
Corrective Measures Proposal

Pontiac North Campus

General Motors Corporation
Pontiac, Michigan

November 26, 2003



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LIST OF ACRONYMS

amsl	Above Mean Sea Level
AOI	Area of Interest
AST	Aboveground Storage Tank
AVS/SEM	Acid volatile sulfide/simultaneously extracted metals
BERA	Baseline Ecological Risk Assessment
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
BTU	British Thermal Units
CCR	Current Conditions Report
CEC	Clayton Environmental Consultants
CET	Carlo Environmental Technologies, Inc.
CMP	Corrective Measures Proposal
CMS	Corrective Measures Study
COC	Constituent of Concern
CoPC	Chemical of Potential Concern
CPC	Chevrolet-Pontiac-Canada Group
CPI	Corrugated Plate Interceptor
CRA	Conestoga-Rovers & Associates
CSA	Closed Container Storage Area
CY	Cubic Yards
DA	Demolition Area
DEP	Department of Environmental Protection
DNAPL	Dense Non-aqueous Phase Liquid
EEC	Encore Environmental Consortium, LLC
EI	Environmental Indicator
ELPO	Electrodeposition
ENCORE	Environmental Corporate Remediation
ERA	Ecological Risk Assessment
Facility	GM Pontiac North Campus Site
FOIA	Freedom of Information Act
FSP	Field Sampling Plan
GAC	Granular Activated Carbon
GCC	Groundwater Contact Criteria
GIS	Geographical Information System
GM	General Motors Corporation
GMC	General Motors Corporation
GMNA	General Motors North America
gpd	Gallons per Day
GSI	Groundwater-Surface Water Interface
GTI	Groundwater Technologies, Inc.
HI	Hazard Index
HQ	Hazard Quotient
HSA	Hollow-stem Auger

HVO	Halogenated Volatile Organic Compound
ID	Inner Diameter
IDC	Michigan NREPA Part 201 Generic Industrial Direct Contact Criteria
IDWC	Michigan NREPA Part 201 Generic Industrial Drinking Water Criteria
IGVIC	Michigan NREPA Part 201 Generic Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria
IM	Interim Measure
IPSIC	Michigan NREPA Part 201 Generic Industrial Particulate Soil Inhalation Criteria
ISVIC	Michigan NREPA Part 201 Generic Industrial Soil Volatilization to Indoor Air Inhalation Criteria
IVSIC	Michigan NREPA Part 201 Generic Industrial Infinite Source Volatile Soil Inhalation Criteria
IWTP	Industrial Wastewater Treatment Plant
LNAPL	Light Non-aqueous Phase Liquid
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
MERA	Michigan Environmental Response Act
MFD	Metal Fabrication Division
mg/L	Milligrams per Liter
MPS	MPS Group, Inc.
MTBE	Methyl-tert-butyl-ether
NET	National Environmental Testing
NFA	No Further Action
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NREPA	Natural Resources and Environmental Protection Act (1994 PA 451, as amended)
OBG	O'Brien and Gere
ORC®	Oxygen Releasing Compound
OSHA	Occupational Safety and Health Administration
PAH	Purgable Aromatic Hydrocarbon
PA/VSI	Preliminary Assessment/Visual Site Inspection
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PNA	Polynuclear Aromatic Hydrocarbon
PNC	Pontiac North Campus
POTW	Publicly Owned Treatment Works
PRC	PRC Environmental Management, Inc.
PSB	Pontiac School Board
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
RAGS	USEPA Risk Assessment Guidance for Superfund
RAP	Remedial Action Plan
RBCA	Risk Based Corrective Action

RCRA	Resource Conservation and Recovery Act
RDC	Michigan NREPA Part 201 Generic Residential Direct Contact Criteria
RDWP	Michigan NREPA Part 201 Generic Residential Drinking Water Protection Criteria
RDWC	Michigan NREPA Part 201 Generic Residential Drinking Water Criteria
RFI	RCRA Facility Investigation
RGVIC	Michigan NREPA Part 201 Generic Residential Groundwater Volatilization to Indoor Air Inhalation Criteria
RPSIC	Michigan NREPA Part 201 Generic Residential Particulate Soil Inhalation Criteria
RSVIC	Residential Soil Volatilization to Indoor Inhalation
SAA	Satellite Accumulation Area
SERA	Screening Environmental Risk Assessment
SF	Square Feet
SPO	Service Parts Operations
SVE	Soil Vapor Extraction
SVIAC	Michigan NREPA Part 201 Generic Soil Volatilization to Indoor Air Inhalation Criteria
SVOC	Semi-Volatile Organic Compound
SWDF	Stormwater Detention Facility
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCDD	2,3,7,8- Tetrachlorodibenzo-p-dioxin
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TEC	Testing Engineers and Consultants
TEQ	Toxicity Equivalents
TEF	Toxicity Equivalence Factors
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substance Control Act
TSD	Treatment Storage and Disposal
UCL	Upper Confidence Limit
U.S.EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VA	Voluntary Corrective Action Agreement
VOC	Volatile Organic Compound
VSI	Visual Site Inspection
VSR	Verification of Soil Remediation
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

1.1 GENERAL

On October 10, 2000, the U.S. Environmental Protection Agency (U.S. EPA) and General Motors Corporation (GM) entered into a Performance Based Voluntary Corrective Action Agreement (The Agreement) for the Pontiac North Campus (PNC) located in Pontiac, Michigan (Site). The Agreement calls for GM to work independently and voluntarily to investigate and, as necessary, stabilize and remediate releases of hazardous waste or hazardous constituents at or from the Site in accordance with the Resource Conservation and Recovery Act (RCRA) and relevant U.S. EPA corrective action guidance documentation. This Corrective Measures Proposal (CMP) for the Site was prepared by Encore Environmental Consortium, L.L.C. (EEC) for Environmental Corporate Remediation (ENCORE), a wholly owned subsidiary of GM. This CMP summarizes interim measures (IMs) at the facility since the effective date of The Agreement and describes the proposed corrective measures and rationale for the selection of the corrective measures.

Comprising approximately 595 acres, the Site is located in the city of Pontiac, Oakland County, Michigan (see Figure 1-1). Surrounding areas consist of residential subdivisions and mixed commercial and light industrial use properties. The Site encompasses four facilities as follows (see Figure 1-2):

- Chevrolet-Pontiac-Canada Group (CPC) Pontiac Fiero Assembly Plant (formerly General Motors Corporation [GMC] Fisher Body Division); GMNA Property Management Fiero Facility, Baldwin Ave, Pontiac, Michigan 48340; (U.S. EPA ID No. MID 005356910);
- GMC Central Foundry Division - Pontiac Plant, One Pontiac Plaza, Pontiac, Michigan 48340 (U.S. EPA ID No. MID 085470102) (Now demolished);
- CPC - Pontiac; GM Metal Fabricating Division Pontiac; 220 E. Columbia Ave, Pontiac, Michigan 48340 (U.S. EPA ID No. MID 005356886); and
- GMC Warehousing and Distribution Division; Service Parts and Operations; 9251 Joslyn Rd, Pontiac, Michigan 48340 (U.S. EPA ID No. MID 076331289).

Figure 1-3 shows each of the Site operational areas and off-Site areas, while Figure 1-4 shows an overlay of the operational areas and the facility boundaries. The operational areas discussed in this document are as follows:

- Fiero;
- Demolition Area (DA);
- Metal Fabrication Division (MFD);

- Powertrain; and
- Service Parts Operation (SPO).

The following off-Site areas are also discussed in this document:

- Pontiac School Board (PSB) Property;
- Harris Lake;
- Terry Lake; and
- Osmun Lake.

Sixty-four Areas of Interest (AOIs) were identified as part of the Current Conditions Report (CCR [ENCORE, 2001a]), as follows:

- Seven SWMUs identified by GM in the 1986 Certification Regarding Potential Releases from Solid Waste Management Units (GM, 1986);
- SWMUs identified by PRC in the Fiero PA/VSI Report (PRC, 1992); and
- 46 other AOIs identified by GM as a result of a thorough review of historical GM files, Freedom of Information Act (FOIA) requests to regulatory agencies, discussions with GM personnel, and multiple Site walkthroughs.

These AOIs are presented on Figure 1-5. An additional three AOIs were subsequently identified since the completion of the RCRA Facility Investigation (RFI) Report (ENCORE, 2002a), as well as four off-Site areas where potential impacts had occurred from Site operations. These off-Site areas and additional AOIs are also shown on Figure 1-5. Additionally, Site storm sewers are included in this report based on current environmental impacts identified during the RFI process. The status of all AOIs and the off-Site areas are summarized in Table 1-1.

