling, trace gravel, medium stiff to soft, dry, organic material and odor.	
98			24		0.0			
99							SILT (ML), dark gray, trace sand and clay and gravel, stiff, dry.	
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								

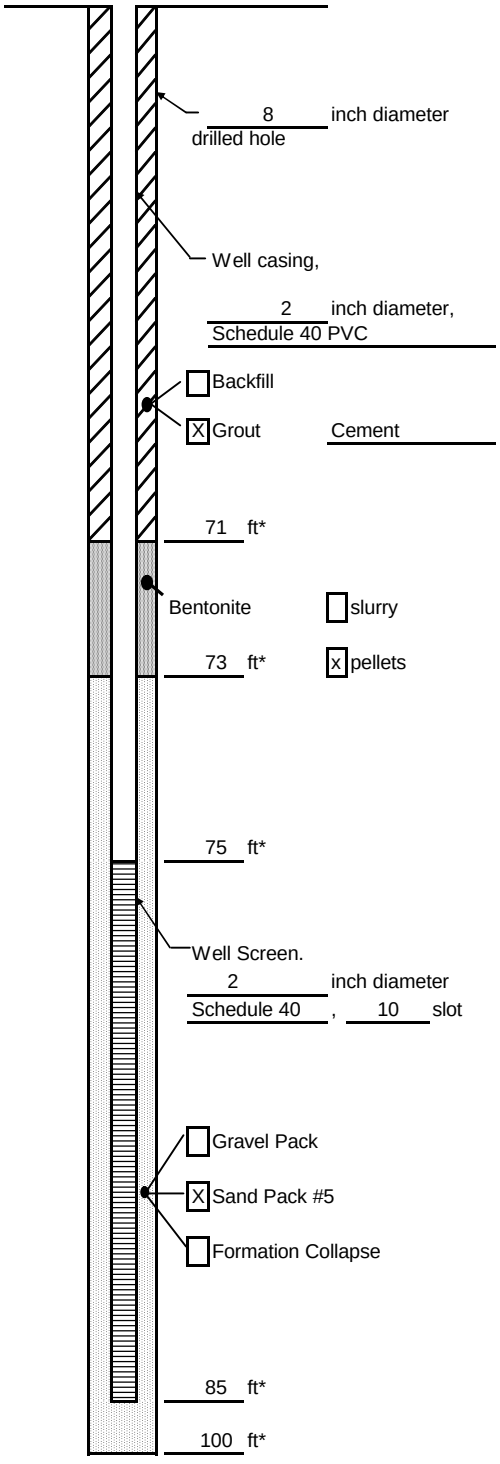
Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-77D

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

741.52 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 9/11/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump & surge - 9/25/2007. All drilling fluid removed during VAS.

Fluid Loss During Drilling N/A gallons

Water Removed During Development 40 gallons

Static Depth to Water 33.98 feet below M.P.

Pumping Depth to Water 80 feet below M.P.

Pumping Duration 0.30 hours

Yield 3 gpm Date 9/25/07

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

Remarks Collapse from 100' to 85'

Time: 9:05, 9:08, 9:11, 9:14

pH: 6.81, 6.74, 6.73, 6.77

Conductivity: 1.37, 1.29, 1.28, 1.35

Turbidity: 999, 672, 547, 77

Temperature: 17.6, 17.5, 17.2, 17.2

Prepared by L. Greene

ARCADIS

Soil Boring Log

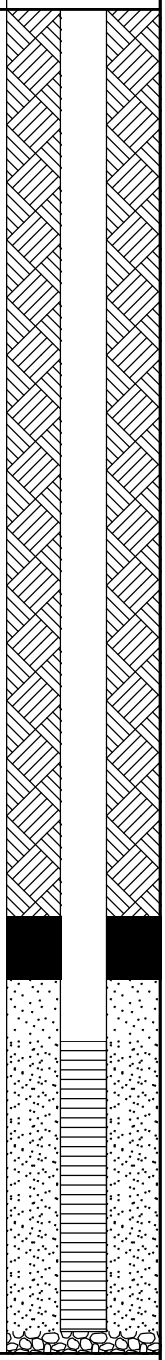
Boring No.: GM-77S

Sheet: 1 of 1

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 09/12/2007
Date Completed: 09/12/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny 80's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1–43							See boring log GM-75D for lithologic description.	

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks:

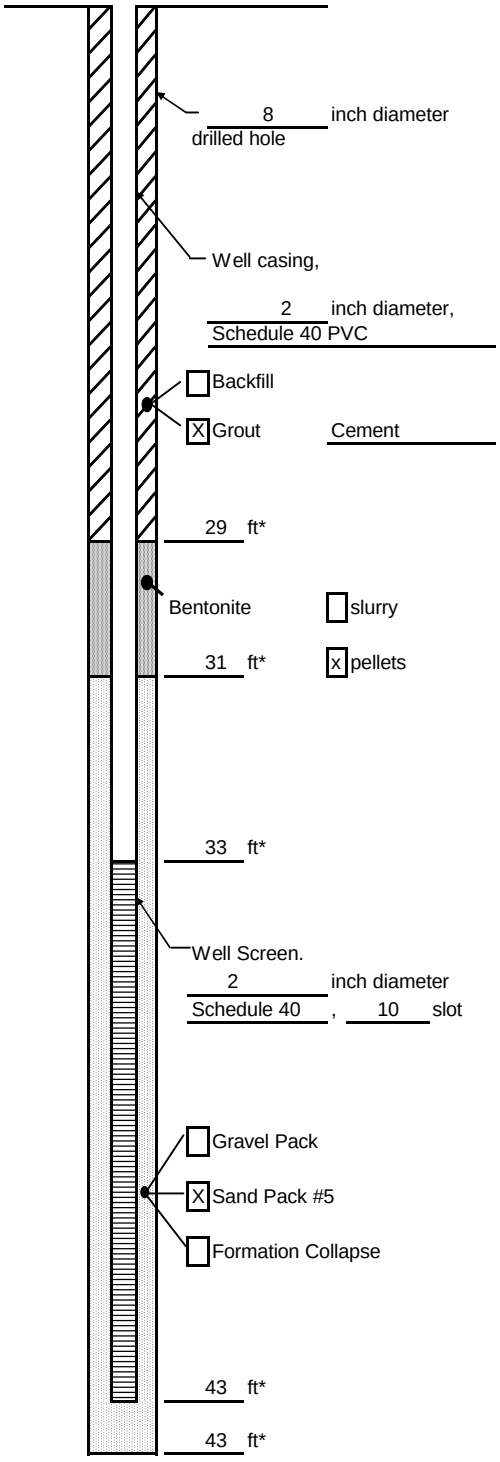
Sampling Method: Core Barrel
Sampling Interval: 10 feet
Water Level Start: NA
Water Level Finish: NA
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 741.49 TOC=741.14
North Coor: 3618.3
East Coor: 7743.0

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-77S

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

741.49 feet [X] Surveyed [ ] Estimated

Installation Date(s) 9/12/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump & surge - 9/25/2007. All drilling fluid removed during VAS.

Fluid Loss During Drilling N/A gallons

Water Removed During Development 30 gallons

Static Depth to Water 33.71 feet below M.P.

Pumping Depth to Water 38 feet below M.P.

Pumping Duration 0.20 hours

Yield 3 gpm Date 9/25/07

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

Remarks

Time: 9:40, 9:43, 9:46, 9:49

pH: 7.66, 7.64, 7.70, 7.59

Conductivity: 0.526, 1.09, 0.99, 1.02

Turbidity:999, 999, 680, 10

Temperature: 20.8, 2.05, 21.0, 20.7

Prepared by L. Greene

ARCADIS

Soil Boring Log

Boring No.: GM-78

Sheet: 1 of 5

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/16/2007
Date Completed: 10/16/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Rain, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							Utility clearance with water knife (10/10/07).	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11			12		0.5		SAND (SW), brown, well graded, fine-medium grained, trace medium gravel, loose, dry.	
12			24		0.7			
13								
14			24		1.0			
15								

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: SD=Sonic Drilling

Sampling Method: 10 feet x 4 inch Core Barrel
Sampling Interval: 10 feet
Water Level Start: --
Water Level Finish: --
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 721.58 TOC=721.18
North Coor: -267.0
East Coor: 5722.8

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-78

Sheet: 2 of 5

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/16/2007
Date Completed: 10/16/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Rain, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
16			24	SD	0.9		SAND (SW), brown, well graded, fine-medium grained, trace medium gravel, loose, dry.	
17							Note: 3 inch fine gravel seam at 17 feet.	
18			12		1.8		Note: Wet at 18 feet.	
19			12		2.0		GRAVELLY SAND (GW), grayish brown, well graded, medium loose, trace silt, wet.	
20			24		1.8			
21								
22			24	GM-78, 20 to 25 feet, 10/16/07, 9:20	1.3			
23								
24			24		0.5			
25								
26			24		2.4			
27								
28			12		1.9			
29			12		1.5		GRAVEL (GP), gray, poorly graded, medium-coarse, loose, wet.	
30			24		1.3			
31								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-78

Sheet: 3 of 5

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/16/2007
Date Completed: 10/16/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Rain, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32			24		1.7		GRAVEL (GP), gray, poorly graded, medium-coarse, loose, wet.	
33							SAND (SW), grayish brown, well graded, fine-coarse, some gravel, medium loose, wet.	
34			24		1.4			
35				SD				
36			24		1.7			
37								
38			12		1.9			
39			12		2.0		SAND (SP), brown, poorly graded, fine-coarse, trace gravel and silt, medium loose, wet.	
40			24		2.1			
41								
42			24	GM-78, 40 to 45 feet, 10/16/07, 10:40	1.7		Note: 2 inch gravel seam at 41.5 feet.	
43								
44			24		2.1			
45								
46			24		1.9			
47								

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-78

Sheet: 4 of 5

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/16/2007
Date Completed: 10/16/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Rain, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48			12		2.1		SAND (SP), brown, poorly graded, fine-coarse, trace gravel and silt, medium loose, wet.	
49			12		1.7		Note: Grayish brown, no trace gravel and silt, medium dense at 49 feet.	
50			24		1.2			
51								
52			24		1.5			
53								
54			24		0.9			
55				SD				
56			24		1.1			
57								
58			12		0.9		GRAVEL (GP), grayish brown, poorly graded, trace sand, loose, wet .	
59			12		0.7		SAND (SP), brown, poorly graded, fine-medium, loose, moist.	
60			24		1.2			
61								
62			24		1.5		SAND (SW), brown, well graded, fine-coarse, some gravel, loose, wet.	
63								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-78

Sheet: 5 of 5

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/16/2007
Date Completed: 10/16/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Rain, 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
64			24		1.3		SAND (SW), brown, well graded, fine-coarse, some gravel, loose, wet.	
65							SAND (SP), brown, poorly graded, fine-coarse, loose, wet.	
66			24		1.9			
67				GM-78, 65 to 70 feet, 10/16/07				
68			24		1.1			
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								

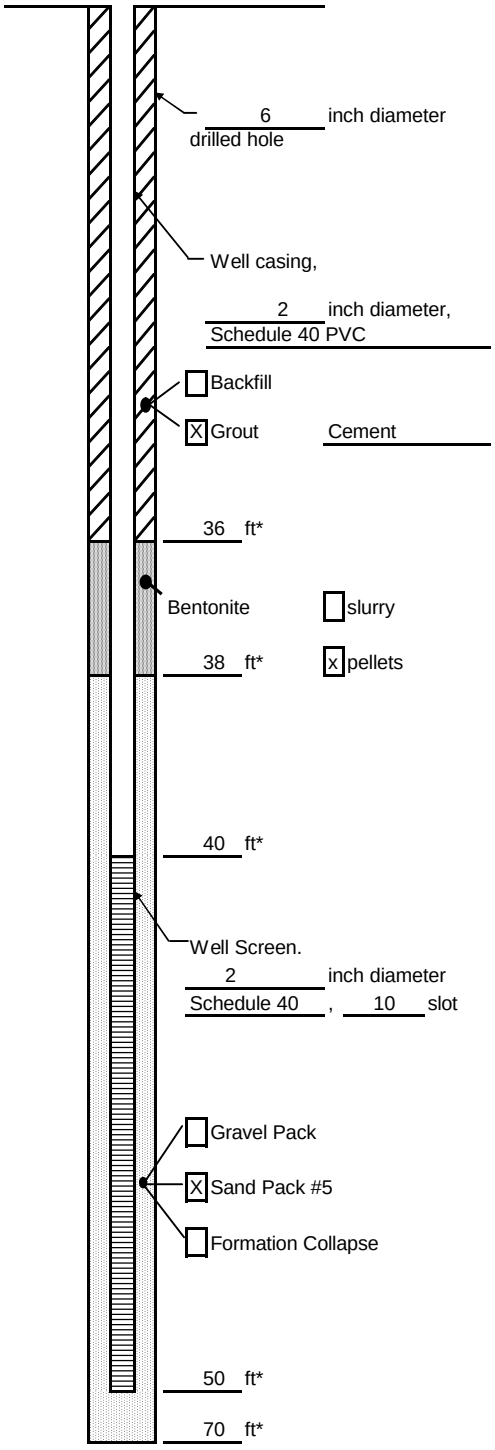
Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-78

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

721.58 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 10/18/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump & surge - 10/18/07

Fluid Loss During Drilling 80 gallons

Water Removed During Development 106 gallons

Static Depth to Water 17.1 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.75 hours

Yield 4 gpm Date 10/18/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks IV = 1 well volume = 5.16 gallons

	1V	2V	3V	4V	5V
Ph	7.38	7.39	7.36	7.36	7.35
Conductivity:	1.50	1.48	1.48	1.49	1.48
Turbidity:	211	239	125	185	179
Temperature:	14.4	14.4	14.3	14.3	14.3

Prepared by L. Greene

ARCADIS

Soil Boring Log

Boring No.: GM-79

Sheet: 1 of 4

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/15/2007
Date Completed: 10/15/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny, 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							Utility clearance with water knife (10/11/07).	
2								
3								
4								
5								
6								
7								
8								
9								
10			24		0.4		SAND (SW), brown, well graded, fine-medium grained, trace coarse gravel, dry, loose.	
11								
12			24		0.7			
13								
14			24		0.6			
15								

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: SD=Sonic Drilling

Sampling Method: 10 feet x 4 inch Core Barrel
Sampling Interval: 10 feet
Water Level Start: 16 feet
Water Level Finish: --
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 718.54 TOC=717.91
North Coor: -28.8
East Coor: 3623.2

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT_2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-79

Sheet: 2 of 4

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/15/2007
Date Completed: 10/15/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny, 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
16			24		0.5		SAND (SW), grayish brown, well graded, medium-coarse, some gravel, trace silt, moist, loose.	
17								
18			12		0.5			
19			12	GM-79, 16 to 21 feet, 10/15/07, 11:15	0.0		GRAVEL (GP), gray, poorly graded, coarse grained, loose, wet.	
20								
21			0				No recovery.	
22			0					
23								
24			0					
25				SD				
26			0					
27								
28			0					
29			12		0.3		GRAVEL (GP), brownish gray, poorly graded, coarse, loose, wet, trace sand. Note: cobbles present.	
30								
31			12					

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-79

Sheet: 3 of 4

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/15/2007
Date Completed: 10/15/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny, 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32			0				No recovery.	
33								
34			0					
35								
36			0					
37								
38			0	GM-79, 35 to 40 feet, 10/15/07, 13:30				
39			12		0.7		SANDY GRAVEL (GW), orangish brown, well graded, fine-medium, trace silt, loose wet.	
40			24		0.5			
41							GRAVELLY SAND (SW), orangish brown, well graded, fine-coarse, trace silt, medium loose, wet.	
42			24		0.8			
43								
44			24		0.5		SANDY GRAVEL (GW), grayish brown, well graded, fine-coarse, loose, wet.	
45				SD				
46			24		1.2			
47							SAND (SW), brown, well graded, fine-coarse, little gravel, loose, moist.	

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-79

Sheet: 4 of 4

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/15/2007
Date Completed: 10/15/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Sunny, 70's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48			24		1.1		SAND (SW), brown, well graded, fine-coarse, little gravel, loose, moist.	
49					0.7			
50							Note: Silt seam at 49.8 feet.	
51			24		0.5		GRAVELLY SAND (SW), brown, well graded, fine-coarse, medium loose, wet.	
52			24		0.3			
53								
54			24		0.1		SILT (ML), gray, medium soft, damp. Note: Orange staining at interface (54 feet).	
55				SD			Note: Very stiff-hard, dry at 55 feet.	
56			24		0.2			
57								
58			12		0.0			
59								
60								
61								
62								
63								

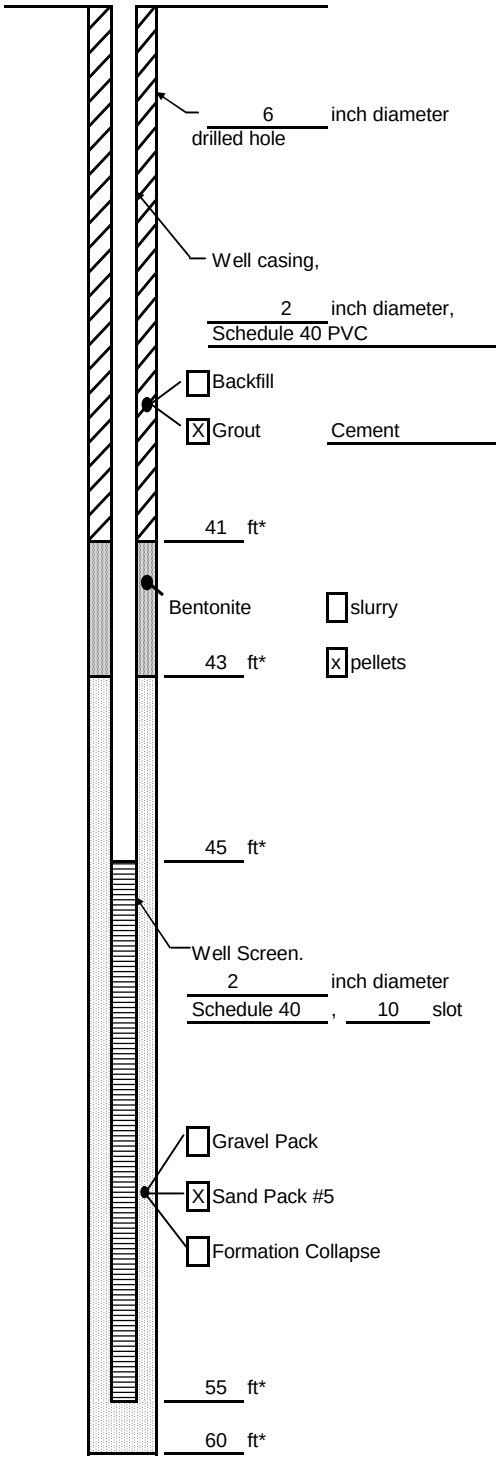
Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well GM-79

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

718.54 feet [X] Surveyed [ ] Estimated

Installation Date(s) 10/17/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Driling

Drilling Fluid Water

Development Technique(s) and Date(s)

Pump and surge 10/22/07

Fluid Loss During Drilling 100 gallons

Water Removed During Development 111 gallons

Static Depth to Water 15.00 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1 hours

Yield 4 gpm Date 10/22/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks IV = 1 well volume = 6.25 gallons

	1V	2V	3V	4V	5V
pH	6.69	6.92	6.93	6.94	6.95
Conductivity	1.44	1.44	1.44	1.43	1.44
Turbidity	232	111	97.7	90.1	98.4
Temperature	17.1	17.1	17.1	17.1	17.1

Prepared by L. Greene

ARCADIS

Soil Boring Log

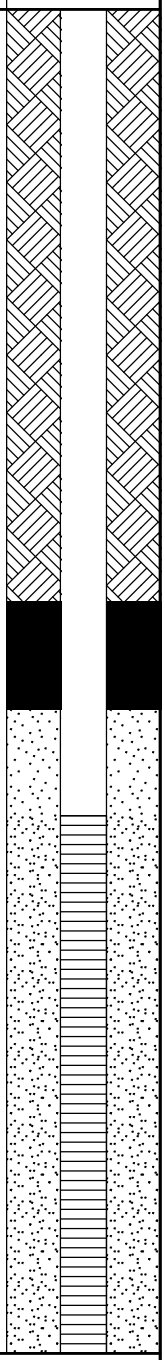
Boring No.: GM-80

Sheet: 1 of 1

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/16/2007
Date Completed: 10/16/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions:

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1–25							See boring log GM-81 for lithologic description.	