The following activities associated with the RCRA Corrective Action have been completed to date:

- The Agreement for RCRA Corrective Action between GM and the U.S. EPA became effective on October 30, 2000;
- The CCR was submitted to the U.S. EPA on January 31, 2001 (ENCORE, 2001a);
- The Quality Assurance Project Plan (QAPP) was submitted to the U.S. EPA on May 15, 2001 as an appendix to the RFI Work Plan (ENCORE, 2001b);
- The RFI Work Plan was submitted to the U.S. EPA on May 15, 2001 (ENCORE, 2001b);

- Addendum No. 1 to the RFI Work Plan for investigations of the Pontiac School Bus (PSB) Maintenance Facility and Harris Lake was submitted to the U.S. EPA on August 14, 2001 (ENCORE, 2001c);
- Addendum No. 2 to the RFI Work Plan was submitted to the U.S. EPA on September 10, 2001 (ENCORE, 2001d);
- Addendum No. 3 to the RFI Work Plan was submitted to the U.S. EPA on February 6, 2002 (ENCORE, 2002a). The addendum covered investigations at AOIs W-1, W-8, W-9, W-10, M-1, M-2, M-4, M-5, M-16, M-19, and P-6 as well as LNAPL delineation at LNAPL Areas No. 1, No.2, and No. 3. In addition, further investigations were proposed at PSB and Harris Lake;
- Addendum No. 1 to the CCR (Harris Lake) was submitted to the U.S. EPA on February 13, 2002 (ENCORE, 2002b);
- RFI field activities commenced the week of June 11, 2001 with the first round of groundwater sampling completed the week of September 17, 2001;
- Field activities associated with the RFI Work Plan Addenda No. 1 and No. 2 (ENCORE, 2001c and d) were completed the week of October 15, 2001;
- Field activities associated with RFI Work Plan Addendum No. 3 (ENCORE, 2002a) were completed February 19, 2002;
- Field activities associated with the delineation of the LNAPL Areas No. 1, No. 2, and No. 3 were completed February 19, 2002;
- The Harris Lake Baseline Risk Assessment was submitted to the U.S. EPA on April 30, 2002 as an appendix to the RFI Report (ENCORE, 2002c);
- The draft RFI (ENCORE, 2002c) and RCRA Environmental Indicators [EI (Environ, 2002)] Reports were submitted to the U.S. EPA on April 30, 2002;
- Response to U.S. EPA comments on the draft RFI and EI Reports were submitted to the U.S. EPA on July 30, 2002;
- Additional comments from the U.S. EPA on the EI (Environ, 2002) and RFI Report (ENCORE, 2002c) were received on December 6, 2002;
- Responses to U.S. EPA comments on the EI (Environ, 2002) and RFI Report (ENCORE, 2002c) were provided on December 6, 2002;
- Work Plan for the Storm Sewer Pipe Removal at the PSB Property was submitted to the U.S. EPA on February 14, 2003, and revised on March 11, 2003 (ENCORE, 2003a);
- RFI Work Plan Addendum No. 4 for LNAPL delineation at AOI M-2 was submitted to the U.S. EPA on March 14, 2003 (ENCORE, 2003b);

- Baseline Ecological Risk Assessment for Harris Lake was completed on April 1, 2003 (ENCORE, 2003c);
- RFI Work Plan Addendum No. 5 for the investigation of the pipeline release at AOI P-9 was submitted to the U.S. EPA on April 10, 2003 (ENCORE, 2003d);
- RFI Work Plan Addendum No. 6 for the investigation of the former Plant 18 (AOI P-10) was submitted to the U.S. EPA on April 10, 2003 (ENCORE, 2003e);
- RFI Work Plan Addendum No. 7 for the investigation of the trestle pipeline release at AOI P-11 was submitted to the U.S. EPA on April 10, 2003 (ENCORE, 2003f);
- RFI Work Plan Addendum No. 8 for the investigation of AOIs F-7, F-15, M-1, M-4, M-5, M-16, M-25, and P-6 was submitted to the U.S. EPA on May 19, 2003 (ENCORE, 2003g);
- RFI Work Plan Addendum No. 9 for the supplemental investigation of DA was submitted to the U.S. EPA on August 1, 2003 (ENCORE, 2003h);
- RFI Work Plan Addendum No. 8A, amending RFI Work Plan Addendum No. 8, was submitted to the U.S. EPA on August 26, 2003 (ENCORE, 2003i); and
- RFI Supplemental Report No. 1 (ENCORE, 2003j) was submitted to the U.S. EPA on November 26, 2003 as an addendum to the RFI Report (ENCORE, 2002c), and in conjunction with this CMP.

1.2 PURPOSE AND SCOPE

The purpose of this document is to propose final corrective measures for those AOIs that were identified in the RFI Report (ENCORE, 2002c) and RFI Supplemental Report No. 1 (ENCORE, 2003j) as having the potential to have released hazardous waste or hazardous constituents that may pose an unacceptable risk to human health and the environment. It was concluded that these AOIs require further action to mitigate the identified environmental conditions.

This CMP discusses all AOIs and off-Site areas identified during activities associated with the CCR (ENCORE, 2001a) and RFI (ENCORE, 2002c). Those AOIs and off-Site areas were concluded to require further action after completion of RFI activities which are discussed in detail with respect to the scope and results of the respective investigations. Any IMs implemented at the Site since the effective date of The Agreement are also discussed. A Site habitat evaluation and an evaluation of human health risks associated with current and potential land uses at the Site are also presented. Final corrective measures are proposed for each respective AOI and off-Site area following a discussion of available alternatives.

The following criteria are addressed with respect to each proposed corrective measure proposed (U.S. Department of Energy, 2000):

1. Long-term reliability and effectiveness, along with the degree of certainty that remedies will remain protective of human health and the environment, considering, as appropriate: the magnitude of risks that will remain at a site from untreated hazardous wastes and hazardous constituents and treatment residuals, and the reliability of any containment systems and institutional controls;
2. Reduction of toxicity, mobility, or volume through treatment of hazardous wastes and hazardous constituents, including how treatment is used to address principal threats posed by the facility, and the degree to which remedies employ treatment that reduces the toxicity, mobility, or volume of hazardous waste and hazardous constituents, considering, as appropriate: the treatment processes to be used and the amount of hazardous waste and hazardous constituents that will be treated; the degree to which treatment is irreversible; and the types of treatment residuals that will be produced;
3. Short-term effectiveness and short-term risks remedies pose, along with the amount of time it will take for remedy design, construction, and implementation;
4. Ease or difficulty of remedy implementation, considering, as appropriate: the technical feasibility of constructing, operating, and monitoring the remedy; the administrative feasibility of coordinating with and obtaining necessary approvals and permits from other agencies; and the availability of services and materials, including capacity and location of needed treatment, storage, and disposal services;
5. Capital as well as operation and maintenance costs, and the net present value of these costs;
6. The degree to which remedies are acceptable to the surrounding community; and
7. The degree to which remedies are acceptable to the state in which the facility is located.

1.3 DOCUMENT ORGANIZATION

This CMP document is organized as follows:

- Section 2.0 provides general Site information describing Site location, current & historical operations, regulatory history, land use, demographics, and environmental setting;
- Section 3.0 discusses the AOIs that the CCR (ENCORE, 2001a) concluded to require no further action (NFA) (i.e., not included in the RFI);
- Section 4.0 presents evaluations of each AOI and off-Site area included in the RFI Report (ENCORE, 2002c) or the RFI Supplemental Report No. 1 (ENCORE, 2003j);
- Section 5.0 provides descriptions of any IMs implemented at the Site following the effective date of The Agreement;

- Section 6.0 provides an evaluation of groundwater quality at the downgradient perimeter of the Site;
- Section 7.0 presents a Site habitat evaluation;
- Section 8.0 discusses the assessment of Site risks to human-health with respect to anticipated and future land-use;
- Section 9.0 provides an evaluation of all corrective measures considered for each AOI;
- Section 10.0 presents the final control measures proposed for each AOI; and
- Section 11.0 lists references.

2.0 FACILITY BACKGROUND

This section provides a general description of the Site location, historical and current operations at the Site, a review of historical topographic and Sanborn maps and aerial photographs, RCRA regulatory history, and historical and current waste management practices. In addition, the Site environmental setting is discussed.

2.1 CURRENT AND HISTORICAL OPERATIONS

This subsection contains information regarding current and historical operations at each of the five operational areas at the Site as shown on Figure 1-3. Information regarding the Site prior to development in 1924 was not available.

Historically, a wide range of automotive-related production processes, including car assembly, engine assembly, plating, heat treating, painting, metal stamping, machining, foundry operations, metal casting, and wastewater treatment activities, have been performed at the Site. Currently, the Site is used for metal fabrication, warehousing, and engineering. Many of the plants have changed designations during the life of the facility. Table 2-1 presents a summary of historical and current plant designations and associated activities. The locations of the plants, with current designations, are shown on Figure 1-3.

Since initiation of the of the corrective action (CA) activities, various Site development activities have occurred at the Site. These changes are summarized as follows:

- Improvements to Beverly Avenue and construction of Glenwood Avenue road extension from Montcalm to Beverly Avenue;
- Construction of new administrative building along Joslyn Avenue in the eastern portion of Powertrain; and
- Ongoing construction of parking lots throughout Powertrain.

2.1.1 FIERO

The Fiero operational area consists of approximately 81 acres located at the southwestern portion of the Site (Figure 1-3) and includes Plant 17. Currently, this area is used for prototyping, storage, and other non-production purposes.

Operations began at the Fiero facility in 1925 as the GMC Fisher Body Plant. This Plant supplied closed-type automotive bodies for the Oakland Motor Car Company, located at the Site. In 1932, the Oakland Motor Car Company became the Pontiac Motor Division. In 1935, the original GMC Fisher Body Plant, located at the Site, combined operations with the GMC

Fisher Body Pontiac Plant with operations consisting of metal fabrication, soft trim fabrication, and body assembly. In 1942, operations at the Fiero facility converted to defense production work, which included production of military vehicle parts.

The facility was modernized to a two-line automotive assembly and operated from 1959 to 1961. In August 1982, the facility ceased operations, and the Pontiac Motor Division took possession of the Site and renamed it Fiero. From 1983 to 1988, the Pontiac Fiero was assembled in Plant 17 on a one-car assembly line. The plant was divided into a body shop, chassis department, paint shop, and trim department. Fiero assembly operations ceased in August 1988. Since 1988, the facility has been used for various non-production purposes, including storage and prototyping.

Current and historical wastes generated from car assembly at Fiero may have included scrap metal and metalworking fluids and oils (petroleum-based, oil-water emulsions, or synthetic emulsions), paints, paint solvents, and plasticizers. A wastewater treatment plant was in operation at the Site from 1973 to 1983 and managed wastewater, wastewater treatment sludge, paint sludge, and bonderite sludge.

2.1.2 DEMOLITION AREA (DA)

The DA consists of approximately 48 acres of the south-central portion of the Site. There are currently no buildings or operations within the DA portion of the Site. The three former main operational buildings (the Foundry [Plant 6], Final Vehicle Assembly [Plant 8], and Engine Construction [Plant 9]) were demolished in 1995, 1997, and 1997, respectively. Since 1996, the DA has been the subject of ongoing soil and groundwater investigations and various IMs that will be discussed in Section 6. The former plant locations are shown on Figure 1-3.

Construction of the Foundry (Plant 6) and Final Vehicle Assembly Plant (Plant 8) took place from 1927 to 1929. During this time, operations within these plants included production of parts and cars for the Oakland Motor Car Company. Expansions of the Foundry took place in 1937, 1940, 1941, 1945, 1946, 1957, and 1962. Expansions to Plant 8 took place in 1956, 1960, 1962, 1963, 1964, and 1970. Fisher Body Division commenced construction of the Engine Construction Building (Plant 9) in 1925, with construction completed by the mid-1930s. Expansions to Plant 9 took place in 1945, 1954, 1959, and 1967. In 1987, operations in Plants 6, 8, and 9 ceased. Plant 6 was demolished in 1995, and Plants 8 and 9 were demolished in 1997.

West of the Foundry (Plant 6) is an area referred to as the West Yard (see Figure 1-3). The West Yard was used for material disposal activities, including foundry sand disposal, refuse disposal, sludge dumping, and trash burning. An area designated as the Railroad Marshalling Area, located along the western side of the West Yard, was used for temporary storage of railcars loaded with scrap metal prior to being shipped off-Site. Also located in the West Yard were the Flammable Liquids Storage Building, the Compressor Building, and the Salvage Building. The

Emissions Control Building. Paved parking areas and roadways occupy much of the land. A vacant area also exists where former Plant 18 was located (see Figure 1-3).

The Powertrain Headquarters Building was constructed in 1967, with a cafeteria adjoining the building constructed in 1990. The Powertrain Engineering Building was constructed between 1966 and 1970. A former car wash, located west of the Powertrain Engineering Building, was constructed in 1967, and was subsequently demolished in 1998. The Emissions Control Building was constructed between 1966 and 1970 and is still present.

On the west portion of the current Powertrain area, an Engine plant (Plant 18) was constructed in 1942 and was expanded in 1953. Plant 18 ceased operations and was demolished in 1998.

A new administration building was also built directly south of Powertrain in 2002/2003. Parking lots are currently being constructed in the area west of the new building and in the vicinity of former Plant 18.

Current and historical wastes generated at Powertrain may have included general trash and nonhazardous wastes, paint-related materials, waste solvents, laboratory wastes, batteries, and waste gasoline and diesel fuel.

2.1.5 SERVICE PARTS OPERATIONS (SPO)

The SPO area consists of 80 acres of land located at the northern portion of the Site (Figure 1-3) and includes Warehouse Storage and Shipping & Receiving operations and parts painting (Plant 75). The building and adjacent paved roadways and parking areas encompass nearly all of this area.

The eastern portion of Plant 75 was built in 1964. Several expansions of Plant 75 occurred until the 1990s.

Current and historical wastes generated at the SPO area may have included paint-related material, parts washer solvent, plant trash, light ballast, and scrap auto parts (including leaded batteries).

2.2 RCRA REGULATORY HISTORY

A history of the Site with respect to RCRA compliance activities for each of the four facilities shown on Figure 1-2 is presented in the following sections.

2.2.1 CPC PONTIAC FIERO ASSEMBLY PLANT OF GMC (U.S. EPA ID NO. MID 005356910)

GM submitted a Notification of Hazardous Waste Activity (U.S. EPA Form 8700-12) on August 8, 1980 (GM, 1980c) and a RCRA Part A Permit Application on November 11, 1980 (GM, 1980e). The Part A Permit Application listed the GMC Fisher Body Division Pontiac as a treatment, storage, and disposal (TSD) facility. The permit cited processes requiring container storage (S01), tank storage (S02), tank treatment (T01), and other treatment (T04). In the June 1985 revision to the Part A Permit Application, the name of the facility was changed to CPC Pontiac Fiero Assembly Plant of GMC (GM, 1985b).

A discussion of the Interim Status Units for the CPC Pontiac Fiero Assembly Plant of GMC is provided below. Available RCRA Part A Permit Applications and related correspondence were presented in the CCR (ENCORE, 2001a).

2.2.1.1 CONTAINER STORAGE

The container storage interim status unit was located outside Plant 17 in the southwest driveway adjacent to the railroad tracks. The container storage area had an 18,700 gallon capacity and was used to store F001, F002, F007, F008, F003, F005, F010, F011, F017, and D001 waste (GM, 1980c). GM removed all waste codes except D001 waste in the June 1985 Part A Permit Application revision (GM, 1985c). GM received clean closure for the container storage area in February 1988 (Michigan Department of Natural Resources (MDNR), 1988a). A new container storage area was constructed on the south side of the storage dock of the assembly plant to replace the former container storage area (GM, 1985b). The new area had the same storage capacity as the former area and was used to store D001, F001, and F003 wastes (GM, 1987e). A closure report for the new container storage area was submitted in January 1995 RUST (RUST, 1995); however, GM has not received official notification of clean closure from the Michigan Department of Environmental Quality (MDEQ).

2.2.1.2 TANK STORAGE AND TREATMENT

In the November 1980 Part A Permit Application, the interim status units for tank storage (600,000 gallon capacity), tank treatment (768,000 gallons per day [gpd] capacity), and other treatment (3,501,600 gpd capacity) were associated to the WWTP (GM, 1980e). The November 1980 Part A permit application cited 384,000 gpd wastewater treatment sludge dewatering, 3,110,400 gpd paint sludge dewatering, and 86,400 gpd bonderite sludge dewatering in the "other treatment" (T04) treatment category. The WWTP stored and/or treated F018, F006, F009, F017, and D002 wastes. The tank storage, tank treatment, and other treatment processes associated with the WWTP were removed from the Part A Permit Application in June 1985 due to the January 4, 1985 RCRA Amendments (GM, 1985b).

A new interim status (IM) unit for tank storage was included in the June 1985 Part A Permit Application revision. The interim status unit was the waste purge thinner UST, located north of Plant 17 and west of the paint mix building. The unit had a capacity of 12,000 gallons and was used to store D001 waste (GM, 1985b). The waste category was changed to F005 waste in the February 1986 Part A Permit Application revision (GM, 1986b). A closure report for the waste purge thinner UST was submitted in January 1995 RUST (RUST, 1995); however, GM has not received official notification of clean closure from the MDEQ.

2.2.2 GMC CENTRAL FOUNDRY DIVISION PONTIAC PLANT (U.S. EPA ID NO. MID 085470102)

GM submitted a Notification of Hazardous Waste Activity in August 1980 (GM, 1980a) and a RCRA Part A Permit application to the U.S. EPA on November 17, 1980 (GM, 1980f). The Part A Permit application listed the GMC Central Foundry Division Pontiac plant as a TSD facility. The permit cited processes requiring container storage (S01) and treatment (T04). The container storage and treatment area was located west of the northern end of the former casting plant. Baghouse dust (D006) was the only waste listed on the application.

In February 1981, GM received a letter from the U.S. EPA (waste analysis program) that the baghouse dust stored at the plant did not meet the definition of a hazardous waste under 40 CFR Part 261.24 (U.S. EPA, 1981). The Arc Furnace Baghouse Dust EP Toxicity Study by Clayton Environmental Consultants, Inc. (CEC) confirmed the previous U.S. EPA findings (CEC, 1981).