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks:

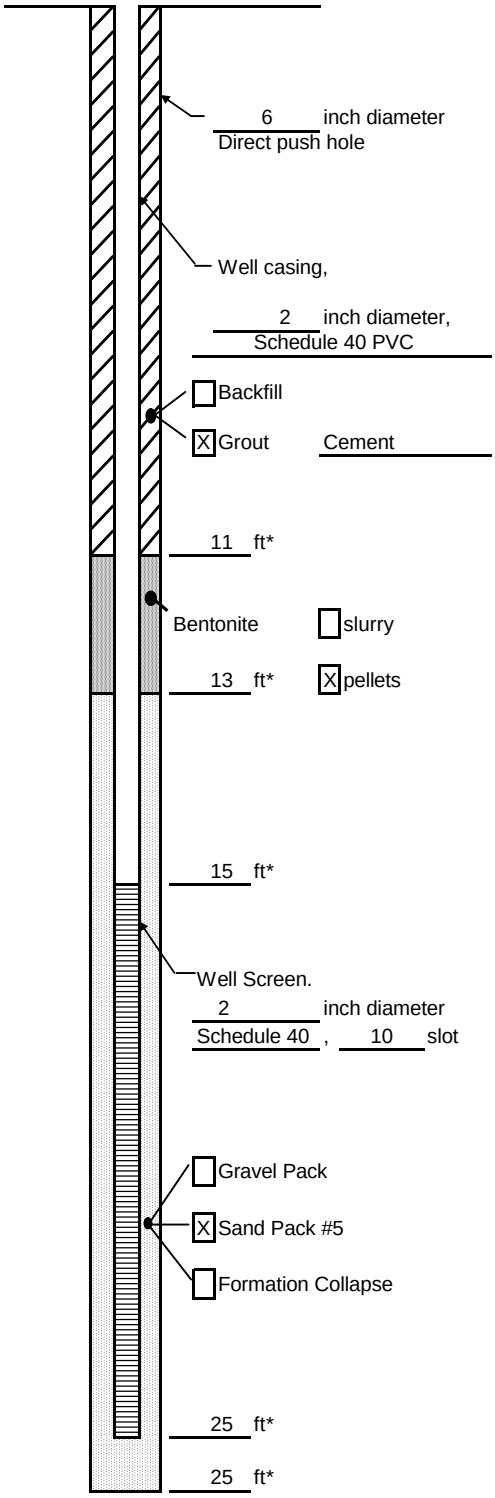
Sampling Method: Core Barrel
Sampling Interval: 10 feet
Water Level Start: NA
Water Level Finish: NA
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 716.23 TOC=715.82
North Coor: -1045.7
East Coor: 7352.9

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-80

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

716.230 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 10/16/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Drilling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump - surge with pump

10/18/2007

Fluid Loss During installation 60 gallons

Water Removed During Development ~100 gallons

Static Depth to Water 13.27 feet below M.P.

Pumping Depth to Water ~20' feet below M.P.

Pumping Duration 0.4 hours

Yield 4 gpm Date 10/18/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks Time: 1110 1113 1116 1119 1122

pH: 7.27 7.32 7.34 7.35 7.39

Conductivity: .844 .809 .808 .805 .801

Turbidity: -10 -10 -10 -10 -10

Temperature: 15.1 15.0 14.9 14.9 14.9

Prepared by L. Greene

ARCADIS

Soil Boring Log

Boring No.: GM-81

Sheet: 1 of 6

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/11/2007
Date Completed: 10/11/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Overcast 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
1							Utility clearance notes with water knife (10/11/07)	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11							Note: No recovery cobble in shoe.	
12								
13								
14							Note: Ground water 14 feet.	
15								

Drilling Co.: Frontz
Driller: Dave S.
Drilling Method: Rotosonic
Drilling Fluid: Water
Remarks: SD=Sonic Drilling

Sampling Method: 10 feet x 4 inch Core Barrel
Sampling Interval: 10 feet
Water Level Start: 14 feet
Water Level Finish: --
Converted to Well: ☒ Yes ☐ No
Surface Elev.: 715.80 TOC=715.31
North Coor: -1062.7
East Coor: 3752.2

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-81

Sheet: 2 of 6

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/11/2007
Date Completed: 10/11/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Overcast 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
16							Note: No recovery cobble in shoe.	
17								
18				GM-80, 15 to 20 feet, 10/11/07, 11:55				
19								
20								
21			24		0.4		SAND (SW), grayish brown, loose, well graded, with gravel (fine-coarse), fine-coarse grained, wet.	
22			24		0.5			
23								
24			24		0.7			
25				SD				
26			24		0.6			
27								
28			24		0.8			
29								
30			24		1.2			
31								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-81

Sheet: 3 of 6

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/11/2007
Date Completed: 10/11/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Overcast 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
32			24		0.7		GRAVELLY SAND (SW), brown, well graded, fine-coarse, loose, wet.	
33								
34			24		1.3			
35							Note: Silty clay seam at 34.75 feet.	
36			24		1.3		SANDY GRAVEL (GW), brown, well graded, loose, trace silt, wet.	
37								
38			24	GM-80, 35 to 40 feet, 10/11/07, 14:50	0.9		SAND (SW), brown, well graded, loose, some gravel, wet.	
39								
40								
41			24		0.7			
42			24		0.5			
43								
44			24		0.3		SANDY GRAVEL (GW), orangish brown, well graded, fine-coarse, loose, wet.	
45				SD				
46			24		0.4			
47								

Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-81

Sheet: 4 of 6

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/11/2007
Date Completed: 10/11/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Overcast 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
48			24		0.3		GRAVELLY SAND (SW), orangish brown, well graded, fine-coarse, trace silt, loose, wet.	
49								
50								
51			24		0.1			
52							GRAVEL (GP), orangish brown, poorly graded, loose, trace sand, wet.	
53			24		0.8		SAND (SP), gray, poorly graded, fine-coarse, medium loose, trace gravel, moist.	
54								
55			24		0.7			
56								
57			24	GM-80, 55 to 60 feet, 10/11/07, 16:50	1.0			
58								
59			24		0.4			
60								
61			24		0.1		SAND (SW), gray, well graded, coarse, loose, wet.	
62								
63			24		0.0			

Remarks:

ARCADIS

Soil Boring Log

Boring No.: GM-81

Sheet: 5 of 6

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/11/2007
Date Completed: 10/11/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Overcast 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
64			24	SD	0.5		SAND (SW), gray, well graded, coarse, loose, wet.	
65								
66			24		0.7			
67								
68			24		1.0			
69								
70			24		0.8		SILTY CLAY (CL), dark gray, very stiff-hard, trace gravel, low plasticity, dry.	
71								
72			24		1.2		GRAVELLY SAND (SW), gray, well graded, loose, wet.	
73								
74			24		1.0		SAND (SW), gray, well graded, loose, some gravel, wet.	
75				SD				
76			24		0.9			
77								
78			24		0.3			
79								

Remarks:

SOIL BORING LOG_BORING LOG.GPJ_ARCADIS.GDT_2/13/08

ARCADIS

Soil Boring Log

Boring No.: GM-81

Sheet: 6 of 6

Project Name: General Motors Corporation
Project Number: OH000294.0010.00002
Project Location: Moraine, Ohio

Date Started: 10/11/2007
Date Completed: 10/11/2007

Logger: L. Greene
Editor: J. Hunt
Weather Conditions: Overcast 60's

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details
80							SAND (SW), gray, well graded, loose, some gravel, wet.	
81			24		1.0		SAND (SP), gray, poorly graded, medium loose, trace gravel, wet.	
82			24		0.1		SANDY GRAVEL (SW), gray, well graded, loose, wet (medium-coarse gravel).	
83								
84			24		0.0			
85								
86			24		0.7		SAND (SW), gray, well graded, loose, some gravel, fine-coarse, wet.	
87				GM-80, 85 to 90 feet, 10/11/07, 18:50				
88			24		1.6			
89								
90								
91								
92								
93								
94								
95								

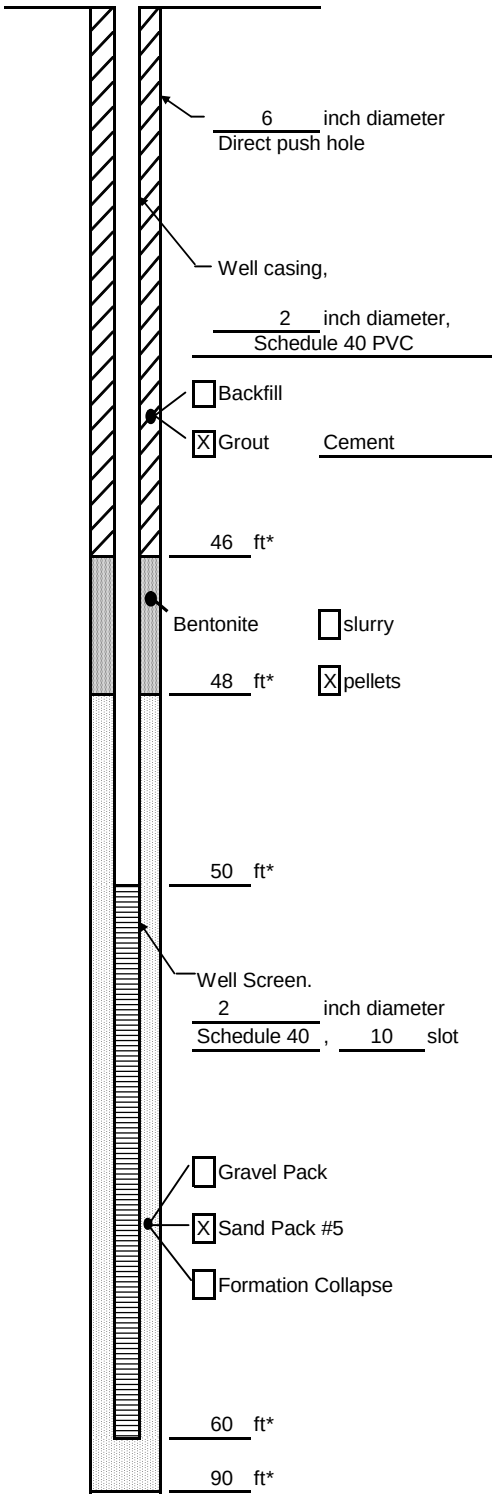
Remarks:

SOIL BORING LOG BORING LOG.GPJ ARCADIS.GDT 2/13/08

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-81

Town/City Moraine

County Montgomery State Ohio

Permit No. N/A

Land-Surface (LS) Elevation and Datum:

715.800 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 10/16/2007

Drilling Method Rotosonic

Drilling Contractor Frontz Drilling

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump - surge with pump

10/18/2007

Fluid Loss During installation 100 gallons

Water Removed During Development ~140 gallons

Static Depth to Water 13.02 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.7 hours

Yield 4 gpm Date 10/18/07

Specific Capacity NM gpm/ft

Well Purpose GW Monitoring

Remarks

Time: 1150 1153 1156 1159 1202

pH: 7.45 7.47 7.48 7.49 7.49

Conductivity: .858 .867 .866 .867 .868

Turbidity: 901 467 348 257 109

Temperature: 14.8 14.1 14.0 13.9 13.8

Prepared by L. Greene

KEY TO SYMBOLS

Symbol **Description**

Strata symbols

High plasticity clay (CH -- C)

Inorganic silts and clays (CH-MH -- MC)

Low plasticity clay (CL -- O)

Low-high plasticity clays (CL-CH -- CO)

Silty low plasticity clay (CL-ML -- CZ)

Fill (FILL -- F)

Clayey gravel (GC -- O8)

Clayey sand and gravel (GC-SC -- DO8)

Silty gravel (GM -- Z8)

Silty clayey gravel (GM-GC -- ZO8)

Silty sand and gravel (GM-SM -- 08)

Poorly graded gravel (GP -- G)

Poorly graded gravel with clay (GP-GC -- DGO3)

Poorly graded gravel with silt (GP-GM -- DGZ3)

Poorly graded gravel and sand (GP-SP -- :G)

Well graded gravel (GW -- 83)

Symbol **Description**

Well graded gravel with clay (GW-GC -- 83O)

Well graded gravel with silt (GW-GM -- 83Z)

Well graded gravel/ clayey gravel (GW-GP -- 83G)

Well graded gravel and sand (GW-SW -- 83D)

Elastic silt (MH -- M)

Silt (ML -- Z)

High plasticity organic clays (OH -- 5)

Low plasticity organic silts (OL -- 4)

Basalt (or generic rock) (ROCK --])

Clayey sand (SC -- DO)

Silty sand (SM -- 0)

Poorly graded clayey silty sand (SM-SC -- :ZO)

Poorly graded silty fine sand (SM-ML -- :Z)

Poorly graded sand (SP -- :)

Poorly graded sand with clay (SP-SC -- :R)

Poorly graded sand with silt (SP-SM -- :=)

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Well graded sand (SW -- D)
	Well graded sand with clay (SW-SC -- DR)
	Well graded sand with silt (SW-SM -- D=)
	Interlayered well/poorly graded sand (SW-SP -- D:)
	Silty sandy clay (VC -- 0C)
	Variable gravel and silty sand mix (VG -- 0G)
	Variable sand and silt mix (VS -- 0Y)
	Agglomerate (\)
	Blank (E)
	CH fraction (U)
	CL fraction (R)
	Claystone (H)
	Cobble frac (A)
	Cobbles (B)
	Competent (K)
	Dolomite (()

Symbol	Description
	Extra fine gravel (3)
	Fine gravel (Y)
	Frac rock (X)
	Granite (/)
	Gravel (8)
	Gravel frac (9)
	Intrusive (V)
	Limestone (L)
	Metamorphic rocks ())
	MH fraction (?)
	ML fraction (=)
	Mudstone (7)
	Organics (J)
	Paving (P)
	Peat (Q)
	Sand (S)
	Sandstone (N)
	Schist ($)

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Sediment (2)
	Shale (>)
	Shell fragments (&)
	Siltstone (I)
	Topsoil (T)
	Weathered (W)
	EXTRA: alternating dot-dash pattern (|)
	EXTRA: dashed horizontal lines (%)
	EXTRA: medium closely-spaced dots (6)
	EXTRA: narrow-spaced horizontal dashed lines (-)
	EXTRA: random dot pattern (1)
	EXTRA: regularly spaced "V"'s (<)

Symbol	Description
	EXTRA: very narrow cross-hatching (!)
	EXTRA: dashed lines with 3 dots above each dash (.)
	EXTRA: large widely-spaced dots (*)
	EXTRA: small filled triangles ([)
	EXTRA: semi-random dot pattern (:)
	EXTRA: semi-random triangle pattern (')
	EXTRA: zigzag lines (#)
	EXTRA: grass pattern ({)
	EXTRA: tilde sign (})
	EXTRA: randomly arranged square boxes (;)
Misc. Symbols	
	Drill rejection (BOTTOM)
	Boring continues (CONTINUE)
	Water table during drilling (LWATERNF)
	Water table at boring completion (LWATER)

KEY TO SYMBOLS

Symbol	Description
Misc. Symbols	
	Water table during drilling (WATER)
	Water table at boring completion (FWATER)
	Water table during drilling (RWATERNF)
	Water table at boring completion (RWATER)
	(RTARROW)
	Depth to caving (CAVED)
	(CIRCLE)
	(FCIRCLE)
	(HATCHED)
	(XHATCHED)
	(FILLED)
	(BARGRAPH)
	(NOMARKER)
Soil Samplers	
	Auger (A)
	Bulk sample taken from 6 in. auger (B)
	California sampler (C)

Symbol	Description
	Direct Push (D)
	Corps of Engineers sampler (E)
	Bulk/Grab sample (F)
	Piston (I)
	Pitcher (L)
	Denison (O)
	Standard penetration test (P)
	Rock core (R)
	Undisturbed thin wall Shelby tube (S)
	No recovery (X)
	EXTRA: (downward pointing white triangle on black background) (G)
	EXTRA: (double vertical lines) (H)
	EXTRA: (downward pointing outline arrow) (J)
	EXTRA: (downward pointing filled arrow) (K)
	EXTRA: (split diagonally left to right, white on left, black on right) (N)
	EXTRA: (diagonal line from right to left) (T)

KEY TO SYMBOLS

Symbol Description

Soil Samplers

EXTRA: (generic sampling interval)
(U)

EXTRA: (generic sampling interval)
(V)

Monitor Well Details

flush-mount cover
(COVER -- FLUSH,)

riser with cover and protective casing
(CASED RISER -- PROTECT,)

pipe riser
(RISER -- BLANKPVC,)

covered riser
(COVERED RISER -- CAPPED,)

recessed cover set in concrete
(RECESSED -- RECESSED, 13)

top of well, recessed pipe
(SUNKEN -- SUNKEN, 13)

protective casing set in concrete
(CASED -- CASED, 13)

concrete seal
(CONCRETE -- BLANKPVC, 13)

gravel backfill
(GRAVEL -- BLANKPVC, *1)

pipe set in cement grout w/ protective casing
(CEMENT CASED -- CASED, E)

unknown backfill type, blank PVC
(INDETERMINATE -- BLANKPVC, E)

assorted cuttings
(CUTTINGS -- BLANKPVC, O)

bentonite slurry
(BENTONITE -- BLANKPVC, P)

Symbol Description

bentonite pellets
(PELLETS -- BLANKPVC, I)

silica sand, blank PVC
(SAND -- BLANKPVC, 6)

slotted pipe w/ sand
(SLOTTED -- SLOTDPVC, 6)

slotted pipe, unknown backfill
(SLOT/NO FILL -- SLOTDPVC, E)

stylized slotted pipe with no back-fill
(STYLIZED SLOT -- ALTSLOT, E)

endcap on pipe packed in sand
(ENDCAP -- ENDCAP, 6)

no pipe, filler material
(END -- ,])

no pipe, sealed
(SEALED -- , P)

silica sand, no pipe (end plug)
(SAND PLUG -- , 6)

end of well installation
(BLANK -- , E)

Sample Destinations

Composite Sample to Lab
(C)

Grab Sample to Lab
(G)

Split-Spoon not Analyzed
(S)

ARCADIS

Appendix E

In-Situ Reactive Zones Performance Results for 2007

In-Situ Reactive Zones Performance Results

As described in Section 3.1.1 of the Site-Wide Groundwater Monitoring Report for 2007 (Monitoring Report), the carbon solution delivery network consists of four reactive zones, RZ-1, former RZ-2 (in operation from 1999 to 2002), and RZ-3 (East and West) and RZ-4 (East and West). During 2007, a carbon solution was introduced into the groundwater through introduction points at RZ-1, RZ-3 (East and West), and RZ-4 (East and West) shown on Figures 12, and 14 of the Monitoring Report, respectively. No carbon was introduced into RZ-2 (Figure 13 of the Monitoring Report) in 2007. RZ-1 was originally installed in 1999 as a nine well barrier downgradient of the Former Oil House Area source area, and then based on the performance of the ERD technology, RZ-1 was expanded into portions of the Former Oil House Area source area by the addition of 12 introduction points in 2002. RZ-3 was originally installed in 1999 and has been operated as a cut-off barrier (30 wells in RZ-3 East and 11 wells in RZ-3 West) to mitigate further downgradient VOC migration. In 2005, RZ-3 East was modified by the addition of 5 introduction wells (RZ-3RR through RZ-3VV) and cessation of introduction in 5 existing wells (RZ-3MM through RZ-3QQ) to improve performance at the far eastern edge of the plume. Using data obtained from the Supplemental Groundwater Investigation conducted in 2006, RZ-4 was designed and installed to address VOC concentrations present west of RZ-3 West. RZ-4 consists of 15 introduction wells, 7 wells in RZ-4 West and 8 wells in RZ-4 East. The RZ-4 West wells are located in the southeast corner of the closed South Settling Lagoon and the RZ-4 East wells are located north of Landfill L1 and west of the Waste Pile/Staging Area. Introductions to RZ-4 began in August 2006. The following sections discuss the monitoring completed to assess the effectiveness of the in-situ reactive zones and the results of this monitoring.

Reactive Zone Monitoring

Operation of the reactive zones was monitored through the collection of field parameter measurements, and laboratory analyses of biogeochemical indicator parameters and volatile organic compounds (VOCs), according to the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002). Field parameter measurements included: pH, specific conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and temperature. Biogeochemical parameters included manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon (TOC), chlorides, light hydrocarbons (ethane and ethene), and methane. The monitored VOCs included: benzene, toluene, ethylbenzene, xylenes, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and trans-1,2-dichloroethene (trans-1,2-DCE). The VOC data collected are presented in Tables 10 through 15 of the Monitoring Report. The bioattenuation parameter data is presented on Tables 16 through 21. An evaluation of pertinent monitoring data is presented in the following sections.