Based on the CEC report, GM withdrew the RCRA Part A Permit application in July 1982 (GM, 1982b). Based on the information submitted by GM, the U.S. EPA (waste management branch) confirmed that the baghouse dust was not defined as a hazardous waste (40 CFR 261.3); therefore, they concluded that the facility was not required to have a hazardous waste permit under Section 3005 of RCRA (U.S. EPA, 1983).

The RCRA Part A permit application and associated correspondence were presented in the CCR (ENCORE, 2001a).

2.2.3 CPC PONTIAC OF GENERAL MOTORS CORPORATION (U.S. EPA ID NO. MID 005356886)

GM submitted a Notification of Hazardous Waste Activity on August 8, 1980 (GM, 1980b) and a RCRA Part A permit application on November 18, 1980 (GM, 1980g). The Part A Permit Application listed the Pontiac Motor Division of GMC as a TSD facility. The permit cited process codes for container storage (S01), tank storage (S02), surface impoundment storage (S04), tank treatment (T01), surface impoundment treatment (T02) and other treatment (T04).

3.0 AOIs WHERE RFI SAMPLING NOT NECESSARY

A number of AOIs were not investigated as part of the RFI. Neither visual inspections nor examination of the available historical records during the development of the CCR (ENCORE, 2001a) could detect evidence of releases from these AOIs. It was consequently concluded in the CCR (ENCORE, 2001a) that these areas required NFA. The following sections summarize these areas.

This section is organized according to the following five operational areas that make up the Site, and a sixth area, the Site storm sewer system for Outfall 001:

- Fiero;
- DA;
- MFD;
- Powertrain;
- SPO; and

These operational areas are illustrated on Figure 1-3.

All AOIs discussed in this section were designated as NFA in the CCR (ENCORE, 2001a), because they were previously clean or closed, due to the lack of evidence of a release, or due to the nonhazardous nature of the materials managed in these areas. A breakdown of the number and type of AOIs for each area is discussed below. Each AOI is discussed according to AOI description, historical and current operations, previous remedial investigations and actions, and the conclusions of the CCR (ENCORE, 2001a).

3.1 FIERO

A total of nine AOIs associated with Fiero were concluded to require NFA in the CCR (ENCORE, 2001a). These areas are discussed in the following sections.

3.1.1 POWERHOUSE SATELLITE ACCUMULATION AREAS (AOI F-1)

AOI F-1 consists of two satellite accumulation areas (SAAs) identified as SAA1 and SAA2, which are both located in the Powerhouse south of Plant 17. SAA1 was identified as SWMU 1 in the Fiero PA/VSI Report (PRC, 1992); therefore, it was considered an AOI.

SAA2 was not identified as a SWMU in the Fiero PA/VSI Report (PRC, 1992); however, it was identified as an AOI due to its proximity to SAA1.

SAA1 is located in the basement of the Powerhouse and consists of one 55-gallon drum that stores waste paint thinner and is placed directly on the concrete floor. SAA1 has been active since August 1988, when Plant 17 ceased assembly operations.

SAA2 is located in the compressor room of the Powerhouse and consists of approximately fifteen 55-gallon drums that store waste oils. When a drum is filled, it is transferred to Plant 5 for disposal.

There have been no documented releases from either SAA1 or SAA2 and no investigations or remedial actions have been conducted in association with SAA1 or SAA2.

During an August 2000 Site walkthrough, which evaluated potential AOIs for the CCR (ENCORE, 2001a), both of the SAAs were observed to be in good condition (i.e., the concrete was not cracked, no extensive staining was observed).

Based on a visual Site walkover, lack of documented releases, and information in the Fiero PA/VSI Report (PRC, 1992), the CCR (ENCORE, 2001a) recommended NFA for AOI F-1.

3.1.2 WASTE GASOLINE ACCUMULATION AREA (AOI F-2)

AOI F-2 consists of a waste gasoline accumulation area located in the maintenance area of Plant 17. This area was previously identified as a SWMU (SWMU 2) in the Fiero PA/VSI Report (PRC, 1992); therefore, this area was considered an AOI.

The waste gasoline accumulation area consists of one 55-gallon drum used to store waste gasoline with the drum placed directly on the concrete floor. The Fiero PA/VSI Report (PRC, 1992) stated that this area had been operational since at least August 1988, when the plant ceased assembly operations.

There have been no documented releases related to the waste gasoline accumulation area and no investigations or remedial actions have been conducted in association with the waste gasoline accumulation area.

During an August 2000 Site walkthrough, the area indicated on the Site figure provided in the Fiero PA/VSI Report (PRC, 1992) was located. However, there was no evidence of a waste gasoline accumulation area being present. Based on this information, the CCR (ENCORE, 2001a) recommended NFA for AOI F-2.

3.1.3 CONTAINER STORAGE AREA (CSA) (AOI F-3)

AOI F-3 consists of a CSA (RCRA Interim Status Unit) located on the south side of the storage dock, outside the assembly plant. This area managed both liquid and solid waste and was

previously identified on the Part A Permit Application (GM, 1987e) and as a SWMU (SWMU 3) in the Fiero PA/VSI Report (PRC, 1992); therefore, the area was considered an AOI.

The CSA (RCRA Interim Status Unit) was constructed in July 1986 to replace the closed CSA (AOI F-4). The CSA managed both solid and liquid wastes generated from a number of areas in the Fiero assembly plant. The CSA consisted of a concrete pad that was approximately 65 feet by 90 feet, with a thickness of 8 inches. The area was partially bermed with 1- to 4-foot-high concrete berms. The pad's concrete joints are sealed and if a release occurred, it was routed through a collection sump to the existing WWTP located on the MFD portion of the Site. Wastes were stored in this area for more than 90 days. Wastes included ignitable waste, chlorinated solvents, and various paint wastes. The maximum capacity of the CSA was three hundred-eighty 55-gallon drums. When the Fiero Plant ceased automobile assembly activities in August 1988, GM closed the CSA. Closure activities were completed in 1989 Techna (Techna, 1990).

Two aboveground storage tanks (ASTs) were located in a separately contained area in the southwest corner of the CSA. GM originally planned to use the tanks for waste oil storage but decided that the tanks were not required and they were never used.

There have been no documented releases from the CSA.

Previous investigations included a soil investigation as part of the CSA closure activities, and a supplemental soil and groundwater investigation. Remedial actions consisted of the CSA closure activities.

Prior to closure activities, the wastes stored on the CSA were removed, transported, and disposed of at a hazardous waste treatment or disposal facility. GM cleaned and decontaminated the concrete pad, the collection sump, and the trench and piping.

Techna (1990) collected 21 confirmation soil samples as part of the closure activities, and recommended additional investigation at the CSA because select volatile organic compounds (VOCs) in soil were above the applicable criteria at that time Techna (Techna, 1990).

In August 1991, Testing, Engineers and Consultants, Inc. (TEC) conducted an additional subsurface investigation at the CSA (TEC, 1992). TEC collected soil samples and groundwater samples where tetrachloroethene (PCE) and 1,1,1-trichloroethene exceeded Michigan Type B soil criteria values. RUST (1995) concluded from the previous data that the VOCs present in soils below the CSA were most likely attributable to historical activities.

In January 1995, GM submitted a RCRA Closure Report for the CSA to MDNR RUST (RUST, 1995). This report summarized the two previous investigations conducted at the CSA. MDNR

sent a letter to GM on March 31, 1995 stating that the agency would begin reviewing the RCRA Closure Report in early 1996 (MDNR, 1995a). No further communication was noted in the files.

Subsequently, GM prepared a revised closure report and is pursuing final closure certification from the MDEQ. Based on the closure activities described previously, the CCR (ENCORE, 2001a) recommended NFA for the CSA.

3.1.4 CLOSED CONTAINER STORAGE AREA (CSA) (AOI F-4)

AOI F-4 consists of a closed CSA (RCRA Interim Status Unit) located outside Plant 17 in the southwest driveway, adjacent to the railroad tracks. This area managed both liquid and solid waste and was previously identified on the Part A Permit Application (GM, 1980e) and as a SWMU (SWMU 4) in the Fiero PA/VSI Report (PRC, 1992); therefore, the area was considered an AOI.

The closed CSA was in operation from before 1977 to August 1985. The closed CSA was situated on a bermed concrete pad. Wastes were stored in this area for greater than 90 days. Wastes included scraped sealers, adhesives, paint thinners, and waste solvents. The maximum capacity of the closed CSA was three hundred-seventy 55-gallon drums. The closed CSA was dismantled, removed, and paved.

There were no documented releases from the closed CSA. Previous investigations and remedial actions consisted of closure of the CSA.

GM submitted a closure plan to MDNR for the closed CSA in April 1986 (after the area was out of service) (GM, 1986b). Closure certification was submitted to MDNR in November 1986 (GM, 1986k). GM received clean closure certification of the area from the MDNR in February 1988 (MDNR, 1988a). Based on this information, the CCR (ENCORE, 2001a) recommended NFA for AOI F-4.

3.1.5 FORMER FIERO WASTEWATER TREATMENT PLANT (WWTP) (AOI F-5)

AOI F-5 consists of the former Fiero WWTP located along Portland Street, 100 yards north of Owens Street. This area was identified as a SWMU (SWMU 5) in the Fiero PA/VSI Report (PRC, 1992); therefore, the former Fiero WWTP was considered an AOI.

The former Fiero WWTP operated from 1973 to 1983 (PRC, 1992). The location of the former WWTP was paved over and is currently used as a driveway. The former Fiero WWTP managed wastewater, wastewater treatment sludge, paint sludge, and bonderite sludge.

The Fiero PA/VSI Report (PRC, 1992) stated that there had been no documented releases from the former Fiero WWTP. According to plant personnel, the former Fiero WWTP was

constructed of above-grade steel tanks situated on a concrete pad with secondary containment. Liquids from the plant were decanted to the city of Pontiac POTW. Solids from the plant were removed and placed directly into trucks for off-Site disposal.

There had been no previous investigations or remedial actions associated with the former Fiero WWTP. The CCR (ENCORE, 2001a) recommended NFA for AOI F-5.

3.1.6 WASTE PURGE THINNER UST AND THREE PRODUCT USTs (AOI F-6)

AOI F-6 consists of a waste purge thinner UST (RCRA Interim Status Unit) and three product USTs located north of Plant 17, directly west of the paint mix building. The waste purge thinner was previously identified on the Part A Permit Application (GM, 1985b) and as a SWMU (SWMU 6) in the Fiero PA/VSI Report (PRC, 1992). This area was considered an AOI because affected soils were discovered during UST closure activities in 1989 and because it was identified on the Part A Permit Application and in the Fiero PA/VSI Report (PRC, 1992).

The waste purge thinner UST (RCRA Interim Status Unit) was located in a tank farm north of Plant 17, directly west of the paint mix building. The three product USTs that stored xylenes, purge thinner, and cellosolve acetate were also located within the tank farm. The 12,000-gallon waste purge thinner UST was a single-walled steel tank. The system was located 3 feet below grade and was encased within 15 inches of reinforced concrete. The USTs were in operation from approximately 1969 to May 1989. The waste purge thinner UST received waste purge thinner from the paint mix building and two paint spray booths in the assembly plant. A licensed transporter removed the waste purge thinner from the tank every 60 to 90 days and transported it to an off-Site reclamation center. A spill of 50 to 100 gallons of waste purge thinner occurred in August 1985. The USTs were removed in 1989.

Previous investigations included a RCRA closure investigation conducted during the waste purge thinner UST closure activities. The three product USTs were closed at the same time (but not required to be closed pursuant to RCRA), while the waste purge thinner UST was subject to closure under RCRA. Remedial actions included removal of the four USTs and adjacent soils.

Prior to removal of the USTs, the waste purge thinner and product were removed and hauled to an off-Site licensed waste treatment facility. The four USTs were rinsed out and decontaminated. No holes, pits, or staining were noticed on the USTs after removal. However, during the UST removal process, solvent odors were noticed in the surface soils. Approximately 60 cubic yards (CY) of surface soil were removed and placed in roll-off boxes. The excavated soils were transported off-Site to a licensed hazardous waste disposal facility for disposal. Soil excavation was continued beyond visually affected surficial soils and stockpiled on the pavement near the tank farm. VOCs were not detected above MDNR Type B Cleanup

Criteria Standards in these soils and the soil was disposed of at the city of Pontiac Landfill RUST (1995).

Twenty confirmation soil samples were collected by Techna (1990) from the UST excavation (all four USTs). In addition, four borings were completed north of the tank farm area to determine area-specific background levels of metals in the surrounding soil. Soil underlying the tank farm exceeded typical background levels.

RUST (1995) concluded from the Techna (1990) data that the metals in the soil are typical of Michigan soils. RUST (1995) also concluded that waste purge thinner does not contain metal wastes that could be associated with the elevated levels of metals in the soil; therefore, these metals were not related to the waste purge thinner UST.

RUST (1995) concluded the following from the Techna (1990) data:

- VOCs in the soil did not exceed the MDNR Type B cleanup criteria;
- VOCs were not detected in the soil near the waste purge thinner UST; and
- VOCs were below method detection limits in the approved closure plan.

In January 1995, GM submitted a RCRA Closure Report for the waste purge thinner UST to MDNR RUST (1995). This report summarized the previous investigation conducted at the UST. MDNR sent a letter to GM on March 31, 1995, stating that the agency would begin review of the RCRA Closure Report in early 1996 (MDNR, 1995a). No further communication was noted in the files. GM will pursue final closure certification from the MDEQ. Therefore, the CCR (ENCORE, 2001a) recommended NFA for AOI F-6.

3.1.7 TEMPORARY CONTAINER STORAGE AREA (CSA) (AOI F-9)

AOI F-9 consists of a temporary CSA located east of the powerhouse. This area was identified in the Fiero PA/VSI Report (PRC, 1992) as a SWMU (SWMU 9); therefore, the area was considered an AOI.

The Fiero PA/VSI Report (PRC, 1992) stated that the temporary CSA was located east of the powerhouse. The area was used between August 1985 (when the closed CSA [AOI F-4] became inactive) and July 1986 (when the CSA [AOI F-3] became active). The PA/VSI Report (PRC, 1992) stated that this area was used to store containers of waste gasoline, solvent, and paint wastes. According to Site personnel, the existence of the temporary CSA is questionable because Site records do not indicate operation of this unit.

There have been no documented releases from the temporary CSA and there have been no previous investigations or remedial actions conducted in association with the temporary CSA.

During the VSI, PRC personnel could not inspect this area due to snow cover; however, the Fiero PA/VSI Report (PRC, 1992) states that there was no evidence of any release controls. Based on the location provided in the Fiero PA/VSI Report (PRC, 1992), this area was inspected during an August 2000 Site walk, with no signs of the reported CSA nor any evidence of past releases.

Based on this information, the CCR (ENCORE, 2001a) recommended NFA for AOI F-9.

3.1.8 HIGH-PRESSURE FLY ASH STORAGE SILO (AOI F-10)

AOI F-10 consists of a high-pressure fly ash storage silo located east of the powerhouse. This area was identified as a SWMU (SWMU 10) in the Fiero PA/VSI Report (PRC, 1992); therefore the area was considered an AOI.

The high-pressure fly ash storage silo has been in operation since 1985. This storage unit consists of a capped concrete cylinder and is used to store nonhazardous high-pressure fly ash. The total capacity of the silo is between 500 and 600 tons. Ash is watered down during the transfer process to reduce dust.

The Fiero PA/VSI Report (PRC, 1992) stated that thirty-seven 55-gallon drums were temporarily stored in this area during the closure of AOI F-4.

There have been no documented releases from the high-pressure fly ash storage silo and there have been no investigations or remedial actions conducted in association with the high-pressure fly ash storage silo. The Fiero PA/VSI Report (PRC, 1992) stated that the silo was in good condition with no evidence of a release. Based on this information, the CCR (ENCORE, 2001a) recommended NFA for AOI F-10.

3.1.9 LOW-PRESSURE FLY ASH STORAGE SILOS (AOI F-11)

AOI F-11 consists of two low-pressure fly ash storage silos located east of the powerhouse. The silos were previously identified as a SWMU (SWMU 11) in the Fiero PA/VSI Report (PRC, 1992); therefore, they were considered an AOI.

The two low-pressure fly ash storage silos have been used to store nonhazardous low-pressure fly ash since the 1940s. Each silo can store approximately 200 to 300 tons of fly ash.

The Fiero PA/VSI Report (PRC, 1992) stated that there had been no documented releases from the low-pressure fly ash storage silos.

No investigations or remedial actions have been conducted in association with the low-pressure fly ash storage silos. The Fiero PA/VSI Report (PRC, 1992) stated that observations made

during the VSI showed that the silos were in good condition with no indication of a release. Based on this information, the CCR (ENCORE, 2001a) recommended NFA for AOI F-11.

3.2 DEMOLITION AREA (DA)

The DA contains four AOIs that had NFA recommended in the CCR (ENCORE, 2001a). These four AOIs are discussed in the following sections.

3.2.1 FORMER HAZARDOUS WASTE STORAGE PAD (AOI W-2)

AOI W-2 consists of a former hazardous waste storage pad located in the western portion of the West Yard, therefore the area was considered an AOI.

In 1982, a hazardous waste storage pad was constructed to store RCRA hazardous waste (RCRA Interim Status Unit). The hazardous waste storage pad is located immediately south of the former Salvage Building and west of the former Compressor Building. The pad is an approximate 27,000-square-foot, 8-inch-thick concrete pad with a 4-inch curb. Activities conducted on the pad included waste storage, drum washing, and empty drum storage. The pad was used for the storage of solid and liquid hazardous and nonhazardous wastes (i.e., paint, paint thinner, gasoline, chlorinated solvents, machine wastes, lead chips, and spent halogenated solvents) prior to July 1, 1988, at which time closure activities were initiated by CPC. As reported in the Certification Regarding Potential Releases from Solid Waste Management Units (GM, 1986c), a waste pile containing WWTP sludge, machine sludges, and paint sludges occupied the storage pad from 1979 to 1981.

Prior to pad construction, TEC conducted a soil/geotechnical investigation. Based on the data, TEC concluded the soil could remain in place to allow for the construction of the Hazardous Waste Storage Pad.