The operational monitoring data collected, as indicated above, can be broadly categorized as: (i) "primary" operational monitoring data, which tracks the actual operation of the remediation system and determines whether the operation is proceeding as planned, and (ii) "secondary"

operational monitoring data, which assists in the occasional troubleshooting of the system. The secondary data becomes important in the event that degradation of the VOCs is not proceeding as expected, and the cause cannot be determined from the primary operational monitoring data. The primary operational monitoring data includes pH, TOC, VOCs, ethene, ethane, and methane. Secondary operational monitoring data includes dissolved manganese, dissolved iron, sulfate, and ORP. The primary operational data for select monitoring wells is discussed below and presented graphically on Figures E-1 through E-13.

The purpose of upgradient and downgradient monitor wells, separate from the introduction points within the reactive zones, is to collect and compare data before and after biodegradation by the stimulated microbial population. Locations of these wells are shown on Figures 12 through 14 of the Monitoring Report.

- At RZ-1, GM-29 is designated as the upgradient monitoring well, while GM-28 is designated as the downgradient monitor well. These wells are ideally positioned, relative to estimated groundwater travel time, approximately 100 days upgradient and 100 days downgradient from the original introduction wells installed to create the RZ-1 introduction zone (line of nine introduction wells, RZ-1A through 1I, placed in an East-West direction). GM-29 is located within the area of the RZ-1 expansion wells (twelve introduction wells placed in two rows north of the original nine wells, RZ-1J through 1U). Therefore, GM-23 is also used as an upgradient monitoring point because this well is located within the source area.

- At former RZ-2, four monitor wells (ME-1 [abandoned], ME-2, ME-4, ME-5 [abandoned]), screened at the top of the water table, were used for introduction points in this area during the initial phase of this remedial action. After a period of introduction in all ME-series wells, it was decided to stop introducing into the most upgradient (ME-6) and downgradient (ME-3) wells so they could be used for RZ-2 monitoring. Groundwater quality was also monitored at GM-31, which is an upper aquifer monitoring well screened at the top of the regional clay till, below the RZ-2 introduction zone. RZ-2 has been inactive since 2002.

- For RZ-3 West, monitor wells EAST and GM-19S are used as the upgradient wells. It should be noted that as of August 2006 GM-19S is now the downgradient monitoring well for RZ-4 East. At RZ-3 West, GM-32, which is within the introduction zone due to its location being constrained by the proximity of Landfill L1, is designated as the downgradient monitor well. Results at GM-32 are analyzed with caution, as this well is located in the early stages of the reactive zone due to its proximity to the introduction points. Annual data collected from GM-8 and GM-6, which are further downgradient from the introduction zone and located along the west side of Landfill L1, have also been evaluated with respect to monitoring the performance of RZ-3 West. At RZ-3 West, carbon solution is introduced in thirty wells, RZ-3A through RZ-3DD.

- For RZ-3 East, GM-22 is designated as the upgradient monitor well and GM-21 is designated as the downgradient monitor well. At RZ-3 East, carbon solution is introduced in the original wells, RZ-3FF through RZ-3KK, and five new wells, RZ-3RR through RZ-3VV.

- For RZ-4 East monitoring well EAST is used as the upgradient monitoring well and GM-19S is used at the downgradient monitoring well. For RZ-4 West monitoring well pair GM-63 and GM-64 are used as the downgradient monitoring wells. This well pair has screened intervals in the intermediate and deep portions of the upper aquifer. Monitoring well W-4-S is also used as a sidegradient monitoring well for RZ-4 West.

In 2007, in general, a target volume of 800 to 900 gallons of 5 percent molasses solution (approximately 17,400 milligrams per liter [mg/L] TOC) was injected into the introduction wells of RZ-1 during February, March, May, June, August, September, October, November, and December. No carbon was injected in RZ-2 during 2007. The introduction wells at RZ-3 West and RZ-3 East introduction wells RZ-3FF through RZ-3KK received a target volume of approximately 1,600 gallons of 5 percent molasses solution (approximately 17,400 mg/L TOC) monthly in general from January through December 2007. The RZ-3 East replacement wells (RZ-3RR through RZ-3VV) received a target volume of approximately 1,600 gallons of 2.7 percent molasses solution (approximately 9,405 mg/L TOC) in 2007. Introductions began in RZ-4 in August 2006 and a target volume of 3,000 gallons of 2 percent molasses solution (approximately 6,960 mg/L TOC) was injected into the RZ-4 East wells from August 2006 through December 2007. Reactive Zone RZ-4 West was in operation from August 2006 through August 2007. Operation of RZ-4 West is currently on hold due to observations of moderate levels of dissolved methane in groundwater at performance Monitoring Well GM-64 and field observations which indicate the presence of excess gas build-up at RZ-4 West injection well-heads (likely a mixture of methane and carbon dioxide). These observations indicate the need to assess the issues associated with the continued operation of RZ-4 West. This assessment will be completed prior to continuing operation of RZ-4 West. Table 23 in the Monitoring Report presents the carbon solution introduction volumes for different introduction wells in 2007.

Analysis of Primary Operational Monitoring Data

The primary operational data is comprised of a limited number of variables that are monitored at a frequency necessary to supply the information required for the operation of the remediation system. The entire data set is presented in Tables 10 through 21 of the Monitoring Report. These tables are organized such that upgradient and downgradient changes can be easily identified for each reactive zone from 1999 to 2007. Figures E-1 through E-13 present the primary operational data (pH, TOC, methane, VOCs, ethane, and ethene) graphically for monitoring wells used for monitoring the effectiveness of each of the IRZs (GM-23, GM-28, GM-29, ME-6, GM-31, ME-3, GM-32, GM-8, GM-6, GM-21, GM-19S, GM-63, and GM-64). The graphs are organized to allow a simple comparison of the trends in each monitoring well for pH, TOC, methane, VOCs, ethene, ethane, and total parent-daughter compound molarity. A discussion of the primary operational data is provided below.

pH

The preferred pH range for reductive dechlorination is between 6 and 8, and the acceptable pH range extends from 5 to 9. All pH measurements collected in 2007 from upgradient and downgradient monitoring wells were within the preferred pH range.

Total Organic Carbon/Methane

At RZ-1, the reductive dechlorination process is continuing effectively even though the TOC levels at the designated downgradient well, GM-28, is only 4 to 7 mg/L which is below background levels. Considering the differences in the VOC concentrations at the upgradient wells GM-29 and GM-23, and the VOC concentrations at GM-28, the RZ is performing as an effective barrier, reducing the total target VOC concentrations from approximately 1,858 micrograms per liter (µg/L) in GM-29 and 15,565 µg/L in GM-23 (September 2007) to less than 3 µg/L at GM-28 (September 2007). Based on the TOC values in RZ-1, the carbon has been consumed at a high rate and the reactive zone ends at some location in between the RZ-1 introduction wells and GM-28. Methane concentrations in GM-28 continue to be sustained above background concentrations which provides evidence that methanogenesis is occurring and further indicating that the desired reducing conditions are being sustained in the reactive zone. TOC concentrations at GM-29 have increased slightly since introductions began at the RZ-1 expansion wells and methane concentrations in GM-29 continue to remain well above the background levels observed in this monitoring well in the 1999 sampling before the start of carbon introductions.

As indicated previously, no carbon was injected in the former RZ-2 wells since 2002, resulting in an overall reduction of TOC in this area. Additionally methane concentrations in this area have reduced to background levels.

TOC and methane concentrations at RZ-3 West downgradient well GM-32 were sustained above background levels through 2007. TOC concentrations observed at further downgradient wells GM-8 and GM-6 showed little change in TOC and methane concentrations from 2006 to 2007. Due to the distance/travel-time from RZ-3 West to downgradient well GM-6, TOC concentrations above background levels would not be expected in this well. TOC concentrations observed at GM-21, which is the downgradient well for RZ-3 East, have remained above background levels, and dissolved methane concentrations have climbed to 30,000 µg/L for the final two quarters of 2007, indicating that the methanogenic conditions required to support complete reductive dechlorination are being maintained.

Analytical results from GM-19S, the downgradient monitoring well for RZ-4 East, exhibit a common ERD signature. An initial spike in TOC (September 2006 sampling event) above background concentrations followed by a spike in total parent-daughter ethene molarity (indicating that target compounds may have been de-sorbed and dissolved from the aquifer soil-matrix), and increasing methane concentrations indicating that that microbial community is

actively consuming carbon, and there is adequate hydrogen production to support methanogenesis. TOC and methane trends in monitoring wells GM-63 and GM-64 (downgradient of RZ-4 West) began to exhibit characteristic ERD degradation sequences with TOC peaking in June 2007, and dissolved methane concentrations climbing to 20,000 µg/L in the September 2007 sampling event (see figures E-12 and E-13, respectively). Substrate introductions to RZ-4 West were put on hold after the August injection event due to these observations of dissolved methane and field observations which indicate the presence of excess gas build-up at RZ-4 West injection well-heads (likely a mixture of methane and carbon dioxide). These observations indicate the need to assess the issues associated with the continued operation of RZ-4 West. This assessment will be completed prior to continuing operation of RZ-4 West.

VOC Analytical Results

The groundwater analytical data for the site-specific list of VOCs are presented in Table 10 for RZ-1, Table 11 for RZ-2, Table 12 for RZ-3 West, Table 13 for RZ-3 East, Table 14 for RZ-4 West, and Table 15 for RZ-4 East in the Monitoring Report. Additionally, the degradation of PCE and TCE (parent compounds) to cis-1,2-DCE, vinyl chloride (daughter products), and ethene and ethane (end products) are provided with the pH, TOC, and methane data for the upgradient monitor wells at RZ-1 (GM-29 and GM-23) and downgradient monitor wells in RZ-1, RZ-2, RZ-3 West, RZ-3 East, RZ-4 West, and RZ-4 East on Figures E-1 through E-13, respectively.

The following bullets summarize the observations and trends evident among the four reactive zones at the GM Moraine Facilities which indicate that enhanced reduction of the targeted chlorinated VOCs is progressing as a result of the carbon introduction process:

- Comparing the 2007 profiles of chlorinated compounds in the upgradient and downgradient wells in RZ-1 (Figures E-1 and E-3, respectively), it was found that degradation of the chlorinated VOCs was sustained throughout 2007. With the exception of the March 2007 analytical results (vinyl chloride detected at 2.8 µg/L), concentrations of PCE, TCE, vinyl chloride, and cis-1,2-DCE in GM-28 were all below MCLs. Concentrations of the final end products (ethene and ethane) in 2007 have remained low, supporting the conclusion that most of the VOCs originally present downgradient of the RZ-1 barrier have degraded. The total chlorinated VOC concentrations in GM-29 have remained relatively constant in 2007 as compared to 2006 (averaging approximately 1,756 µg/L in 2006 and 1,759 µg/L in 2007). Elevated levels of ethene observed at GM-29 from 2005 and 2006 have persisted in 2007 (1,600 µg/L in 2005, 750 µg/L in 2006, and 675 µg/L in 2007). The elevated ethene concentration is most likely due to the carbon introduction at the RZ-1 expansion wells (RZ-1J through RZ-1U), which are located west and north of GM-29. The introduction of carbon at these wells is likely resulting in a redox recovery zone near GM-29 and the presence of higher ethane, ethene and methane concentrations noted in GM-29. Total chlorinated VOC concentrations in GM-23 decreased from 15,835 µg/L in 2006 to 7,662 µg/L in 2007. This well is upgradient to the original RZ-1 barrier and is within the zone of influence of carbon

introductions conducted in the Former Oil House Area in wells OW-1 through OW-3 which resulted in solubilizing previously adsorbed VOCs to be treated by RZ-1.

- The concentrations of PCE, TCE, cis-1,2-DCE, and vinyl chloride at downgradient monitoring well ME-3 in former RZ-2 decreased to non-detectable levels by the end of 2002. No carbon was injected since 2003. The latest data at ME-3 show total chlorinated VOC concentrations of 10.82 µg/L, with the maximum contributor being PCE (concentration at 5.2 µg/L). Total chlorinated VOC concentrations in ME-3 in 2007 were similar to those observed in 2006.

- At RZ-3 West, concentrations of PCE, TCE, cis-1,2-DCE, and vinyl chloride monitored at GM-32, located within the influence of the introduction zone, remained at non-detectable levels in 2007 (Table 12 of the Monitoring Report). It is important to note that GM-32 is close to the introduction zone, and the fact that PCE, TCE, cis-1,2-DCE, and vinyl chloride are below detection at GM-32 indicates the dechlorination is proceeding very rapidly in this area.

- Data from monitoring wells GM-8 and GM-6, which are located further downgradient of RZ-3 West along the west side of Landfill L1, are also being considered to evaluate the effect of carbon introductions at RZ-3 West. Concentrations of chlorinated VOCs at GM-8 only increased above laboratory reporting limits in the 1st quarter (March) 2007 sampling event, with cis-1,2-DCE detected at 1.3 µg/L and vinyl chloride detected at 2.8 µg/L. Though GM-6 is located further downgradient, concentrations of PCE and TCE have consistently decreased since 1998. It is expected that consistent carbon introduction at RZ-3 West will eventually reduce the concentrations of all chlorinated VOCs at GM-6. It is important to realize that though GM-6 is located in the redox recovery zone for RZ-3 West (because of the distance/travel time from the introduction zone), the effectiveness of the enhanced reductive dechlorination in this downgradient area may be adversely affected by the proximity of GM-6 to groundwater recovery well TW-2 which draws fresh, oxygenated groundwater into the area, thereby limiting the ability to develop the desired reducing conditions.

- Total chlorinated VOC concentrations in monitoring well GM-21, which is the downgradient monitor well for RZ-3 East, have remained significantly lower since the installation of Reactive Zone introduction wells RZ-3RR through RZ-3VV.

- Data from monitoring well GM-19S, downgradient of RZ-4 East has exhibited a strong decreasing trend in total chlorinated VOC concentrations falling from 607 µg/L in December 2006 to less than 3.7 µg/L in December 2007.

- The concentrations of VOCs at the influent to the air-stripper tower are being monitored on a monthly basis since the startup of the air stripper unit on January 31, 1996 (Figure 5 of the Monitoring Report). The first monitoring event was in February 1996, and the introduction of carbon in RZ-3 commenced in December 1999. On reviewing the data presented in Figure 5, it can be observed that the concentrations of VOCs in 2007 remained consistent with the 2006 monitoring data.

Conclusions

The following observations and conclusions can be made:

- Existing aquifer conditions have been converted to more reducing conditions within and downgradient of the reactive zones through the introduction of a carbon source, as evidenced by the changes in field and bioattenuation parameters;

- The target compounds (PCE and TCE) have been effectively reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to end products (ethene and ethane) based on a review of the VOC results;

- Levels of vinyl chloride were consistently low to non-detect in all downgradient wells, indicating degradation of cis-1,2-DCE to ethene and ethane;

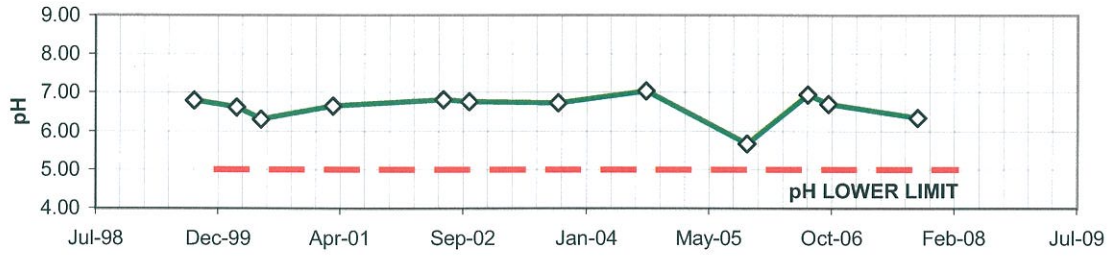
- The primary and secondary operational monitoring data from RZ-2 will continue to be evaluated to determine whether or not re-establishment of or enhancements to RZ-2 is necessary.

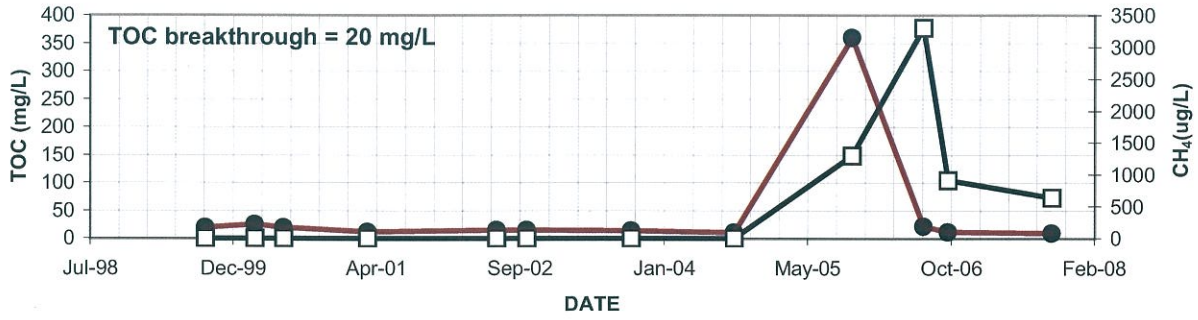
- VOC concentrations at RZ-3 East (GM-21) have decreased in response to carbon introductions, since the enhanced design of the introduction system in RZ-3 East in 2005. TOC levels, as well as other primary and secondary operational monitoring data, indicate that the effects of carbon introductions have reached the area monitored by GM-21.

- Carbon introductions to RZ-4 West were put on hold after the August injection event because of the observation of excess gas build-up at RZ-4 West injection well-heads and the presence of dissolved methane in performance monitoring wells. Additional assessment will be completed prior to continuing operation of RZ-4 West.

Overall, the process of enhanced reductive dechlorination at this site has been successful in achieving the desired reduction of VOC concentrations. In 2008, GM will continue to evaluate if modifications to the RZs are needed based on water quality and performance monitoring data.