Closure plans were subsequently submitted by GM to MDNR in November 1987 (GM, 1987c), February 1988 (GM, 1988a), and May 1988 (GM, 1988c) to allow for the decommissioning of the pad. The MDNR rejected the first two closure plans, and in June 1988 approved the May 1988 plan (MDNR, 1988b). Closure activities conducted by Dames & Moore commenced in July 1988. As part of the decommissioning activities, Dames & Moore conducted two phases of soil sampling as summarized in the Interim Closure Report - Former Container Storage Area (Dames & Moore, 1989). It was noted in this report that the pad was heavily cracked and that much of the contamination was found in low-lying areas. All soil and groundwater samples were analyzed for lead, benzene, toluene, xylenes, 1,1,1-trichlorethane, methylene chloride, methyl ethyl ketone and 1-butanol.

Dames & Moore reported in the Endangerment Assessment - Former Container Storage Area (Dames & Moore, 1990; draft) that there was a significant risk associated with the carcinogenic contamination. The estimated worst-case current use exposures and associated potential health risks were identified to be within the U.S. EPA target risk range.

Groundwater Technologies, Inc. (GTI) conducted a soil vapor extraction feasibility study that is summarized in both the Subsurface Investigation and Soil Vapor Pilot Test - Feasibility Study (GTI, 1990a) and the Soil Vapor Pilot Test #2 - Feasibility Study (GTI, 1990b). GTI installed several monitoring wells and obtained soil samples. During a subsequent investigation, as reported in the RCRA Pad Review - Hazardous Waste Storage Area (GTI, 1991), it appears that GTI installed two additional monitoring wells, however well logs were not included. In this report, GTI summarizes the ongoing history of the hazardous waste storage pad without making any further discoveries in addition to those outlined previously.

A Parsons (1997b) Site investigation conducted in 1996 and 1997, summarized historical investigations and remedial activities, concluding that it appeared infeasible to remediate to the pad closure criteria the underlying soil and groundwater at the pad, and that compounds in soils and groundwater under the pad most likely did not originate from the activities at the pad, but from historical waste management activities in the West Yard area. GM subsequently agreed to conduct a West Yard area-wide investigation to evaluate the environmental conditions and assess the need for any appropriate corrective actions.

This conclusion is further supported by groundwater sampling and analysis conducted by Parsons in January 1996, which indicated that the LNAPL sampled from different wells originated from different sources and consisted of different concentrations and combinations of constituents (Parsons, 1997b).

GM previously reached an agreement with MDEQ that final closure of the pad would be granted upon implementation of remediation activities pertaining to historical impacts in the West Yard. Recent discussions with MDEQ indicated that a non-clean closure could be provided. GM will pursue non-clean closure of the pad. Based on this information, the CCR (ENCORE, 2001a) recommended NFA for the hazardous waste storage pad.

3.2.2 TRANSFORMER SUBSTATION D-1 (AOI W-4)

AOI W-4 consists of transformer substation D-1, which was previously located in the southeast quadrant of the former Plant 8 prior to its demolition in 1997. This area was considered an AOI because of documented polychlorinated biphenyl (PCB) transformer oil spills within the substation.

4.1.4.1 OSMUN LAKE RFI RESULTS

The scope of the field investigations at Osmun Lake involved collection of sediment samples to determine whether a potential release exceeding screening criteria has occurred.

Surficial sediment samples were collected from six locations (SDOL-01 through SDOL-06). The samples were collected from the 0- to 6-inch interval. The samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, inorganics and cyanide. The analytical data for all samples are provided in Appendix E of the RFI Report (ENCORE, 2002c).

The concentrations of constituents detected in sediment were compared with the residential soil screening criteria. This comparison indicated that lead is the only constituent to exceed residential screening criteria in Osmun Lake sediments.

The RFI sediment data from Osmun Lake indicate that a release exceeding residential screening criteria has occurred at Osmun Lake. Since the ecological-based risks were estimated below the U.S. EPA target levels, NFA is recommended for Osmun Lake.

Table 1-1 presents a summary of data and conclusions for this AOI.

4.2 AOIs SUITABLE FOR INDUSTRIAL LAND USE WITHOUT FURTHER ACTION

The following section presents a brief overview of the investigations conducted at each AOI that was concluded to be suitable for industrial land use with NFA designations following RFI field activities. Due to the NFA status of these AOIs, the respective investigations are not discussed in detail in this CMP. However, detailed descriptions and discussions of the results of the investigations conducted at each AOI are available in the RFI Report (ENCORE, 2002c) and/or Supplemental RFI Report No. 1 (ENCORE, 2003j).

4.2.1 COAL STORAGE AREA (AOI F-12)

AOI F-12 consists of a coal storage area located southeast of the powerhouse (Figure 1-5). Also located within the northern footprint of the coal storage pile is the CSA (AOI F-3). It has been reported that historic activities at the coal storage area included adding waste solvent to the coal to increase British Thermal Unit (BTU) efficiency. The coal storage area is considered an AOI because of this reported practice.

4.2.1.1 AOI F-12 RFI RESULTS

The scope of the field investigations at AOI F-12 involved collection of soil and groundwater samples to determine whether a potential release exceeding industrial screening criteria has occurred from the coal storage area.

Two monitoring wells (MWF12-01 and MWF12-02) were installed downgradient from the coal storage area. Soil and groundwater samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. The analytical data for all samples are provided in Appendix E of the RFI Report (ENCORE, 2002c).

Concentrations of constituents detected in soil and groundwater do not exceed the industrial screening criteria. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.2.2 FORMER OILY PEA GRAVEL, CONCRETE, AND DEBRIS (AOI F-13)

AOI F-13 consists of an area that formerly contained oily pea gravel, concrete, and debris, located south of the assembly plant scale, at the northeast corner of Plant 17 (Figure 1-5). This area is considered an AOI because of the historical presence of oily material.

The oily material was removed in February 1996; however, there is no documentation describing these removal activities, nor does any analytical data exist pertaining to the soils below the excavation.

4.2.2.1 AOI F-13 RFI RESULTS

The scope of the field investigations at AOI F-13 involved collection of soil samples to determine whether a potential release exceeding industrial screening criteria has occurred to soils from the former oily pea gravel, concrete, and debris area.

Three soil borings (BF13-01, BF13-02, and BF13-03) were completed within the footprint of the previously excavated soils to determine residual soil quality. The soil samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. The analytical data for all samples are provided in Appendix E of the RFI Report (ENCORE, 2002c).

The concentrations of constituents detected in the soil boring samples collected from AOI F-13 do not exceed industrial screening criteria. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.2.3 FUEL AST AREA (AOI F-14)

AOI F-14 consists of a fuel AST area located west of the low-pressure fly ash storage silos (Figure 1-5). The fuel AST area is considered an AOI because of the materials (diesel fuel and gasoline) stored in the ASTs.

The 300-gallon diesel fuel AST and 560-gallon gasoline AST have been removed. The 1,000-gallon diesel fuel AST is still in use and is located within a secondary containment area. There have been no documented releases from any of these ASTs; however, there is no documentation of closure activities for the removal of the ASTs.

4.2.3.1 AOI F-14 RFI RESULTS

The scope of the field investigations at AOI F-14 involved collection of soil samples to determine whether a potential release in excess industrial screening criteria has occurred from the fuel AST area.

Two soil borings (BF14-01 and BF14-02) were completed adjacent to the location of the ASTs. The samples were submitted for laboratory analysis for BTEX, SVOCs, and lead. The analytical data for all samples are provided in Appendix E of the RFI Report (ENCORE, 2002c).

The concentrations of constituents detected in the soil boring samples from AOI F-14 do not exceed industrial screening criteria. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.2.4 OIL/SOLVENT CATCH BASIN (AOI F-15)

AOI F-15 is a catch basin that is located in the south loading dock at Fiero Plant 17 (Figure 1-5). Petroleum-like odors were reported emanating from the catch basin. The oil/solvent catch basin (AOI F-15) was cleaned and inspected during RFI activities. Materials within the catch basin included oil and sludge containing chlorinated solvents. The catch basin showed evidence of pitting and cracking, and was stained throughout.

4.2.4.1 AOI F-15 RFI RESULTS

The scope of the field investigations at AOI F-15 involved cleaning and inspecting the catch basin to assess its structural integrity. Based on the inspection, soil and groundwater samples were collected to determine whether a potential release exceeding industrial screening criteria has occurred from the oil/solvent catch basin.

Soil Samples

Two soil borings (BF15-01 and BF15-02) were completed. Boring BF15-01 was completed adjacent to the catch basin, while BF15-02 was completed beneath the bottom of the catch basin to determine whether the soil had been impacted by contents of the catch basin. A soil boring associated with the installation of monitoring well (MWP15-01), was completed downgradient of the catch basin. The soil samples were submitted for laboratory analysis for VOCs, SVOCs,

PCBs, and inorganics. The supplemental RFI field investigations at AOI F-15 involved collection of soil samples to determine if VOCs in soil from the oil/solvent catch basin impacted soils to the north, east, and west of the catch basin (ENCORE, 2003j). Three soil borings (BF15-03 through BF15-05) were completed at AOI F-15. The samples were submitted for laboratory analysis for VOCs. The concentrations of constituents detected in the soil borings from AOI F-15 exceed industrial screening criteria for tetrachloroethene (PCE) and 1,1-dichloroethene. The concentrations of constituents detected in the soil boring samples, collected as part of the supplemental RFI field investigations, do not exceed the screening criteria.