Figure E-1
GM-23 ERD Analysis





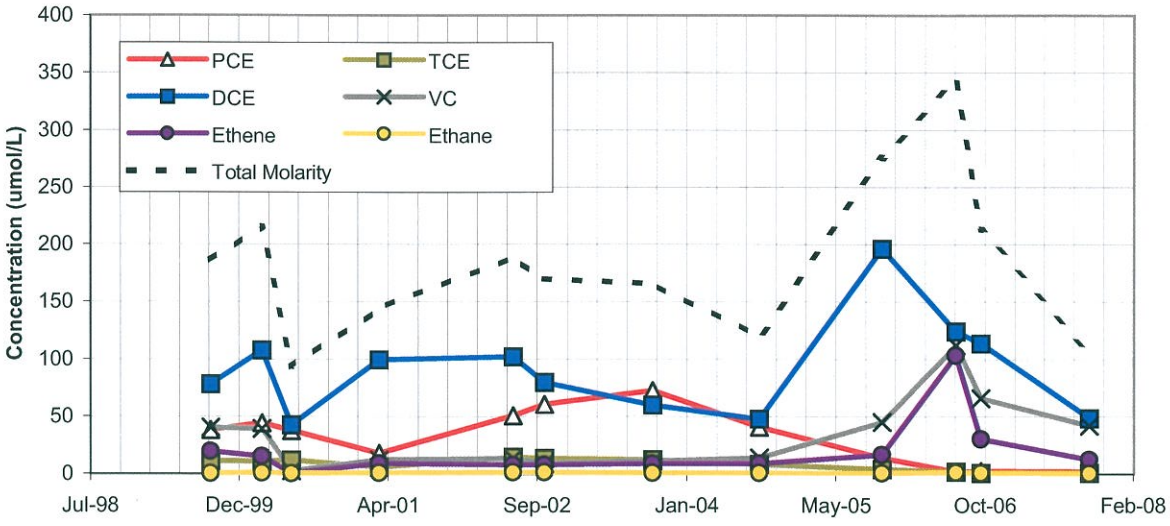
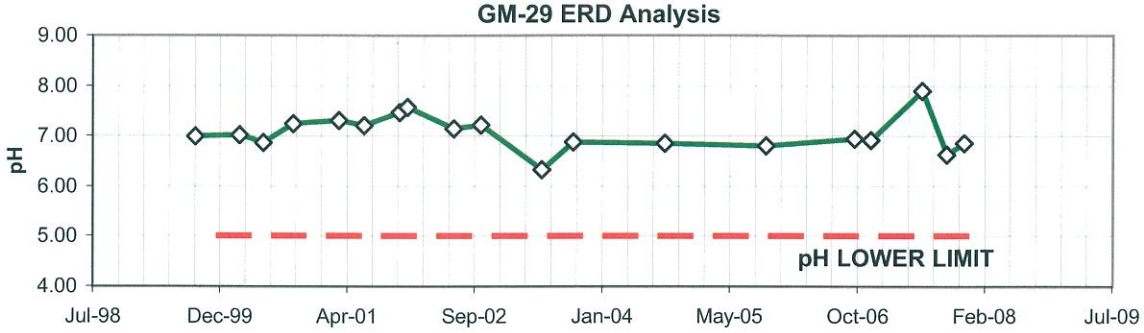
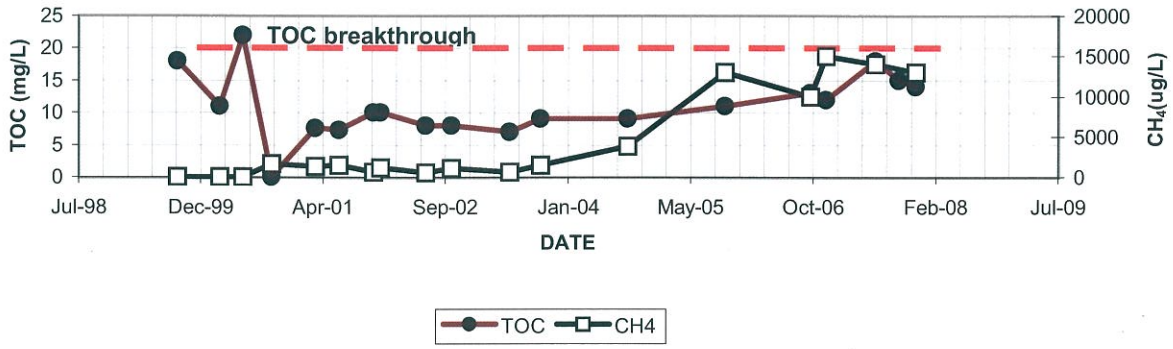


Figure E-2
GM-29 ERD Analysis



Dissolved CH_4 and TOC Trends in Monitoring Well GM-29
General Motors Corporation
Moraine, Ohio



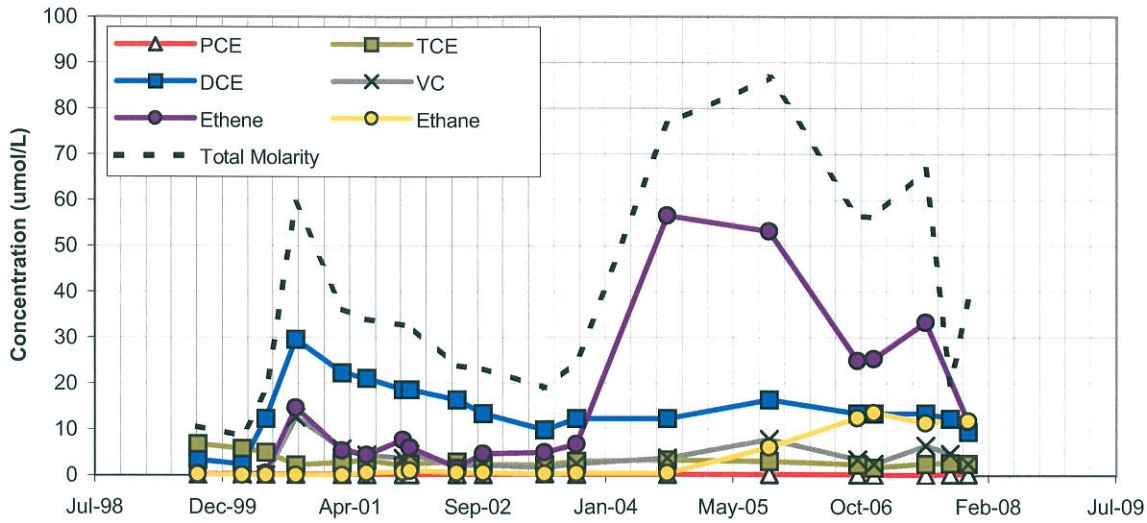
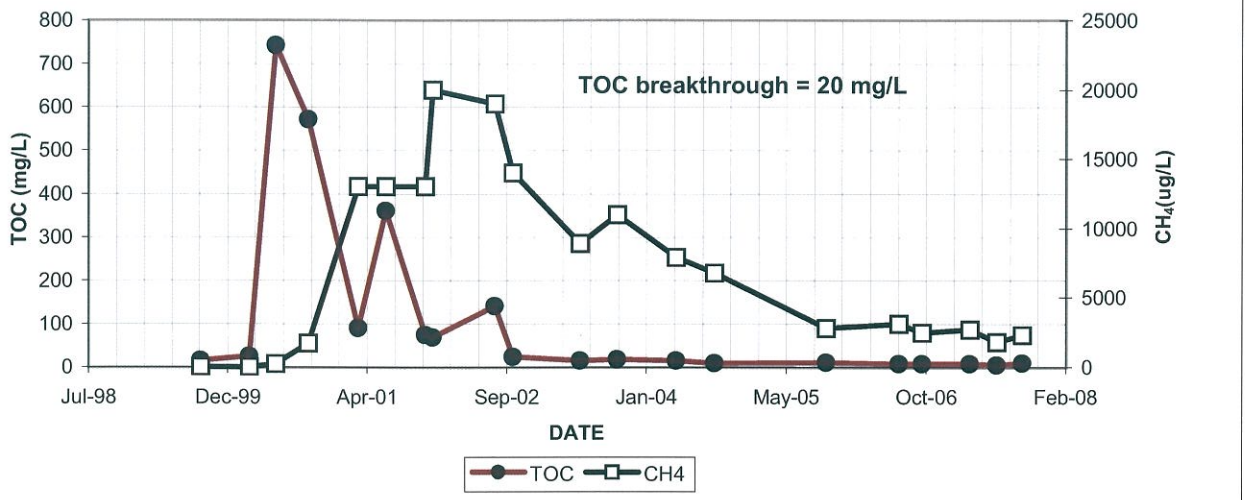


Figure E-3
GM-28 ERD Analysis



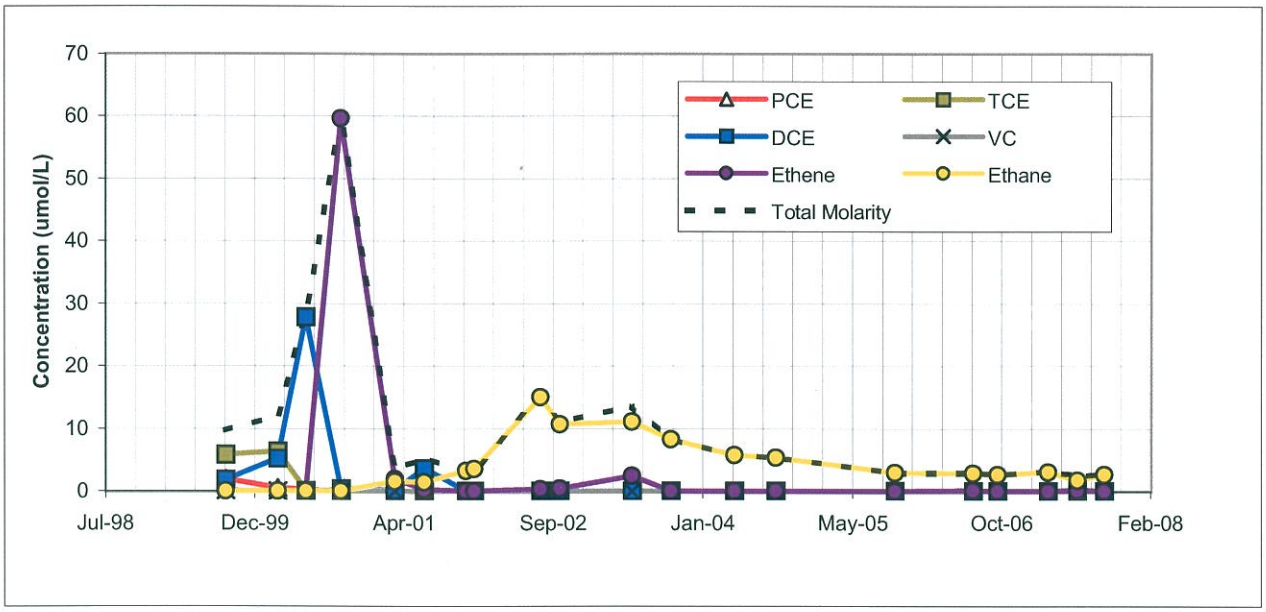
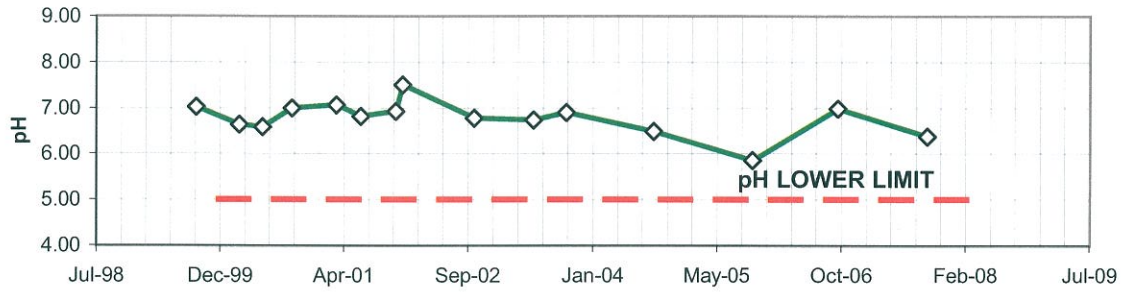
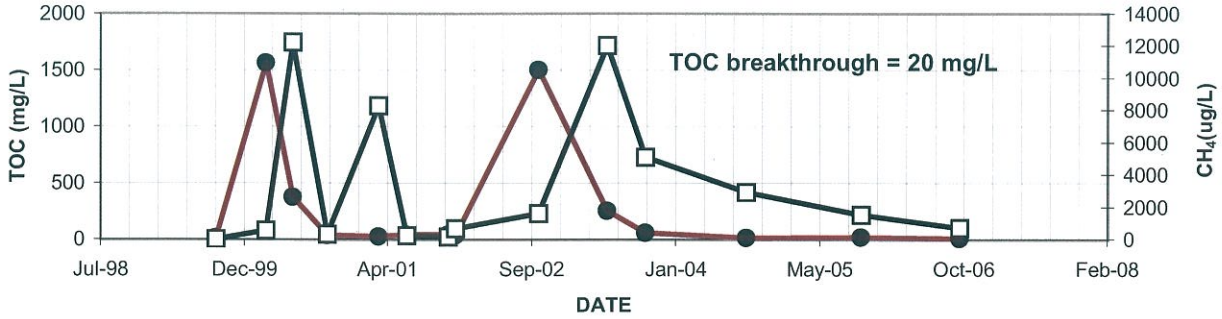


Figure E-4
ME-6 ERD Analysis





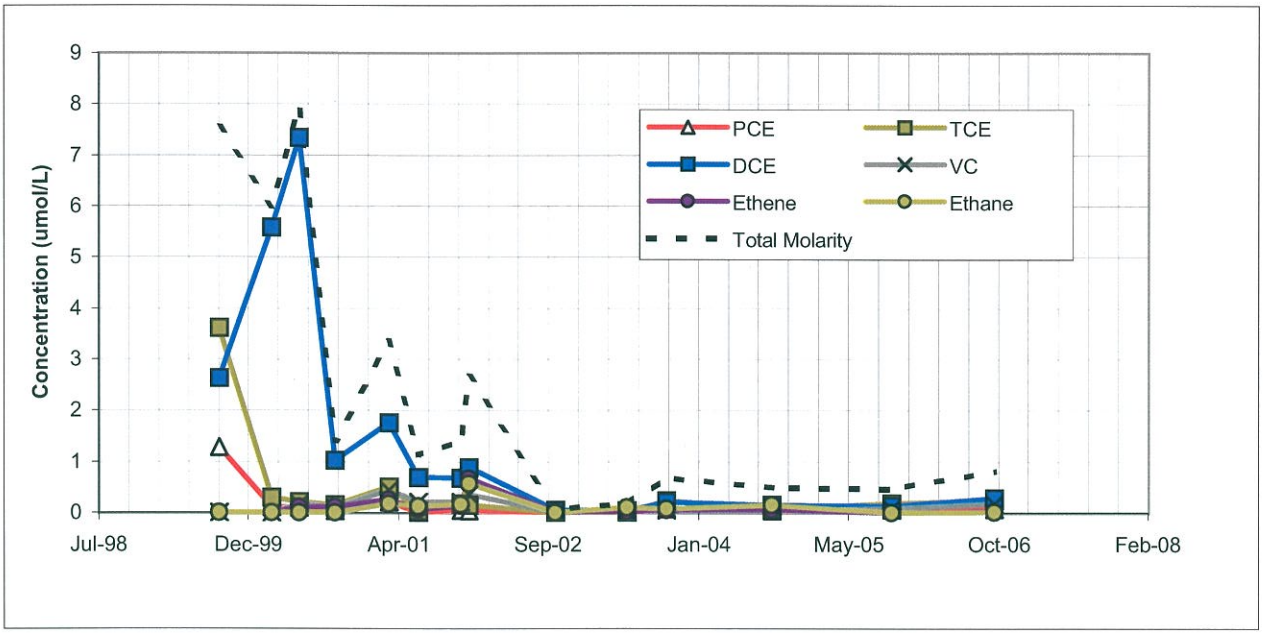
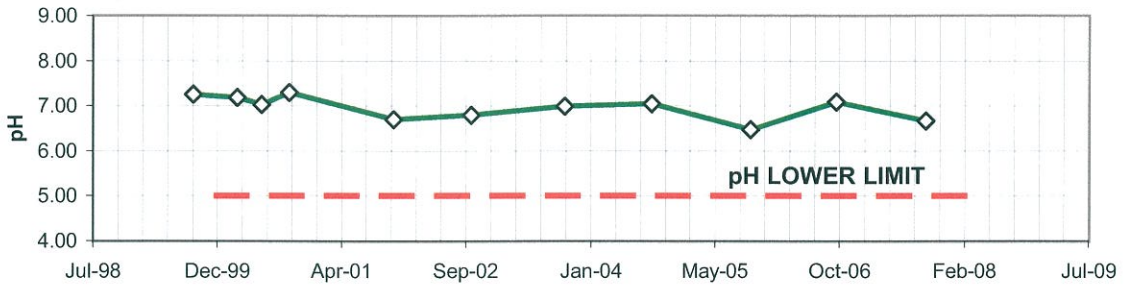
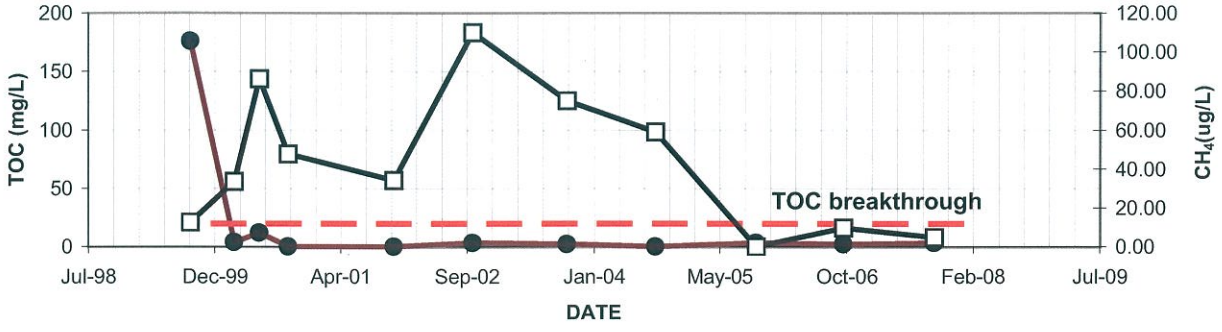


Figure E-5
GM-31 ERD Analysis





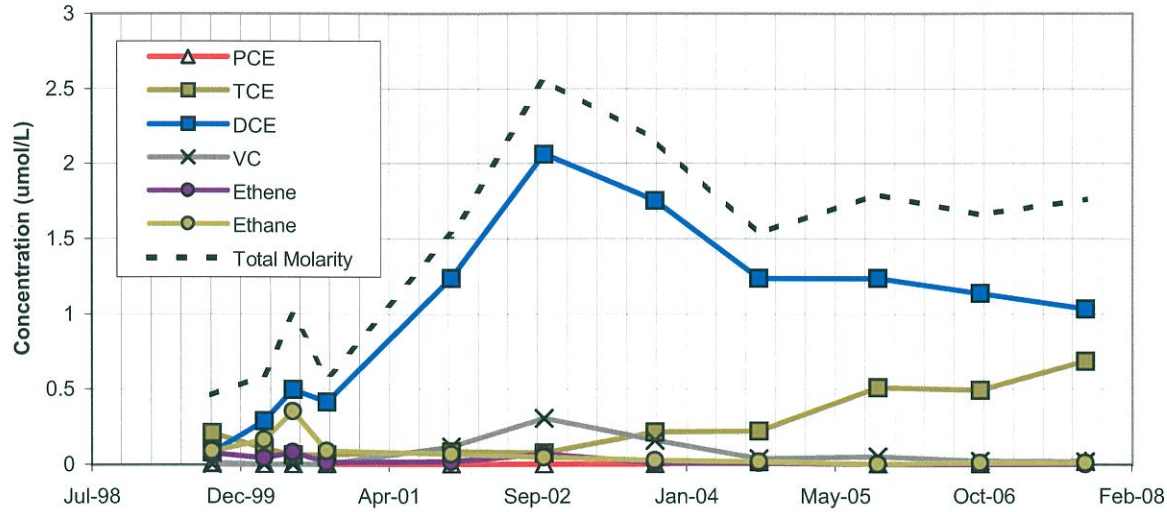
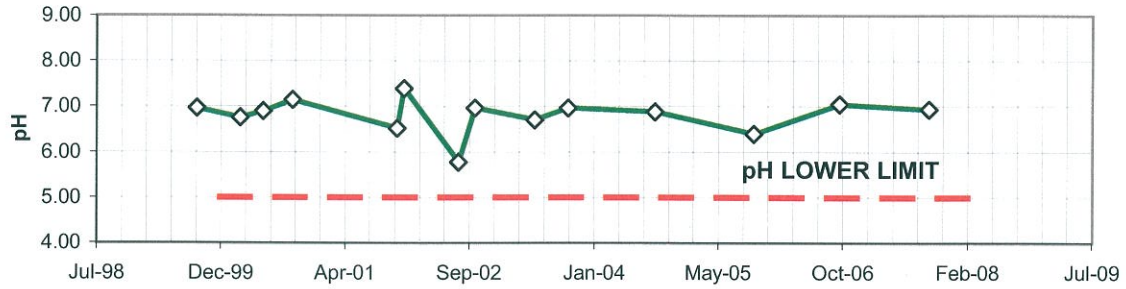
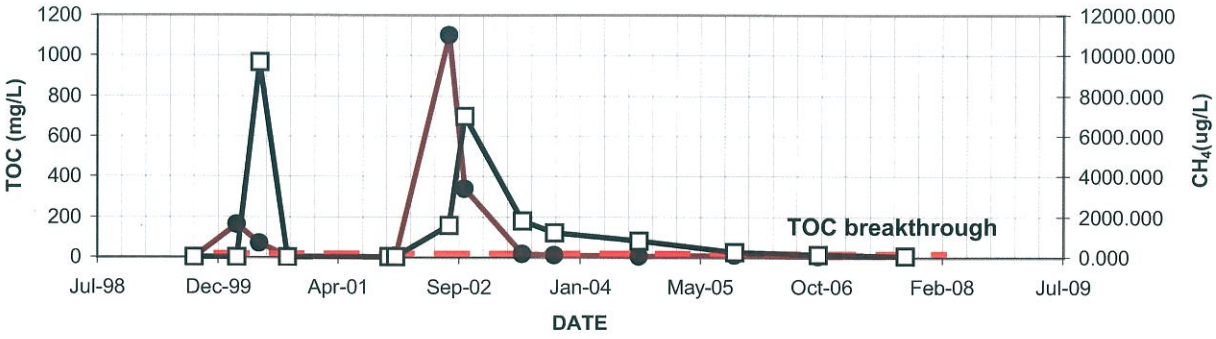


Figure E-6
ME-3 ERD Analysis





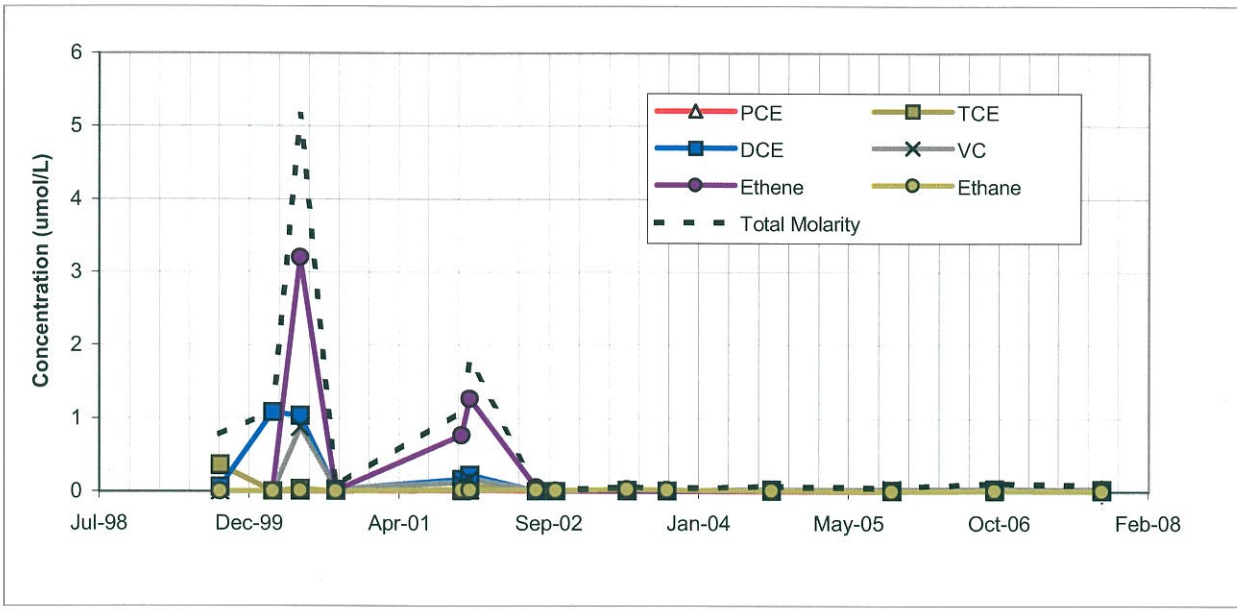
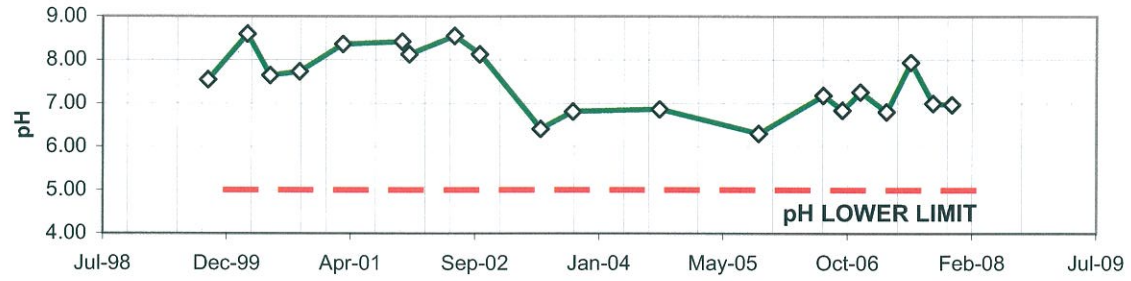
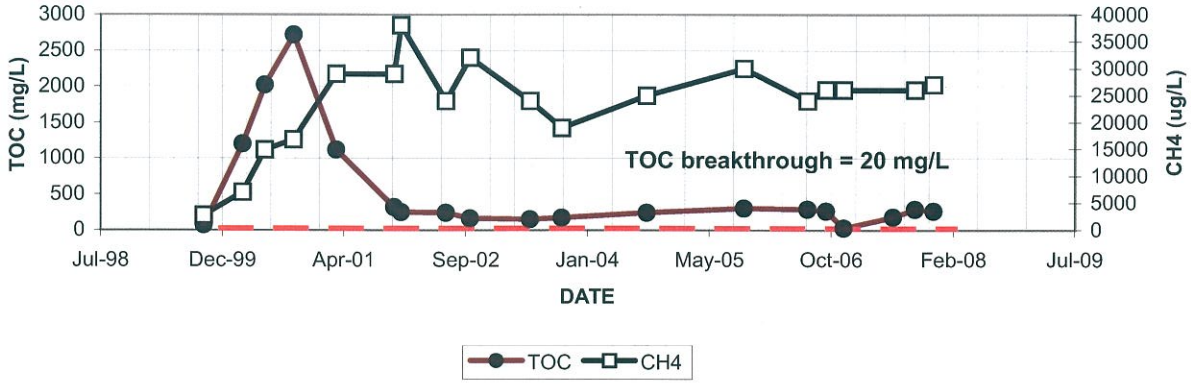


Figure E-7
GM-32 ERD Analysis





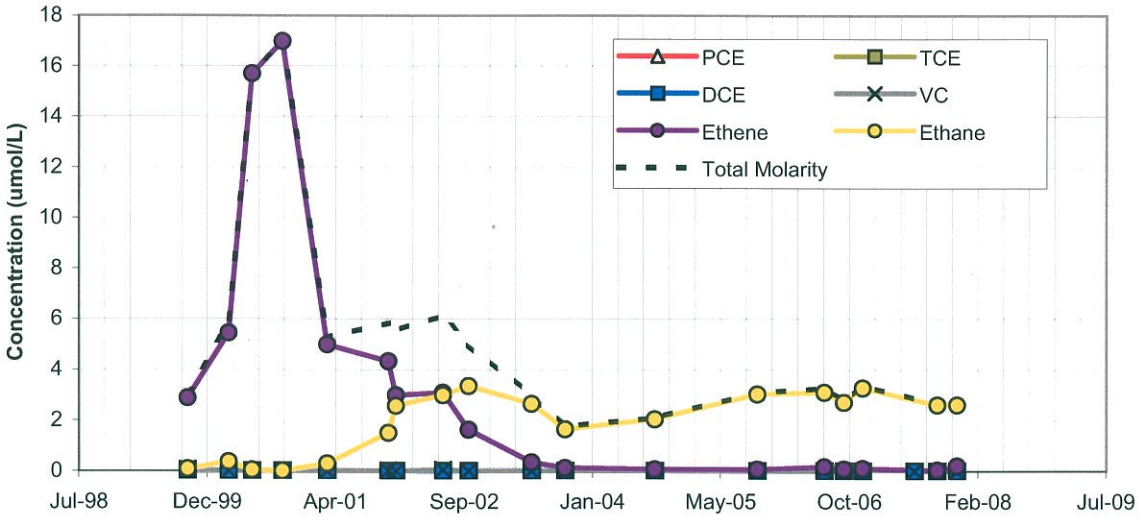
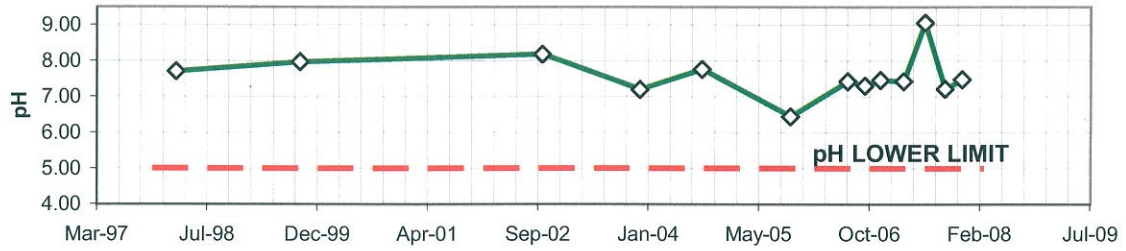
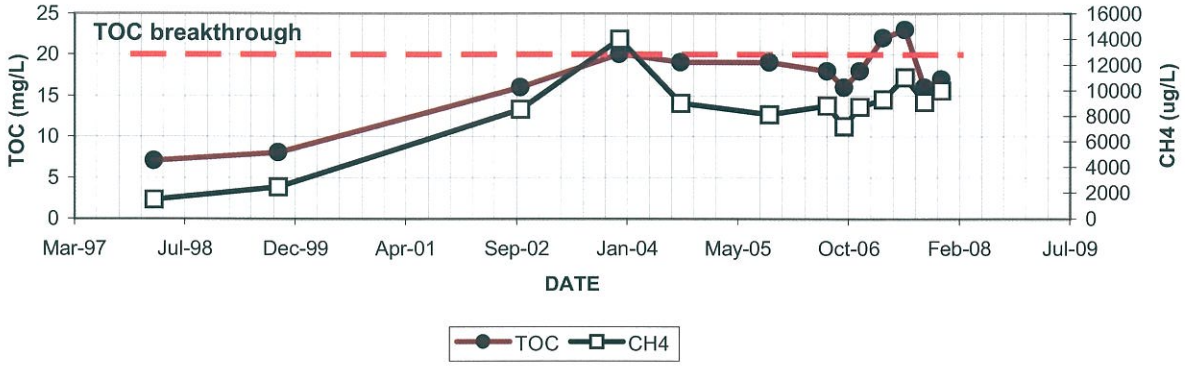


Figure E-8
GM-8 ERD Analysis





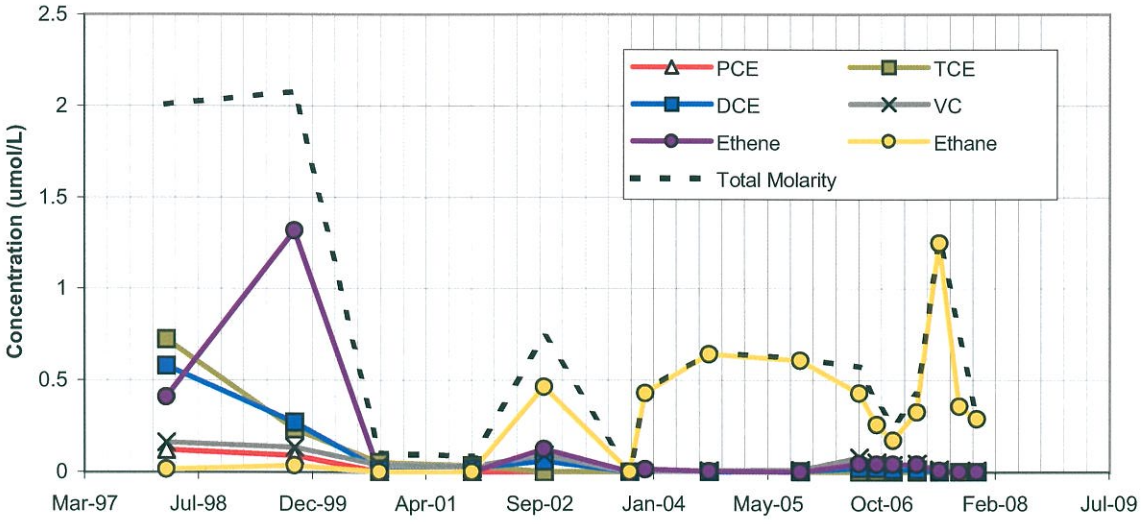
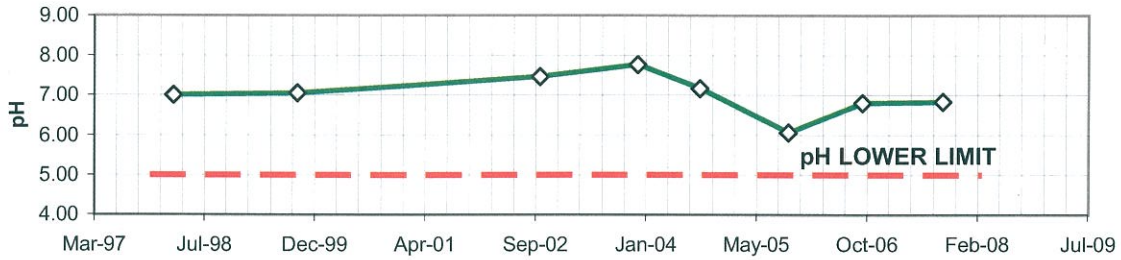
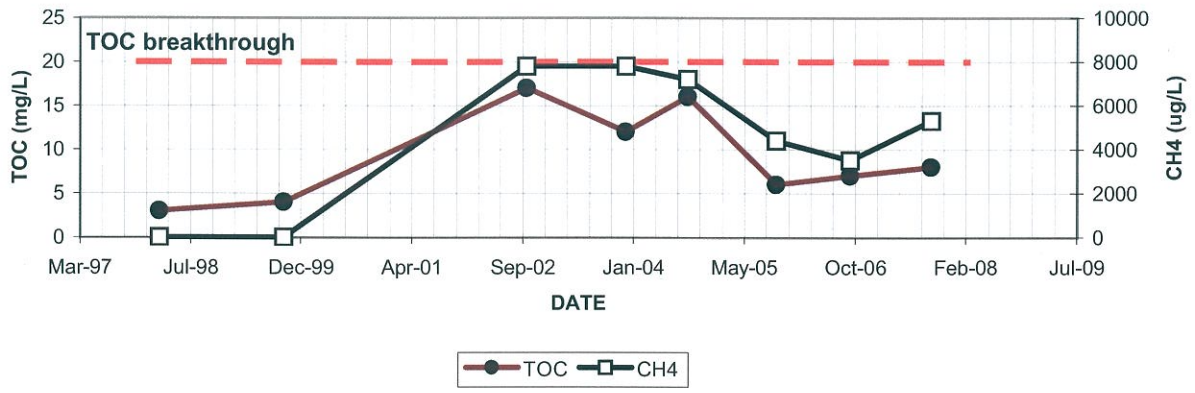


Figure E-9
GM-6 ERD Analysis





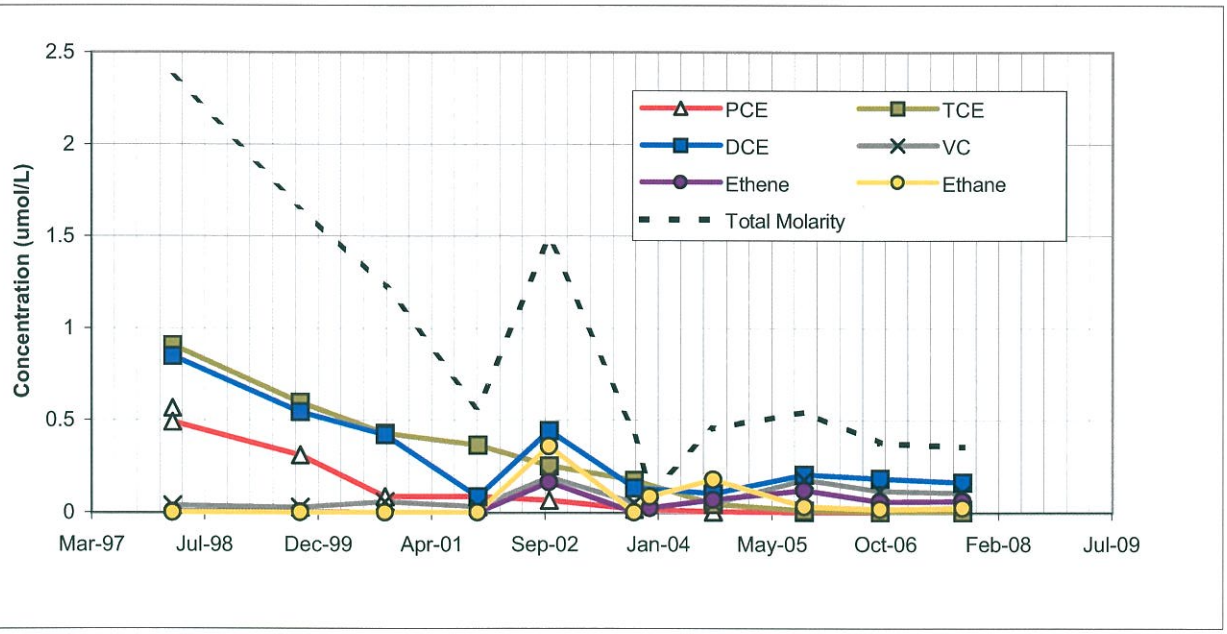
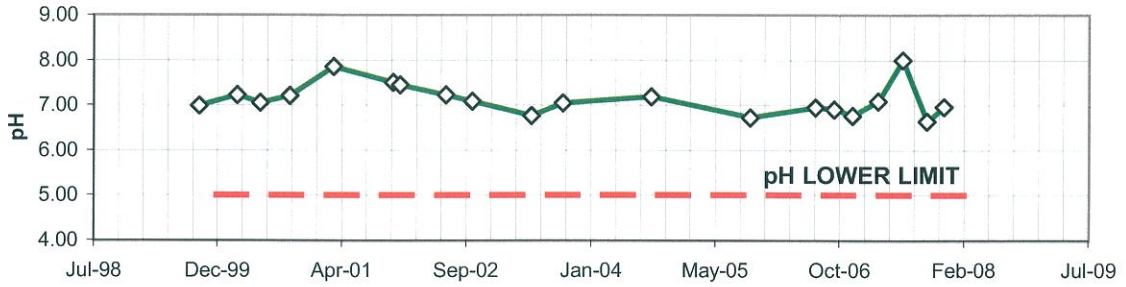
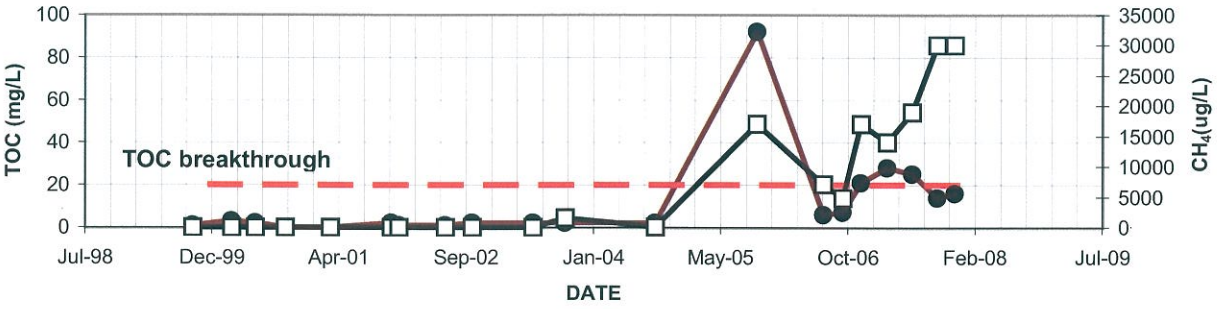