Groundwater Samples

One groundwater sample was collected from monitoring well (MWP15-01). The groundwater samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. The concentrations of constituents detected in groundwater samples collected from AOI F-15 do not exceed industrial screening criteria.

The analytical data summaries are provided in Appendix E of the RFI Report (ENCORE, 2002c) and Appendix C of Supplemental RFI Report No. 1 (ENCORE, 2003j).

The RFI soil data from AOI F-15 indicate that a release exceeding industrial screening criteria has occurred at AOI F-15. A Site-specific risk evaluation, which shows estimates of Site related cumulative cancer and noncancer risks do not exceed U.S. EPA's acceptable levels of 10^{-4} and a HI of 1, respectively. Therefore, corrective measures at AOI F-15 are not necessary. However, based on comments received from the U.S. EPA, regarding RFI field investigations, the supplemental RFI activities were conducted. The supplemental RFI soil data from AOI F-15 delineates VOC-impacted soils at AOI F-15 to the north, east and west of the catch basin. Concentrations detected in soil do not exceed screening criteria. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for this AOI.

4.2.5 FORMER PLANT 8 FLAMMABLE LIQUID STORAGE TANK FARM (AOI W-3)

AOI W-3 consists of a former Flammable Liquid Storage Tank Farm near former Plant 8 in the northwestern corner of the DA (Figure 1-5). The tank farm contained nine ASTs historically used to store flammable liquids including diesel fuel, line thinner, gasoline, and solvents. The tank farm consisted of two separate areas, a north area and south area, each contained within a 3-foot-high dike. The former tank farm was decommissioned and demolished prior to RFI on-Site activities although no closure documentation is available.

the horizontal component of the groundwater flow to the southwest toward a series of small lakes (Harris, Terry, and Osmun). The horizontal hydraulic gradient across the Site in the unconfined water table zone is 0.0047. However, there are localized groundwater flow variations as shown on Figure 2-6 in the area of Former Plant 9 (AOI W-8). There is a large groundwater depression at monitoring well MWW8-03. There is a large groundwater mound located in the area of the West Yard (AOI W-1) and Railroad Marshalling Area (W-10), which is most likely associated with the storm sewer system below the tracks, which has been plugged.

Located in the southwest portion of the Site is a groundwater seep along Montcalm Avenue east of the Saginaw gate. Monitoring wells MWW1-02 and MWW1-03 were installed along the seep. The groundwater elevation data indicate that the groundwater elevation is at ground surface. In this area, the topography drops off and intercepts the water table, creating the seepage. This area is hydraulically at the downgradient portion of the Site. A toe drain was installed to divert this to the stormwater detention facility, discussed in Section 4.5.

In addition to the localized groundwater flow on Site, there are also Site areas where groundwater was not present within the interval targeted for well placement. This is due glaciolacustrine deposits in the immediate areas where the wells were installed are not abundant in water-bearing materials (sands) and more abundant in clays and silts. There are also areas in which USTs (AOIs M-4 and P-6) have been removed as part of previous remedial actions. These excavations are backfilled with imported sand, which have created a localized mounded and possibly perched groundwater system.

The RFI Report (EEC 2003) concluded that there are currently no constituents detected in off-Site groundwater that exceed the human health determination. However, concentrations that exceed the MDEQ Part 201 Residential Drinking Water Criteria are currently detected at the downgradient property boundary in the unconfined water table zone.

Manganese was detected above the MDEQ Part 201 Residential Drinking Water Criteria and in monitoring wells MWF12-01 and MWF12-02 in both rounds of groundwater samples collected as part of the RFI (September, 2001 and January, 2002) and both semi-annual groundwater sampling events (November, 2002 and May, 2003). Manganese was also detected above MDEQ Part 201 Residential Drinking Water Criteria in monitoring wells and located immediately south of the Storm Water Detention Facility (SWDF). Lead was detected above the MDEQ Part 201 Residential Drinking Water Criteria in monitoring well MWW9-01. Monitoring well MWW9-01 was installed as part of RFI Work Plan Addendum No. 9. Only one groundwater sample has been collected from this monitoring well. The SWDF is located downgradient from this monitoring well and the analytical results for lead from the monitoring wells located at the SWDF are below the MDEQ Part 201 Residential Drinking Water Criteria.

Total PCBs and methylene chloride were detected above the MDEQ Part 201 Residential Drinking Water Criteria at monitoring well MWW1-04, located at the property boundary at the northwest corner of Montcalm Ave. and North Saginaw St. PCBs were detected during groundwater sampling completed as part of the RFI (February 2002) and both semi-annual groundwater sampling events (November 2002 and May 2003). Methylene chloride was not detected during the original groundwater sampling event (February 2002) but was detected in the May 2003 semi-annual groundwater sampling event. Monitoring well MWW1-06 was installed off Site and downgradient of MWW1-04. Total PCBs were not detected from groundwater samples collected at monitoring well MWW1-06. Future monitoring will include both total and dissolved analysis for PCBs to determine if the PCBs that were detected in the groundwater are in aqueous form or adhered to soil particles.

Dioxins are not expected to leach into the groundwater based on their physical properties and are likely associated with LNAPL on-Site. The EI presents that minute quantities of LNAPL were contained in the groundwater samples. While total dioxins were not detected above the MDEQ Part 201 Residential Drinking Water Criteria at the property boundary they were detected in groundwater on-Site. Total dioxins were detected above the screening criteria in monitoring wells MW-28-99 and MW-34-99. These monitoring wells are in close proximity to LNAPL Areas Nos. 1 and 2. Total dioxins were detected downgradient of the LNAPL in monitoring wells MWW1-04, MW-29-99, MW-30-99, and MW-31-99. While analytical results indicate that there are currently no exceedances to screening criteria at or near the property boundary, the concentration at MWW1-04 (property boundary) is increasing in time at the monitoring well MWW1-04. Although Dioxins are not expected to dissolve into the groundwater, future monitoring will include analysis for total dioxins to determine if the dioxins that were detected in the groundwater are in aqueous form or adhered to soil particles and are migrating.

Groundwater samples collected at AOI's M-4 and P-6 for benzene and ethylbenzene exceeded the MDEQ Part 201 Industrial Drinking Water Criteria (IDWC) and Residential Drinking Water Criteria) RDWC at AOI's M-4 and P-6. Both these AOI's were former LUSTs that were removed and the excavation backfilled. The concentrations of constituents detected in the groundwater samples collected from AOI M-4 and AOI P-6 that exceeded the screening criteria originated from monitoring wells installed in the backfill material. The downgradient monitoring wells at each of these AOI's did not have any constituent that exceed the screening criteria. No monitoring wells located at the property boundary exhibited concentrations exceeding the RDWC for VOCs.

No SVOCs were detected above the MDEQ Part 201 RDWC at the property boundary.

6.2 GROUNDWATER MONITORING IN THE GLACIOLACUSTRINE (INTERMEDIATE) ZONE

Intermediate groundwater monitoring wells were installed in the glaciolacustrine deposits as part of the Site-wide hydrogeologic investigation. These intermediate monitoring wells were installed in well clusters with monitoring wells installed in the unconfined water table and the upper sand and gravel outwash zone to allow for determination of vertical groundwater flow information.

The RFI Report (EEC 2003) concluded that there is currently no constituents detected in groundwater off-Site that exceed the human health determination. Concentrations that exceed the MDEQ Part 201 Residential Drinking Water Criteria were detected at the property boundary in the glaciolacustrine (intermediate) zone. However, the groundwater samples from monitoring wells located along the downgradient Site boundary located in the glaciolacustrine zone are not impacted by on-Site industrial activities.

Acetone was detected above the MDEQ Part 201 Residential Drinking Water Criteria in monitoring wells in this zone (IWF3, IWM2, and IWP5). The RFI Report (ENCORE 2002) (Section 4.1.3.) concluded that the result of the acetone detections was bentonite pellets used in the installation of the monitoring well.

Lead and bis (2-Ethylhexyl) phthalate exceeded their respective Residential Drinking Water Criteria at monitoring well IWD-7 during the January 9, 2002 sampling event. Two semi-annual groundwater sampling events were conducted after January 9, 2002 (November 2002 and May 2003) in which lead and bis (2-Ethyl hexyl) phthalate were not detected in wells screened in this unit. Based on the data collected, the conclusions in the RFI Report (ENCORE 2002) and the results of both the semi-annual groundwater sampling events (November 2002 and May 2003) no further monitoring of groundwater is proposed in the glaciolacustrine (intermediate) zone.