Figure E-10
GM-21 ERD Analysis





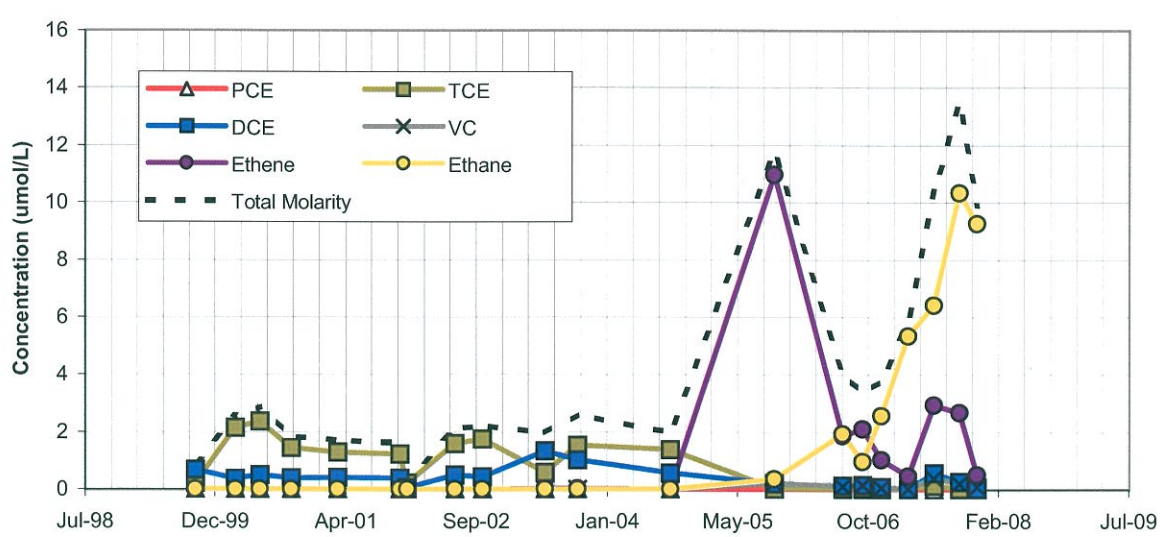
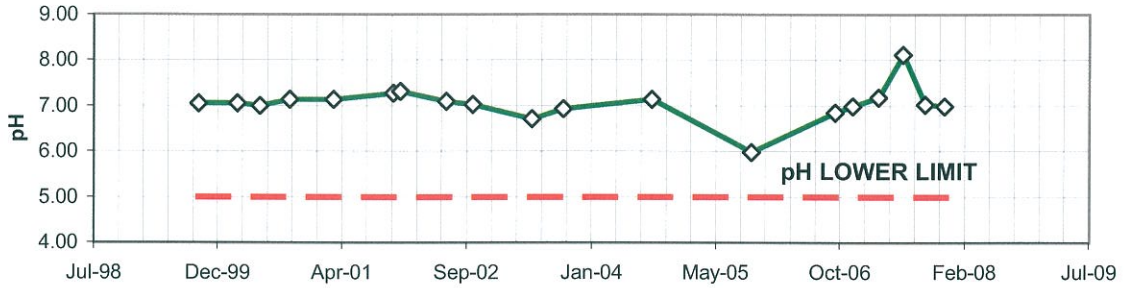
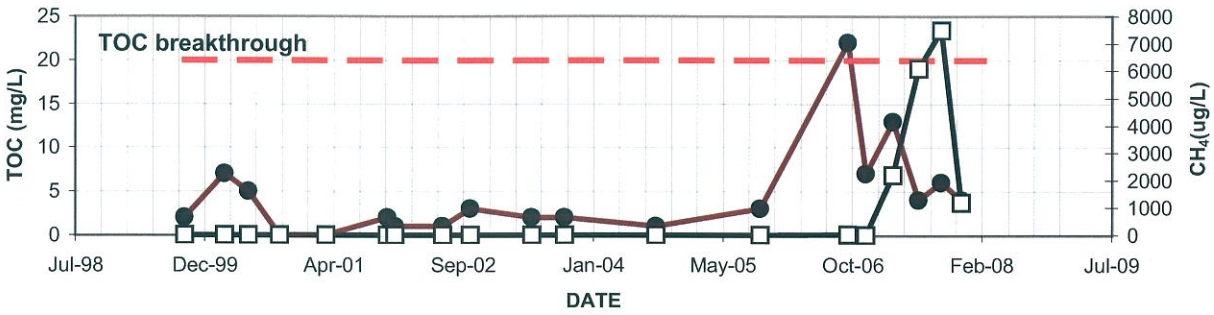


Figure E-11
GM-19S ERD Analysis





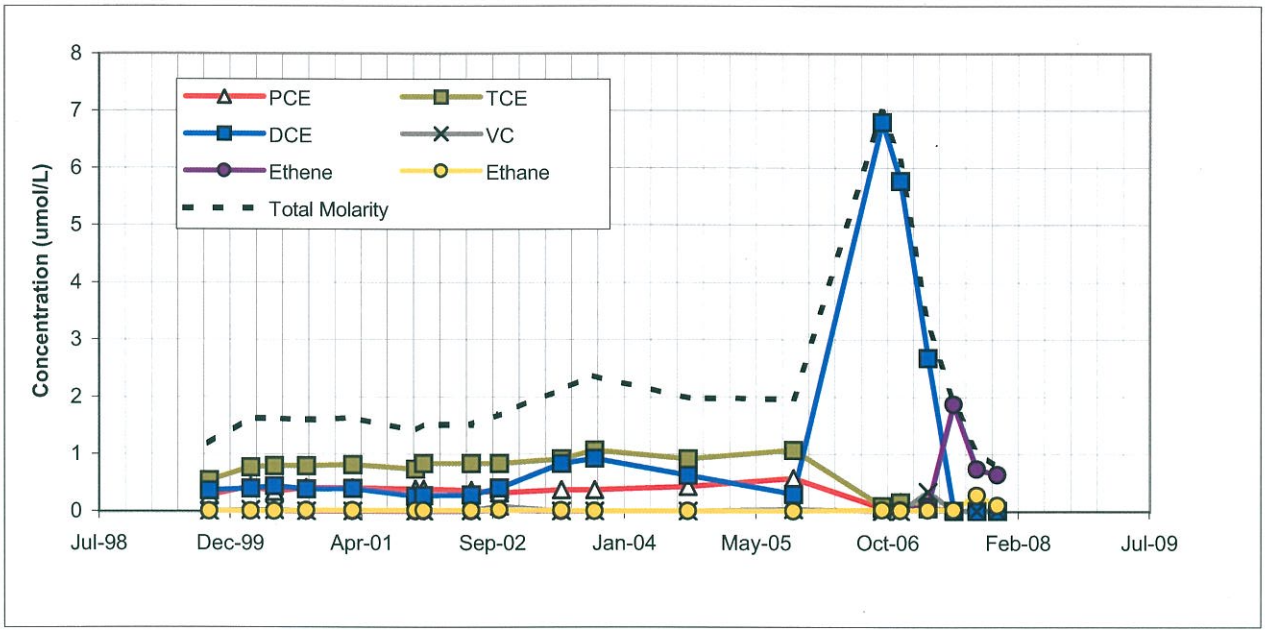
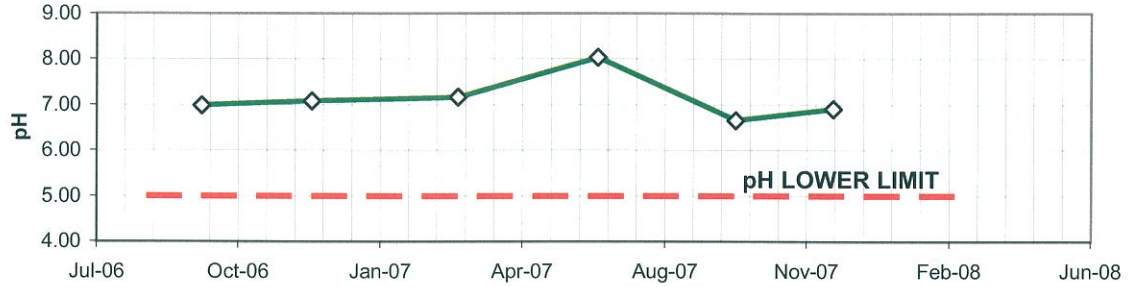
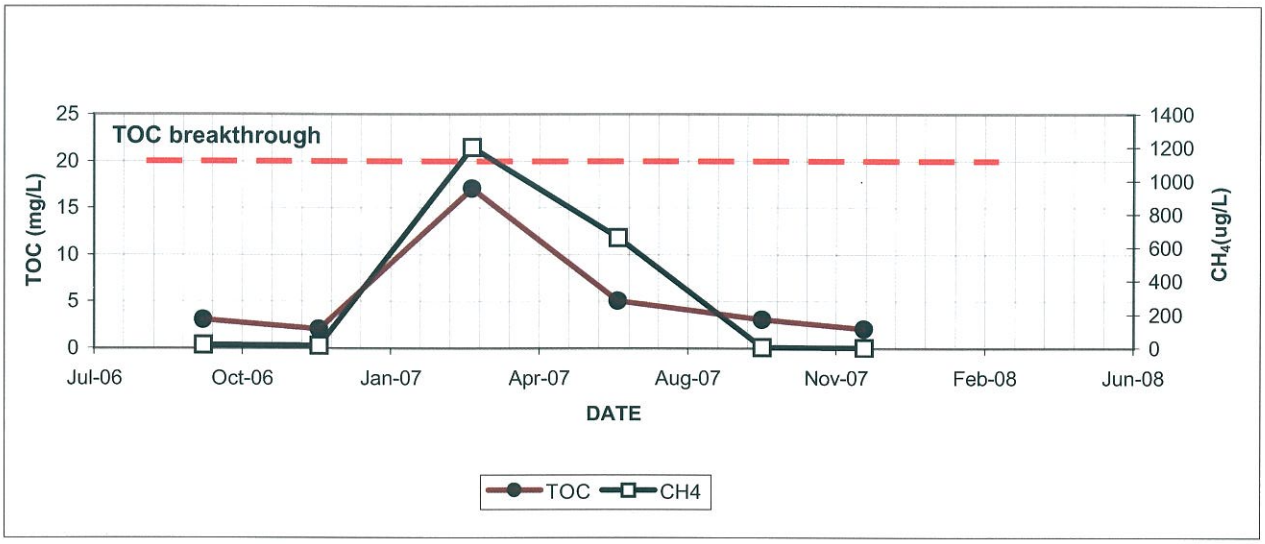


Figure E-12
GM-63 ERD Analysis





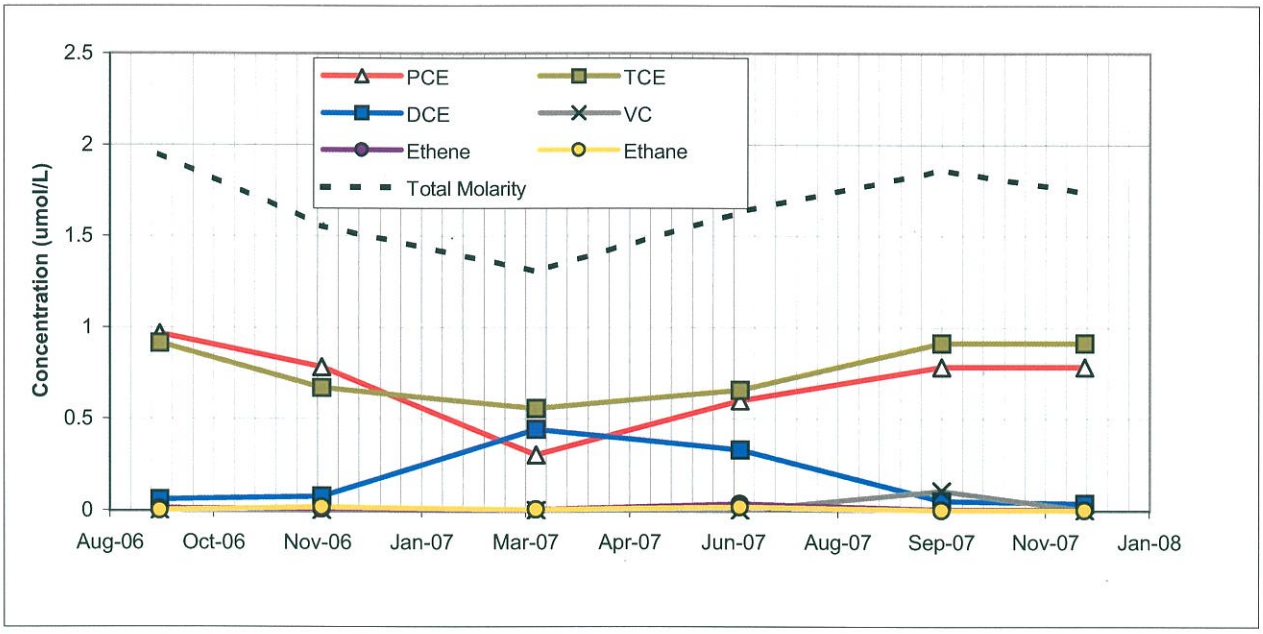
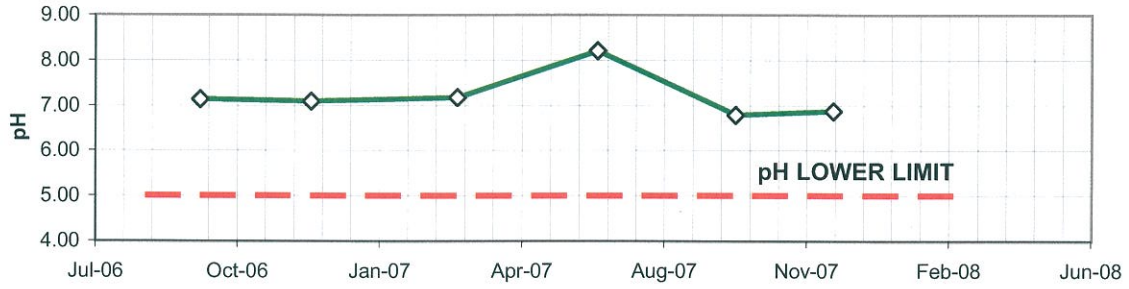
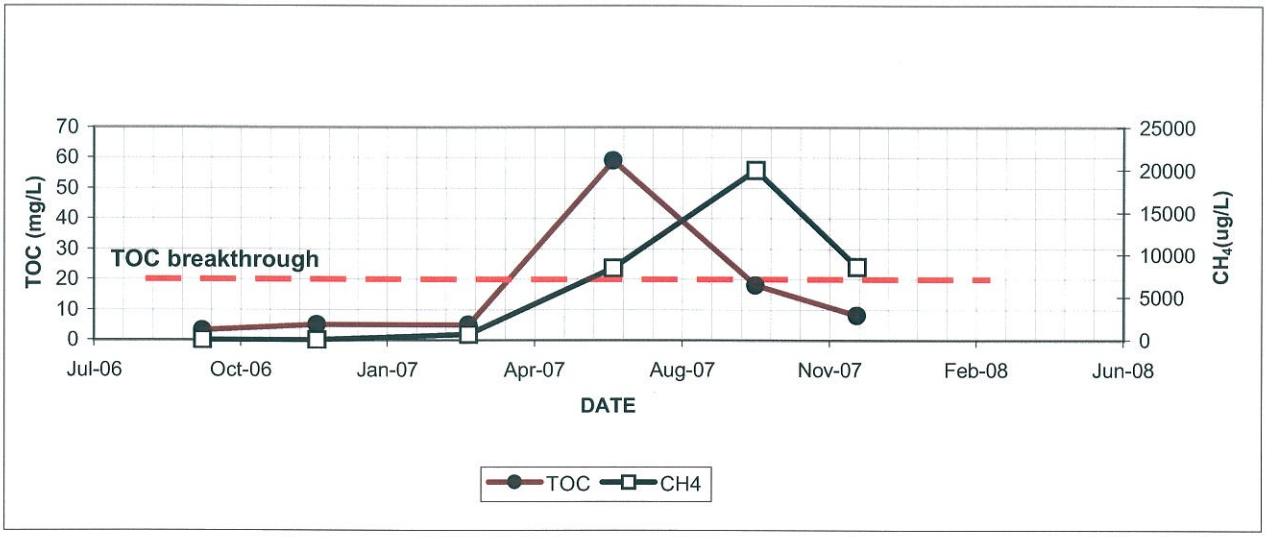
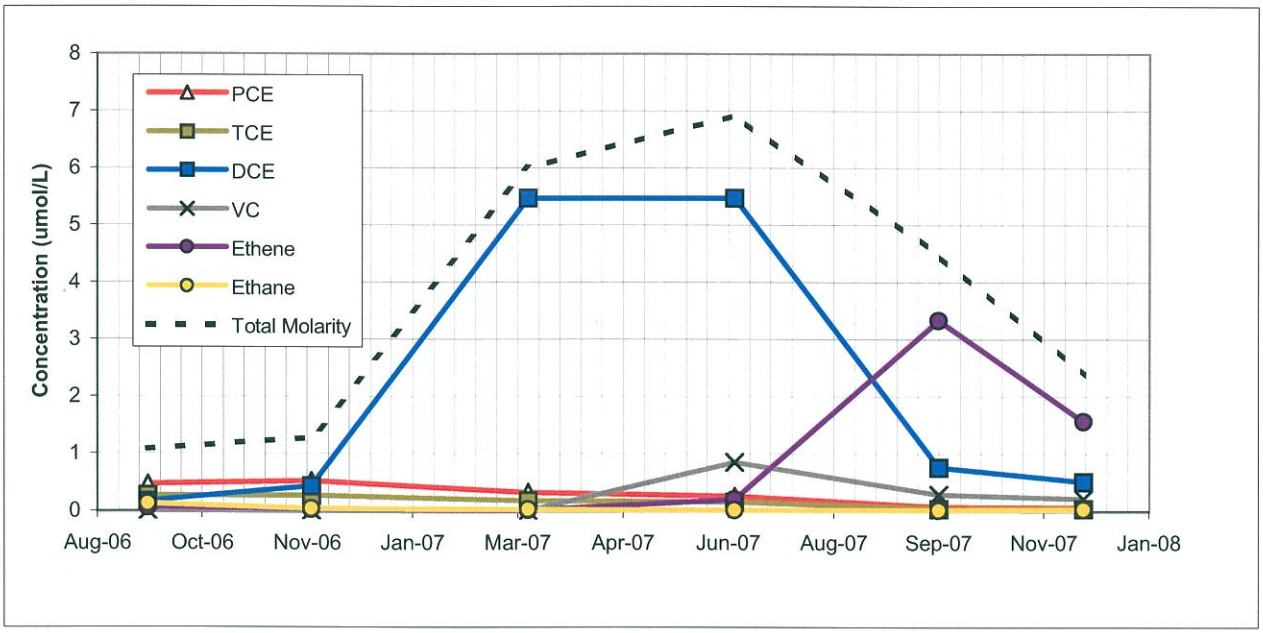


Figure E-13
GM-64 ERD Analysis







ARCADIS

Appendix F

Supporting Documentation for
Corrective Action Completion
Evaluation for 2007

Supporting Calculations
Table F-1: Source Reduction Factors

Potential Receptors Points	Well ID	Model Location (row, column, layer)	Pumping Rates	Potential Source Areas				
				Landfill 1	Landfill 2	Landfill 3	North Settling Lagoon	South Settling Lagoon
Proposed Shallow Well	TW-2	(82,55,1)	0	0.00E+00	2.59E-03	1.21E-02	5.36E-02	0.00E+00
Dryden North Well	DN-13	(89,46,3)	0	9.67E-02	1.51E-03	5.44E-03	7.86E-03	3.16E-01
Dryden South Well	DS-7	(98,43,3)	0	1.85E-02	3.06E-04	8.74E-04	1.28E-03	2.95E-02
Miami Shores Well Field	MS-14 MS-15	(98,38,3)	0	5.73E-03	1.04E-04	3.23E-04	4.59E-04	1.55E-02
	MS-16 MS-17	(98,35,3)	0	5.34E-03	9.96E-05	3.32E-04	4.77E-04	2.61E-02
	MS-18 MS-19 MS-20	(100,37,3)	0	5.35E-03	9.26E-05	2.73E-04	3.98E-04	1.11E-02
	MS-21	(100,34,3)	0	4.68E-03	8.37E-05	2.59E-04	3.74E-04	1.42E-02
	MS-22	(101,33,3)	0	4.01E-03	7.08E-05	2.14E-04	3.11E-04	1.06E-02
Moraine Assembly Production Wells	11B	(50,94,3)	325	0.00E+00	1.68E-02	4.04E-04	2.12E-05	0.00E+00
	12A	(46,93,3)	240	0.00E+00	2.84E-06	1.64E-08	5.00E-10	0.00E+00
Moraine Engine Well 28	28	(58,80,3)	0	0.00E+00	2.49E-02	1.20E-03	8.70E-04	0.00E+00
Moraine Engine Plant	31	(37,82,3)	0	0.00E+00	3.74E-08	0.00E+00	0.00E+00	0.00E+00
	39	(40,81,3)	0	0.00E+00	7.88E-06	1.80E-09	0.00E+00	0.00E+00
Harrison Production Wells	44	(29,70,3)	0	0.00E+00	1.62E-04	1.31E-02	0.00E+00	0.00E+00
	42	(54,59,3)	0	0.00E+00	7.71E-04	1.66E-02	5.44E-02	0.00E+00
	45	(74,56,3)	0	0.00E+00	2.20E-02	3.76E-02	3.58E-02	0.00E+00
West Carrollton Well Field	MI-41AP	(111, 21, 3)	317	4.35E-04	0.00E+00	0.00E+00	1.52E-05	2.21E-03
	MI-41CP	(111, 20, 3)	317	5.94E-04	0.00E+00	0.00E+00	1.32E-05	4.47E-03
	MI-41DP	(112, 19, 3)	317	4.67E-04	0.00E+00	7.39E-08	1.47E-05	3.63E-03
Miami River	--	--	0	3.59E-03	6.05E-07	3.18E-04	1.68E-02	0.00E+00

NOTES:

1. Source Reduction Factors reflect updated groundwater model results generated using current site pumping conditions without interim measures pumping (Pumping Scenario 1; updated Feb 2006)
2. Shaded cells indicate those potential receptor wells which are not pumping in Pumping Scenario 1 (i.e., current conditions without interim measures pumping).
3. Dilution factors reported for the Miami River are mass loading factors to the river [$^{lb/day}/_{mg/L}$]

Supporting Calculations
Table F-2: Source Concentrations for In-Place Waste Management Units
(Based on 2007 Sampling Data)

SWMU	TCL/TAL Group	Constituent	CASRN	Maximum Downgradient Ground Water Concentration (mg/L)
Landfill L1	VOC	1,1,1-Trichloroethane	71-55-6	0.0E+00
Landfill L1	VOC	1,1-Dichloroethane	75-34-3	2.6E-02
Landfill L1	VOC	1,1-Dichloroethene	75-35-4	0.0E+00
Landfill L1	VOC	1,2-Dichloroethene (total)	540-59-0	0.0E+00
Landfill L1	VOC	2-Butanone	78-93-3	0.0E+00
Landfill L1	VOC	Acetone	67-64-1	0.0E+00
Landfill L1	VOC	Benzene	71-43-2	8.1E-04
Landfill L1	VOC	Carbon Disulfide	75-15-0	0.0E+00
Landfill L1	VOC	Chlorobenzene	108-90-7	0.0E+00
Landfill L1	VOC	Chloroethane	75-00-3	0.0E+00
Landfill L1	VOC	Chloroform	67-66-3	0.0E+00
Landfill L1	VOC	cis-1,2-Dichloroethene	156-59-2	1.6E-02
Landfill L1	VOC	Ethyl Benzene	100-41-4	0.0E+00
Landfill L1	VOC	Styrene	100-42-5	0.0E+00
Landfill L1	VOC	Tetrachloroethene	127-18-4	1.9E-03
Landfill L1	VOC	Toluene	108-88-3	0.0E+00
Landfill L1	VOC	trans-1,2-Dichloroethene	156-60-5	2.6E-03
Landfill L1	VOC	Trichloroethene	79-01-6	2.4E-02
Landfill L1	VOC	Trichlorofluoromethane	75-69-4	0.0E+00
Landfill L1	VOC	Vinyl Chloride	75-01-4	6.7E-03
Landfill L1	VOC	Xylenes (total)	1330-20-7	0.0E+00
Landfill L1	SVOC	1,2-Dichlorobenzene	95-50-1	0.0E+00
Landfill L1	SVOC	2-Methylnaphthalene	91-57-6	0.0E+00
Landfill L1	SVOC	Benzo(a)anthracene	56-55-3	0.0E+00
Landfill L1	SVOC	Benzo(a)pyrene	50-32-8	0.0E+00
Landfill L1	SVOC	Benzo(b)fluoranthene	205-99-2	0.0E+00
Landfill L1	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	0.0E+00
Landfill L1	SVOC	Butylbenzylphthalate	85-68-7	0.0E+00
Landfill L1	SVOC	Chrysene	218-01-9	0.0E+00
Landfill L1	SVOC	Di-n-butylphthalate	84-74-2	0.0E+00
Landfill L1	SVOC	Fluoranthene	206-44-0	0.0E+00
Landfill L1	SVOC	Fluorene	86-73-7	0.0E+00
Landfill L1	SVOC	Naphthalene	91-20-3	0.0E+00
Landfill L1	SVOC	Phenanthrene	85-01-8	0.0E+00
Landfill L1	SVOC	Pyrene	129-00-0	0.0E+00
Landfill L1	P/PCB	Aroclor-1242	53469-21-9	0.0E+00
Landfill L1	P/PCB	Aroclor-1254	11097-69-1	0.0E+00
Landfill L1	P/PCB	Aroclor-1260	11096-82-5	0.0E+00
Landfill L1	INORG	Antimony	7440-36-0	0.0E+00
Landfill L1	INORG	Arsenic	7440-38-2	0.0E+00
Landfill L1	INORG	Barium	7440-39-3	0.0E+00
Landfill L1	INORG	Beryllium	7440-41-7	0.0E+00
Landfill L1	INORG	Cadmium	7440-43-9	0.0E+00
Landfill L1	INORG	Chromium (total)	7440-47-3	0.0E+00
Landfill L1	INORG	Cobalt	7440-48-4	0.0E+00
Landfill L1	INORG	Copper	7440-50-8	0.0E+00
Landfill L1	INORG	Cyanide (total)	57-12-5	0.0E+00
Landfill L1	INORG	Lead	7439-92-1	0.0E+00
Landfill L1	INORG	Manganese	7439-96-5	3.9E-01
Landfill L1	INORG	Mercury	7439-97-6	0.0E+00
Landfill L1	INORG	Nickel	7440-02-0	0.0E+00
Landfill L1	INORG	Selenium	7782-49-2	0.0E+00
Landfill L1	INORG	Silver	7440-22-4	0.0E+00
Landfill L1	INORG	Thallium	7440-28-0	0.0E+00
Landfill L1	INORG	Vanadium	7440-62-2	0.0E+00
Landfill L1	INORG	Zinc	7440-66-6	0.0E+00
Notes:				
Downgradient Wells = TW-2, GM-6, 4S				

Supporting Calculations
Table F-2: Source Concentrations for In-Place Waste Management Units
(Based on 2007 Sampling Data)

SWMU	TCL/TAL Group	Constituent	CASRN	Maximum Downgradient Ground Water Concentration (mg/L)
Landfill L2	VOC	1,1,1-Trichloroethane	71-55-6	3.4E-04
Landfill L2	VOC	1,1-Dichloroethane	75-34-3	5.3E-03
Landfill L2	VOC	1,1-Dichloroethene	75-35-4	0.0E+00
Landfill L2	VOC	1,2-Dichloroethene (total)	540-59-0	0.0E+00
Landfill L2	VOC	2-Butanone	78-93-3	0.0E+00
Landfill L2	VOC	Acetone	67-64-1	0.0E+00
Landfill L2	VOC	Benzene	71-43-2	0.0E+00
Landfill L2	VOC	Carbon Disulfide	75-15-0	0.0E+00
Landfill L2	VOC	Chlorobenzene	108-90-7	0.0E+00
Landfill L2	VOC	Chloroethane	75-00-3	0.0E+00
Landfill L2	VOC	Chloroform	67-66-3	0.0E+00
Landfill L2	VOC	cis-1,2-Dichloroethene	156-59-2	5.0E-03
Landfill L2	VOC	Ethyl Benzene	100-41-4	0.0E+00
Landfill L2	VOC	Styrene	100-42-5	0.0E+00
Landfill L2	VOC	Tetrachloroethene	127-18-4	8.8E-04
Landfill L2	VOC	Toluene	108-88-3	0.0E+00
Landfill L2	VOC	trans-1,2-Dichloroethene	156-60-5	7.6E-04
Landfill L2	VOC	Trichloroethene	79-01-6	1.0E-02
Landfill L2	VOC	Trichlorofluoromethane	75-69-4	0.0E+00
Landfill L2	VOC	Vinyl Chloride	75-01-4	9.6E-04
Landfill L2	VOC	Xylenes (total)	1330-20-7	0.0E+00
Landfill L2	SVOC	1,2-Dichlorobenzene	95-50-1	0.0E+00
Landfill L2	SVOC	2-Methylnaphthalene	91-57-6	0.0E+00
Landfill L2	SVOC	Benzo(a)anthracene	56-55-3	0.0E+00
Landfill L2	SVOC	Benzo(a)pyrene	50-32-8	0.0E+00
Landfill L2	SVOC	Benzo(b)fluoranthene	205-99-2	0.0E+00
Landfill L2	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	0.0E+00
Landfill L2	SVOC	Butylbenzylphthalate	85-68-7	0.0E+00
Landfill L2	SVOC	Chrysene	218-01-9	0.0E+00
Landfill L2	SVOC	Di-n-butylphthalate	84-74-2	0.0E+00
Landfill L2	SVOC	Fluoranthene	206-44-0	0.0E+00
Landfill L2	SVOC	Fluorene	86-73-7	0.0E+00
Landfill L2	SVOC	Naphthalene	91-20-3	0.0E+00
Landfill L2	SVOC	Phenanthrene	85-01-8	0.0E+00
Landfill L2	SVOC	Pyrene	129-00-0	0.0E+00
Landfill L2	P/PCB	Aroclor-1242	53469-21-9	0.0E+00
Landfill L2	P/PCB	Aroclor-1254	11097-69-1	0.0E+00
Landfill L2	P/PCB	Aroclor-1260	11096-82-5	0.0E+00
Landfill L2	INORG	Antimony	7440-36-0	0.0E+00
Landfill L2	INORG	Arsenic	7440-38-2	0.0E+00
Landfill L2	INORG	Barium	7440-39-3	0.0E+00
Landfill L2	INORG	Beryllium	7440-41-7	0.0E+00
Landfill L2	INORG	Cadmium	7440-43-9	0.0E+00
Landfill L2	INORG	Chromium (total)	7440-47-3	0.0E+00
Landfill L2	INORG	Cobalt	7440-48-4	0.0E+00
Landfill L2	INORG	Copper	7440-50-8	0.0E+00
Landfill L2	INORG	Cyanide (total)	57-12-5	0.0E+00
Landfill L2	INORG	Lead	7439-92-1	0.0E+00
Landfill L2	INORG	Manganese	7439-96-5	0.0E+00
Landfill L2	INORG	Mercury	7439-97-6	0.0E+00
Landfill L2	INORG	Nickel	7440-02-0	0.0E+00
Landfill L2	INORG	Selenium	7782-49-2	0.0E+00
Landfill L2	INORG	Silver	7440-22-4	0.0E+00
Landfill L2	INORG	Thallium	7440-28-0	0.0E+00
Landfill L2	INORG	Vanadium	7440-62-2	0.0E+00
Landfill L2	INORG	Zinc	7440-66-6	0.0E+00
Notes:				
Downgradient Wells = W-4-N, HR-2				

Supporting Calculations
Table F-2: Source Concentrations for In-Place Waste Management Units
(Based on 2007 Sampling Data)

SWMU	TCL/TAL Group	Constituent	CASRN	Maximum Downgradient Ground Water Concentration (mg/L)
Landfill L3	VOC	1,1,1-Trichloroethane	71-55-6	3.4E-04
Landfill L3	VOC	1,1-Dichloroethane	75-34-3	5.3E-03
Landfill L3	VOC	1,1-Dichloroethene	75-35-4	0.0E+00
Landfill L3	VOC	1,2-Dichloroethene (total)	540-59-0	0.0E+00
Landfill L3	VOC	2-Butanone	78-93-3	0.0E+00
Landfill L3	VOC	Acetone	67-64-1	0.0E+00
Landfill L3	VOC	Benzene	71-43-2	0.0E+00
Landfill L3	VOC	Carbon Disulfide	75-15-0	0.0E+00
Landfill L3	VOC	Chlorobenzene	108-90-7	0.0E+00
Landfill L3	VOC	Chloroethane	75-00-3	0.0E+00
Landfill L3	VOC	Chloroform	67-66-3	0.0E+00
Landfill L3	VOC	cis-1,2-Dichloroethene	156-59-2	5.0E-03
Landfill L3	VOC	Ethyl Benzene	100-41-4	0.0E+00
Landfill L3	VOC	Styrene	100-42-5	0.0E+00
Landfill L3	VOC	Tetrachloroethene	127-18-4	8.8E-04
Landfill L3	VOC	Toluene	108-88-3	0.0E+00
Landfill L3	VOC	trans-1,2-Dichloroethene	156-60-5	7.6E-04
Landfill L3	VOC	Trichloroethene	79-01-6	1.0E-02
Landfill L3	VOC	Trichlorofluoromethane	75-69-4	0.0E+00
Landfill L3	VOC	Vinyl Chloride	75-01-4	9.6E-04
Landfill L3	VOC	Xylenes (total)	1330-20-7	0.0E+00
Landfill L3	SVOC	1,2-Dichlorobenzene	95-50-1	0.0E+00
Landfill L3	SVOC	2-Methylnaphthalene	91-57-6	0.0E+00
Landfill L3	SVOC	Benzo(a)anthracene	56-55-3	0.0E+00
Landfill L3	SVOC	Benzo(a)pyrene	50-32-8	0.0E+00
Landfill L3	SVOC	Benzo(b)fluoranthene	205-99-2	0.0E+00
Landfill L3	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	0.0E+00
Landfill L3	SVOC	Butylbenzylphthalate	85-68-7	0.0E+00
Landfill L3	SVOC	Chrysene	218-01-9	0.0E+00
Landfill L3	SVOC	Di-n-butylphthalate	84-74-2	0.0E+00
Landfill L3	SVOC	Fluoranthene	206-44-0	0.0E+00
Landfill L3	SVOC	Fluorene	86-73-7	0.0E+00
Landfill L3	SVOC	Naphthalene	91-20-3	0.0E+00
Landfill L3	SVOC	Phenanthrene	85-01-8	0.0E+00
Landfill L3	SVOC	Pyrene	129-00-0	0.0E+00
Landfill L3	P/PCB	Aroclor-1242	53469-21-9	0.0E+00
Landfill L3	P/PCB	Aroclor-1254	11097-69-1	0.0E+00
Landfill L3	P/PCB	Aroclor-1260	11096-82-5	0.0E+00
Landfill L3	INORG	Antimony	7440-36-0	0.0E+00
Landfill L3	INORG	Arsenic	7440-38-2	0.0E+00
Landfill L3	INORG	Barium	7440-39-3	0.0E+00
Landfill L3	INORG	Beryllium	7440-41-7	0.0E+00
Landfill L3	INORG	Cadmium	7440-43-9	0.0E+00
Landfill L3	INORG	Chromium (total)	7440-47-3	0.0E+00
Landfill L3	INORG	Cobalt	7440-48-4	0.0E+00
Landfill L3	INORG	Copper	7440-50-8	0.0E+00
Landfill L3	INORG	Cyanide (total)	57-12-5	0.0E+00
Landfill L3	INORG	Lead	7439-92-1	0.0E+00
Landfill L3	INORG	Manganese	7439-96-5	0.0E+00
Landfill L3	INORG	Mercury	7439-97-6	0.0E+00
Landfill L3	INORG	Nickel	7440-02-0	0.0E+00
Landfill L3	INORG	Selenium	7782-49-2	0.0E+00
Landfill L3	INORG	Silver	7440-22-4	0.0E+00
Landfill L3	INORG	Thallium	7440-28-0	0.0E+00
Landfill L3	INORG	Vanadium	7440-62-2	0.0E+00
Landfill L3	INORG	Zinc	7440-66-6	0.0E+00
Notes:				
Downgradient Wells = W-4-N, HR-2, HR-4				

Supporting Calculations
Table F-2: Source Concentrations for In-Place Waste Management Units
(Based on 2007 Sampling Data)

SWMU	TCL/TAL Group	Constituent	CASRN	Maximum Downgradient Ground Water Concentration (mg/L)
North Settling Lagoon	VOC	1,1,1-Trichloroethane	71-55-6	3.4E-04
North Settling Lagoon	VOC	1,1-Dichloroethane	75-34-3	1.6E-03
North Settling Lagoon	VOC	1,1-Dichloroethene	75-35-4	0.0E+00
North Settling Lagoon	VOC	1,2-Dichloroethene (total)	540-59-0	0.0E+00
North Settling Lagoon	VOC	2-Butanone	78-93-3	0.0E+00
North Settling Lagoon	VOC	Acetone	67-64-1	0.0E+00
North Settling Lagoon	VOC	Benzene	71-43-2	0.0E+00
North Settling Lagoon	VOC	Carbon Disulfide	75-15-0	0.0E+00
North Settling Lagoon	VOC	Chlorobenzene	108-90-7	0.0E+00
North Settling Lagoon	VOC	Chloroethane	75-00-3	0.0E+00
North Settling Lagoon	VOC	Chloroform	67-66-3	0.0E+00
North Settling Lagoon	VOC	cis-1,2-Dichloroethene	156-59-2	1.1E-01
North Settling Lagoon	VOC	Ethyl Benzene	100-41-4	0.0E+00
North Settling Lagoon	VOC	Styrene	100-42-5	0.0E+00
North Settling Lagoon	VOC	Tetrachloroethene	127-18-4	8.8E-04
North Settling Lagoon	VOC	Toluene	108-88-3	2.8E-04
North Settling Lagoon	VOC	trans-1,2-Dichloroethene	156-60-5	1.4E-03
North Settling Lagoon	VOC	Trichloroethene	79-01-6	1.3E-02
North Settling Lagoon	VOC	Trichlorofluoromethane	75-69-4	0.0E+00
North Settling Lagoon	VOC	Vinyl Chloride	75-01-4	5.6E-03
North Settling Lagoon	VOC	Xylenes (total)	1330-20-7	0.0E+00
North Settling Lagoon	SVOC	1,2-Dichlorobenzene	95-50-1	0.0E+00
North Settling Lagoon	SVOC	2-Methylnaphthalene	91-57-6	0.0E+00
North Settling Lagoon	SVOC	Benzo(a)anthracene	56-55-3	0.0E+00
North Settling Lagoon	SVOC	Benzo(a)pyrene	50-32-8	0.0E+00
North Settling Lagoon	SVOC	Benzo(b)fluoranthene	205-99-2	0.0E+00
North Settling Lagoon	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	0.0E+00
North Settling Lagoon	SVOC	Butylbenzylphthalate	85-68-7	0.0E+00
North Settling Lagoon	SVOC	Chrysene	218-01-9	0.0E+00
North Settling Lagoon	SVOC	Di-n-butylphthalate	84-74-2	0.0E+00
North Settling Lagoon	SVOC	Fluoranthene	206-44-0	0.0E+00
North Settling Lagoon	SVOC	Fluorene	86-73-7	0.0E+00
North Settling Lagoon	SVOC	Naphthalene	91-20-3	0.0E+00
North Settling Lagoon	SVOC	Phenanthrene	85-01-8	0.0E+00
North Settling Lagoon	SVOC	Pyrene	129-00-0	0.0E+00
North Settling Lagoon	P/PCB	Aroclor-1242	53469-21-9	0.0E+00
North Settling Lagoon	P/PCB	Aroclor-1254	11097-69-1	0.0E+00
North Settling Lagoon	P/PCB	Aroclor-1260	11096-82-5	0.0E+00
North Settling Lagoon	INORG	Antimony	7440-36-0	0.0E+00
North Settling Lagoon	INORG	Arsenic	7440-38-2	0.0E+00
North Settling Lagoon	INORG	Barium	7440-39-3	0.0E+00
North Settling Lagoon	INORG	Beryllium	7440-41-7	0.0E+00
North Settling Lagoon	INORG	Cadmium	7440-43-9	0.0E+00
North Settling Lagoon	INORG	Chromium (total)	7440-47-3	0.0E+00
North Settling Lagoon	INORG	Cobalt	7440-48-4	0.0E+00
North Settling Lagoon	INORG	Copper	7440-50-8	0.0E+00
North Settling Lagoon	INORG	Cyanide (total)	57-12-5	0.0E+00
North Settling Lagoon	INORG	Lead	7439-92-1	0.0E+00
North Settling Lagoon	INORG	Manganese	7439-96-5	0.0E+00
North Settling Lagoon	INORG	Mercury	7439-97-6	0.0E+00
North Settling Lagoon	INORG	Nickel	7440-02-0	0.0E+00
North Settling Lagoon	INORG	Selenium	7782-49-2	0.0E+00
North Settling Lagoon	INORG	Silver	7440-22-4	0.0E+00
North Settling Lagoon	INORG	Thallium	7440-28-0	0.0E+00
North Settling Lagoon	INORG	Vanadium	7440-62-2	0.0E+00
North Settling Lagoon	INORG	Zinc	7440-66-6	0.0E+00
Notes:				
Downgradient Wells = HR-5, W-2-N, W-3-N, W-4-N				

Supporting Calculations
Table F-2: Source Concentrations for In-Place Waste Management Units
(Based on 2007 Sampling Data)

SWMU	TCL/TAL Group	Constituent	CASRN	Maximum Downgradient Ground Water Concentration (mg/L)
South Settling Lagoon	VOC	1,1,1-Trichloroethane	71-55-6	1.5E-03
South Settling Lagoon	VOC	1,1-Dichloroethane	75-34-3	1.8E-03
South Settling Lagoon	VOC	1,1-Dichloroethene	75-35-4	0.0E+00
South Settling Lagoon	VOC	1,2-Dichloroethene (total)	540-59-0	0.0E+00
South Settling Lagoon	VOC	2-Butanone	78-93-3	0.0E+00
South Settling Lagoon	VOC	Acetone	67-64-1	0.0E+00
South Settling Lagoon	VOC	Benzene	71-43-2	0.0E+00
South Settling Lagoon	VOC	Carbon Disulfide	75-15-0	0.0E+00
South Settling Lagoon	VOC	Chlorobenzene	108-90-7	0.0E+00
South Settling Lagoon	VOC	Chloroethane	75-00-3	0.0E+00
South Settling Lagoon	VOC	Chloroform	67-66-3	0.0E+00
South Settling Lagoon	VOC	cis-1,2-Dichloroethene	156-59-2	5.9E-03
South Settling Lagoon	VOC	Ethyl Benzene	100-41-4	0.0E+00
South Settling Lagoon	VOC	Styrene	100-42-5	0.0E+00
South Settling Lagoon	VOC	Tetrachloroethene	127-18-4	2.6E-02
South Settling Lagoon	VOC	Toluene	108-88-3	0.0E+00
South Settling Lagoon	VOC	trans-1,2-Dichloroethene	156-60-5	1.3E-03
South Settling Lagoon	VOC	Trichloroethene	79-01-6	1.6E-02
South Settling Lagoon	VOC	Trichlorofluoromethane	75-69-4	0.0E+00
South Settling Lagoon	VOC	Vinyl Chloride	75-01-4	0.0E+00
South Settling Lagoon	VOC	Xylenes (total)	1330-20-7	0.0E+00
South Settling Lagoon	SVOC	1,2-Dichlorobenzene	95-50-1	0.0E+00
South Settling Lagoon	SVOC	2-Methylnaphthalene	91-57-6	0.0E+00
South Settling Lagoon	SVOC	Benzo(a)anthracene	56-55-3	0.0E+00
South Settling Lagoon	SVOC	Benzo(a)pyrene	50-32-8	0.0E+00
South Settling Lagoon	SVOC	Benzo(b)fluoranthene	205-99-2	0.0E+00
South Settling Lagoon	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	0.0E+00
South Settling Lagoon	SVOC	Butylbenzylphthalate	85-68-7	0.0E+00
South Settling Lagoon	SVOC	Chrysene	218-01-9	0.0E+00
South Settling Lagoon	SVOC	Di-n-butylphthalate	84-74-2	0.0E+00
South Settling Lagoon	SVOC	Fluoranthene	206-44-0	0.0E+00
South Settling Lagoon	SVOC	Fluorene	86-73-7	0.0E+00
South Settling Lagoon	SVOC	Naphthalene	91-20-3	0.0E+00
South Settling Lagoon	SVOC	Phenanthrene	85-01-8	0.0E+00
South Settling Lagoon	SVOC	Pyrene	129-00-0	0.0E+00
South Settling Lagoon	P/PCB	Aroclor-1242	53469-21-9	0.0E+00
South Settling Lagoon	P/PCB	Aroclor-1254	11097-69-1	0.0E+00
South Settling Lagoon	P/PCB	Aroclor-1260	11096-82-5	0.0E+00
South Settling Lagoon	INORG	Antimony	7440-36-0	0.0E+00
South Settling Lagoon	INORG	Arsenic	7440-38-2	0.0E+00
South Settling Lagoon	INORG	Barium	7440-39-3	0.0E+00
South Settling Lagoon	INORG	Beryllium	7440-41-7	0.0E+00
South Settling Lagoon	INORG	Cadmium	7440-43-9	0.0E+00
South Settling Lagoon	INORG	Chromium (total)	7440-47-3	0.0E+00
South Settling Lagoon	INORG	Cobalt	7440-48-4	0.0E+00
South Settling Lagoon	INORG	Copper	7440-50-8	0.0E+00
South Settling Lagoon	INORG	Cyanide (total)	57-12-5	0.0E+00
South Settling Lagoon	INORG	Lead	7439-92-1	0.0E+00
South Settling Lagoon	INORG	Manganese	7439-96-5	1.5E-01
South Settling Lagoon	INORG	Mercury	7439-97-6	0.0E+00
South Settling Lagoon	INORG	Nickel	7440-02-0	0.0E+00
South Settling Lagoon	INORG	Selenium	7782-49-2	0.0E+00
South Settling Lagoon	INORG	Silver	7440-22-4	0.0E+00
South Settling Lagoon	INORG	Thallium	7440-28-0	0.0E+00
South Settling Lagoon	INORG	Vanadium	7440-62-2	0.0E+00
South Settling Lagoon	INORG	Zinc	7440-66-6	0.0E+00
Notes:				
Downgradient Wells = W-2-S, W-3-S, W-4-S				

Supporting Calculations

Table F-3a: Estimated Contributions to Ground Water Concentrations (mg/L) at Moraine Assembly Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6		3.29E-06	7.90E-08	4.15E-09		0.	0.2	
VOC	1,1-Dichloroethane	75-34-3		5.12E-05	1.23E-06	1.95E-08		0.0001	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2							0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2		4.83E-05	1.16E-06	1.34E-06		0.0001	0.07	
VOC	Ethyl Benzene	100-41-4							0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4		8.51E-06	2.05E-07	1.07E-08		0.	0.005	
VOC	Toluene	108-88-3				3.41E-09		0.	1.	
VOC	trans-1,2-Dichloroethene	156-60-5		7.35E-06	1.77E-07	1.71E-08		0.	0.1	
VOC	Trichloroethene	79-01-6		9.66E-05	2.32E-06	1.59E-07		0.0001	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4		9.28E-06	2.23E-07	6.83E-08		0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5							5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

Supporting Calculations

Table F-3b: Estimated Contributions to Ground Water Concentrations (mg/L) at Moraine Engine Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6		1.35E-09	3.06E-13			0.	0.2	
VOC	1,1-Dichloroethane	75-34-3		2.10E-08	4.77E-12			0.	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2							0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2		1.98E-08	4.50E-12			0.	0.07	
VOC	Ethyl Benzene	100-41-4							0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4		3.48E-09	7.92E-13			0.	0.005	
VOC	Toluene	108-88-3							1.	
VOC	trans-1,2-Dichloroethene	156-60-5		3.01E-09	6.84E-13			0.	0.1	
VOC	Trichloroethene	79-01-6		3.96E-08	9.00E-12			0.	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4		3.80E-09	8.64E-13			0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5							5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

Supporting Calculations

Table F-3c: Estimated Contributions to Ground Water Concentrations (mg/L) at West Carrollton Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6			8.38E-12	4.88E-09	5.16E-06	0.	0.2	
VOC	1,1-Dichloroethane	75-34-3	1.30E-05		1.31E-10	2.30E-08	6.19E-06	0.	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2	4.04E-07					0.	0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2	7.98E-06		1.23E-10	1.58E-06	2.03E-05	0.	0.07	
VOC	Ethyl Benzene	100-41-4							0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4	9.47E-07		2.17E-11	1.26E-08	8.94E-05	0.0001	0.005	
VOC	Toluene	108-88-3				4.02E-09		0.	1.	
VOC	trans-1,2-Dichloroethene	156-60-5	1.30E-06		1.87E-11	2.01E-08	4.47E-06	0.	0.1	
VOC	Trichloroethene	79-01-6	1.20E-05		2.46E-10	1.87E-07	5.50E-05	0.0001	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4	3.34E-06		2.36E-11	8.05E-08		0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5	1.94E-04				5.16E-04	0.0007	5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

Supporting Calculations

Table F-3d: Estimated Contributions to Ground Water Concentrations (mg/L) at Great Miami River Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6		1.55E-14	8.17E-12	4.32E-10		0.	0.2	
VOC	1,1-Dichloroethane	75-34-3	7.05E-09	2.42E-13	1.27E-10	2.03E-09		0.	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2	2.20E-10					0.	0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2	4.34E-09	2.29E-13	1.20E-10	1.40E-07		0.	0.07	
VOC	Ethyl Benzene	100-41-4							0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4	5.15E-10	4.02E-14	2.11E-11	1.12E-09		0.	0.005	
VOC	Toluene	108-88-3				3.55E-10		0.	1.	
VOC	trans-1,2-Dichloroethene	156-60-5	7.05E-10	3.47E-14	1.83E-11	1.78E-09		0.	0.1	
VOC	Trichloroethene	79-01-6	6.51E-09	4.57E-13	2.40E-10	1.65E-08		0.	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4	1.82E-09	4.39E-14	2.31E-11	7.11E-09		0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5	1.06E-07					0.	5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

TABLE F-4: Preliminary Remediation Target Levels (Updated February 2006)

Remediation Target Levels (mg/L) - Upper Aquifer

			Constituent of Concern					
Point of Compliance	*GM-26*		*PCE*	*TCE*	*1,1-DCE*	*cis-1,2-DCE*	*Vinyl Chloride*	monitoring wells
Allowable POC Concentration (mg/L):			*0.005*	*0.005*	*0.007*	*0.070*	*0.002*	
Estimated Remediation Target Level at AOI 7 (mg/L):			*0.098*	*0.098*	*0.137*	*1.373*	*0.039*	GM-23, GM-29 and GM-30
Distance from AOI 7 (monitoring zone)	Source Reduction Factor[1]	Normalized Remediation Target	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	
140 ft (Zone S1)	0.9	18	0.088	0.088	0.124	1.235	0.035	GM-28
1190 ft (Zone S1 to Zone S2)	0.47	9	0.046	0.046	0.065	0.645	0.018	GM-28, ME-6
2240 ft (Zone S2)	0.4	8	0.039	0.039	0.055	0.549	0.016	ME-6, ME-3, GM-31
2940 ft (Zone S2 to Zone S3)	0.27	5	0.026	0.026	0.037	0.371	0.011	ME-6, ME-3, GM-31, GM-22, GM-19S, and EAST
3640 ft (Zone S3)	0.19	4	0.019	0.019	0.026	0.261	0.007	GM-32, GM-21, W-4-S, GM-63, and GM-64
4430 ft (Zone S3 to GM-10)	0.15	3	0.015	0.015	0.021	0.206	0.006	GM-47, GM-50, GM-51, GM-63, GM-64, GM-32, GM-21, GM-8, GM-6, 4S, GM-2, GM-16, GM-17, GM-18, WSU-24, W-4-S, and GM-10
5215 ft (GM-10/GM-52)	0.11	2	0.011	0.011	0.015	0.151	0.004	GM-10 and GM-52
6370 ft (POC)	0.051	1	0.005	0.005	0.007	0.070	0.002	GM-26

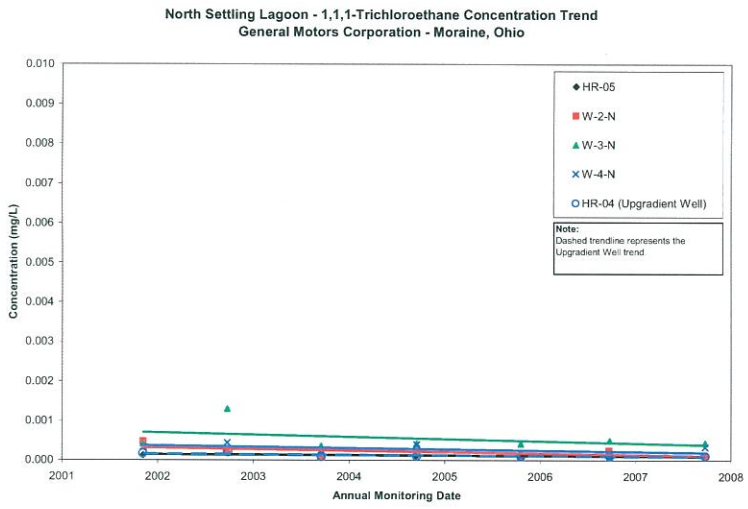
Remediation Target Level (mg/L) - Lower Aquifer

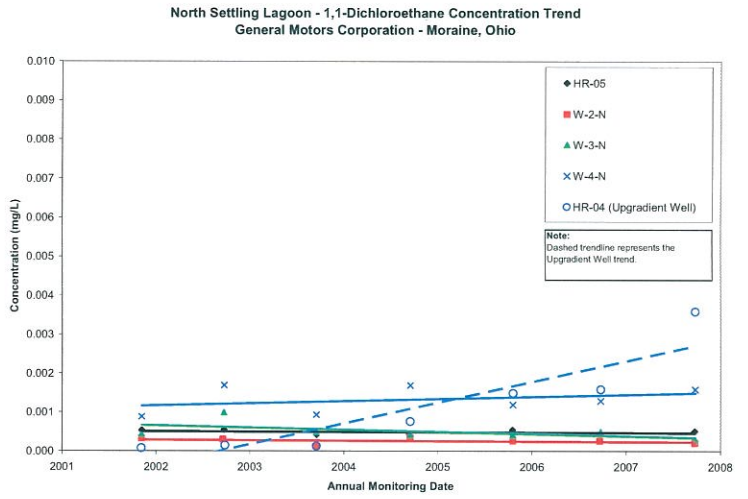
			Constituent of Concern					
Point of Compliance	*GM-11, GM-15 and GM-20D*		*PCE*	*TCE*	*1,1-DCE*	*cis-1,2-DCE*	*Vinyl Chloride*	monitoring wells
Allowable POC Concentration (mg/L):			*0.005*	*0.005*	*0.007*	*0.070*	*0.002*	
Estimated Remediation Target Level at AOI 7 (mg/L):			*0.128*	*0.128*	*0.179*	*1.795*	*0.051*	GM-23, GM-29 and GM-30
Distance from AOI 7 (monitoring zone)	Source Reduction Factor[1]	Normalized Remediation Target	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	
2000 ft (GM-40/41/54)	0.18	4.6	0.023	0.023	0.032	0.323	0.009	GM-40, GM-41, and GM-52
2900 ft (Well GM-42)	0.06	1.5	0.008	0.008	0.011	0.108	0.003	GM-42 (replaces Well 32)
3600 ft (Well GM-19D)	0.046	1.2	0.006	0.006	0.008	0.083	0.002	GM-19D
4250 ft (Zone D2)	0.042	1.1	0.005	0.005	0.008	0.075	0.002	GM-1 and GM-3
4900 ft (P0C)	0.039	1.0	0.005	0.005	0.007	0.070	0.002	GM-11, GM-15 and GM-20D

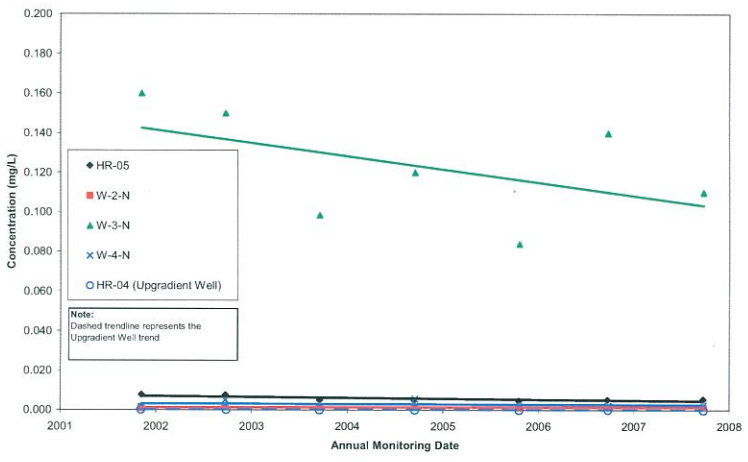
Note

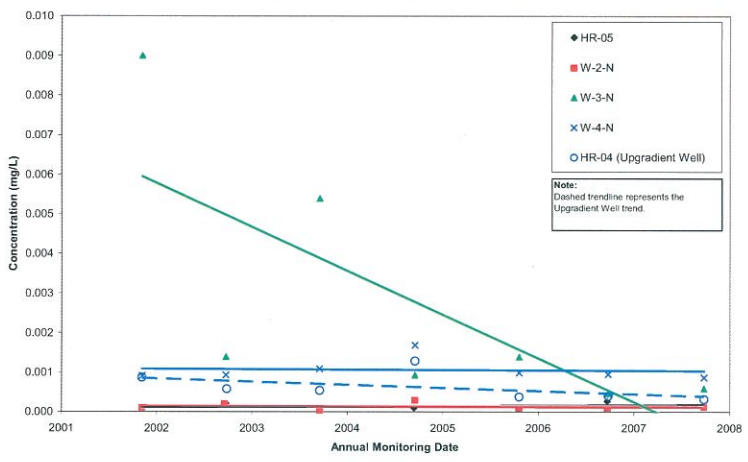
1. Source Reduction Factors reflect updated groundwater model results generated using current site pumping conditions without interim measures pumping (Pumping Scenario 1; updated Feb 2006

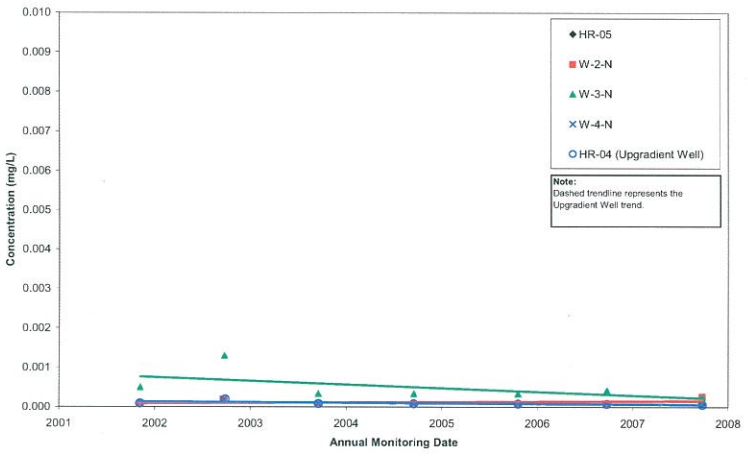
Figure F-1:
North Settling Lagoon

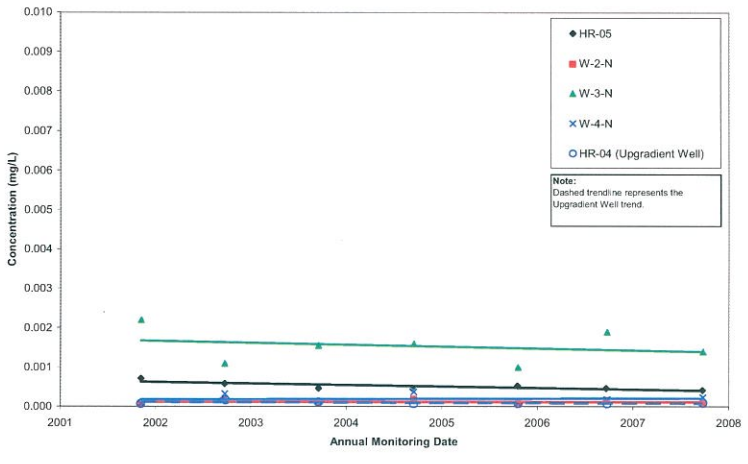


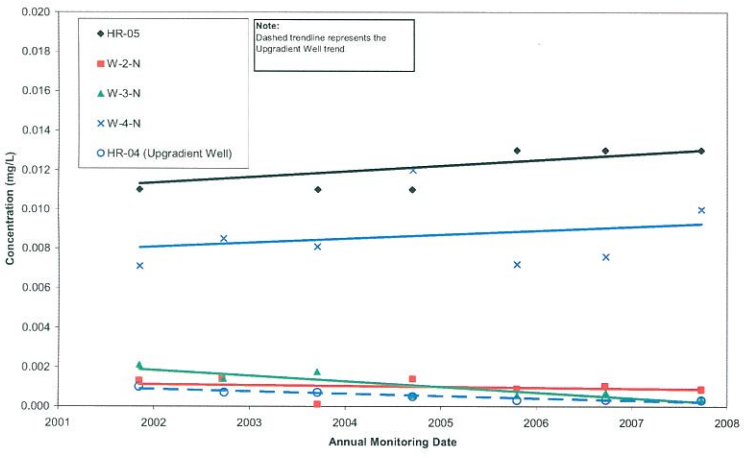












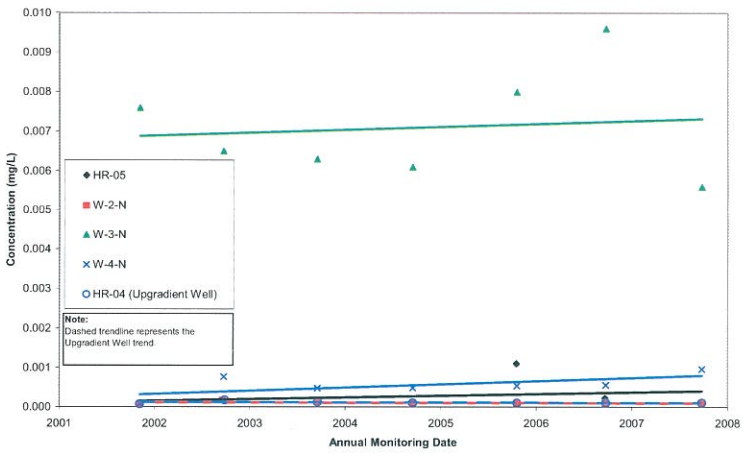


Figure F-2:
South Settling Lagoon