6.3 GROUNDWATER MONITORING IN THE UPPER AND LOWER SAND AND GRAVEL OUTWASH ZONE

6.3.1 MONITERED ZONES

Upper Sand and Gravel Outwash Zone

Groundwater level measurements were collected periodically throughout the duration of the RFI. A groundwater potentiometric map (Figure 2-6) for February 7 and 8, 2002 was generated for the upper sand and gravel outwash aquifer. The groundwater potentiometric surface in the sand and gravel aquifer is typically measured at depths ranging from 40 to 75 feet. In general, the horizontal component of the groundwater flow is to the south-southeast toward the Clinton

River, which is the regional groundwater discharge point. The horizontal hydraulic gradient across the Site in the sand and gravel aquifer is 0.0045. These monitoring wells are located in the northwest and southeast corners of the Site, respectively, along the main axis of groundwater flow.

Lower Sand and Gravel Outwash Zone

Three groundwater monitoring wells were installed in the lower sand and gravel outwash zone. Based on groundwater elevation data, the groundwater flow direction is similar to the upper sand and gravel zone, being toward the southeast.

Vertical Groundwater Flow

Vertical hydraulic gradients were calculated for each of the clustered sets of monitoring wells across the Site. The vertical gradients were calculated for the water table monitoring well and the corresponding monitoring well installed in the upper sand and gravel outwash zone in each set. In addition, the vertical hydraulic gradients were calculated based on two sets of monitoring wells constructed in the upper and lower sand and gravel outwash.

In all instances, the vertical gradient is downward. The vertical gradient between the water table zone and the upper sand and gravel outwash monitoring wells located on the north and west sides of the Site ranges from 0.37 to 0.47 (MWM1 and GWM3 - 0.38, MWS1 and GWS2 - 0.38, MWF2 and GWF4 - 0.42, and MWD6 and GWD8 - 0.37). The vertical hydraulic gradient between the water table zone and the upper sand and gravel outwash monitoring wells located on the north and east central and southeastern sides of the Site ranges from 0.65 to 0.71 (MWP4 and GWP6 - 0.65, and MWP1 and GWP3 - 0.71). The vertical hydraulic gradients between the monitoring wells installed in the upper and lower sand and gravel outwash zones were 0.12 between monitoring wells GWD9 and DWD10 and 0.37 between monitoring wells GWD9 and DWD10.

6.3.2 GROUNDWATER QUALITY

The RFI Report (EEC 2003) concluded that there is currently no constituents detected in groundwater that exceed the human health risk that is migrating off-Site. However, concentrations that exceed the MDEQ Part 201 Residential Drinking Water Criteria were detected at the property boundary in the upper and lower sand and gravel zones. However, the groundwater samples from monitoring wells located along the downgradient Site boundary located in the upper and lower sand and gravel zones are not impacted by on-Site industrial activities.

Acetone was detected in monitoring well GWP6 above MDEQ Part 201 Residential Drinking Water Criteria in both the first and second rounds of groundwater sampling associated with the

RFI (September 2001 and January 2002). Acetone was not detected during both the semi-annual groundwater sampling events (November 2002 and May 2003). Acetone was also detected in monitoring well GWD8 above MDEQ Part 201 Residential Drinking Water Criteria in the first round of groundwater sampling associated with the RFI (September 2001). However, it was not detected during both the second round of sampling associated with the RFI and both semi-annual groundwater sampling events (November 2002 and May 2003). The RFI Report (ENCORE 2002) (Section 4.1.3.) concluded that the result of the acetone detections was bentonite pellets used in the installation of the monitoring well.

Based on the data collected and the conclusions in the RFI (ENCORE 2002) and the results of both the semi-annual groundwater-sampling events (November 2002 and May 2003) no further monitoring of groundwater is proposed in the lower sand and gravel outwash zone. This zone is separated from the upper sand and gravel outwash zone by a basal till unit approximately 20 feet thick. Because the vertical gradient demonstrates a downward gradient, groundwater monitoring in the upper sand and gravel zone will continue to be monitored on the southern boundary of the Site to determine if contaminants have migrated.

6.4 GROUNDWATER MONITORING PLAN

The objective of the groundwater monitoring plan is to monitor, on a semi-annual basis, the unconfined water table zone at the downgradient edge of the Site to establish that the contaminant migration has stabilized and no additional contaminants have migrated off-Site. The cleanup goal is to prevent groundwater from migrating off-Site that would pose a potential health risk. Additionally, groundwater samples will be collected in the unconfined water table zone at the northern Site boundary for metals to establish background levels.

Because monitoring wells MWF10-01 and MW12-02, located on the southern property boundary of Fiero had manganese that exceeded the MDEQ Residential Drinking Water criteria groundwater samples will be collected as part of the monitoring plan and analyzed for total and dissolved inorganics. Sample locations are shown on Figure 6-1.

Monitoring wells MW-01 and MW-02, located immediately south of the SWDF, had various inorganics that exceeded the MDEQ Residential Drinking Water Criteria. Groundwater samples will be collected as part of the monitoring plan and analyzed for total and dissolved inorganics. Sample locations are shown on Figure 6-1 and analytical summary presented in Table 6-1.

Since monitoring wells located in AOIs W-1, W-10, and W-9 exhibit elevated levels of various inorganics and VOCs, dioxins, and PCBs, groundwater samples will be collected at select monitoring wells at the property boundary and downgradient of LNAPL Areas as part of the monitoring plan. Groundwater samples will be collected and analyzed for VOCs, total inorganics, and total dioxin at three monitoring wells along the southern property boundary

(MWW1-04, MW-40-99, and MWW1-02) and two monitoring wells downgradient of LNAPL Area No. 2 (MW-29-99 and MW-31-99). Groundwater samples will be collected at monitoring well MWW9-01 for analysis of total inorganics. Groundwater samples will be collected at monitoring wells MWW1-04 (property boundary) and MWW1-06 (off-Site) for total PCB analysis. Sample locations are shown on Figure 6-1 and analytical summary presented in Table 6-1.

The supplemental RFI groundwater data from AOIs P-6 and M-4 indicate that although benzene and ethylbenzene concentrations exceed the IDWC and RDWC they are generally continuing to naturally decrease as concluded in the RFI Report (ENCORE, 2002a). Groundwater samples will be collected from downgradient monitoring wells at AOIs M-4 and P-6 for BETX and monitored natural attenuation (MNA) parameters, as indicated in Table 6.1.

Groundwater samples for will be collected for total inorganics at three upgradient monitoring wells (MWM1, MWS1, and MWP3) to evaluate background concentrations in the unconfined water table zone.

As part of the groundwater monitoring plan, groundwater samples will be collected for monitoring wells located in the upper sand and gravel outwash. Groundwater samples will be collected from monitoring wells GWP3, GWP11, and GWP9 and analyzed for VOCs and total inorganics. These monitoring wells are located downgradient (southeast) at the property boundary.

Additional monitoring wells will be installed off-Site to delineate the contaminant plume(s). The RFI work plan addendum for off-Site delineation will be submitted separately. As like, a monitoring plan will be prepared to monitor any off-Site wells and submitted to the U.S. EPA. The groundwater monitoring plan will be re-evaluated on a regular basis.

8.0 EVALUATION OF RISKS TO HUMAN HEALTH

Risks associated with potential exposures to constituents in soil, sediment, surface water, and groundwater at and adjacent to the Site under current and reasonably expected future on-Site land use (i.e., industrial) and off-Site land use (residential) have been evaluated during the RFI. As discussed in Sections 3.0 and 4.0 of this report, the screening criteria for on-Site soils are the Part 201 generic industrial cleanup criteria based on direct contact, inhalation of soil vapor and particulates in ambient air, and inhalation of soil vapor in indoor air. The screening criteria for groundwater are those for residential drinking water (although none of the groundwater zones currently serve as a drinking water supply for the Site or the immediate vicinity), inhalation of groundwater vapor in indoor air, and direct groundwater contact by workers conducting excavations. In cases where some constituent concentrations were higher than the screening criteria, additional risk-based analysis was conducted to evaluate the significance of potential exposure to these concentrations. The additional analysis included estimating cumulative cancer and noncancer risks for reasonable maximum exposures and comparing the estimates with the U.S. EPA-established levels for determining whether corrective measures are warranted. Under U.S. EPA policy, corrective measures are not warranted when the Site-related cumulative cancer risk does not exceed 10^{-4} and the hazard index (HI) does not exceed 1 (61 FR 19432, May 1, 1996; U.S. EPA 1991).

The results of these evaluations showed that certain AOIs have constituent concentrations that correspond to estimates of risk that do not require corrective measures under continued industrial land use, which is the reasonably expected future land use at the Site. These AOIs are summarized in Section 8.1. AOIs that need corrective measures are discussed in Section 8.2. The need for corrective measures at these AOIs is related to the presence of constituents in soil, rather than in groundwater or LNAPLs.

As discussed in Section 4 of the RFI report (ENCORE 2002b) groundwater at the Site is not currently used as a potable water supply and a deed restriction that prohibits such groundwater use at the Site will be evaluated as part of the proposed corrective measures for the Site, as discussed in Section 9.1. Potential exposures to groundwater under this restriction were evaluated during the RFI and the results are summarized in Section 8.3 to provide a basis for not needing other corrective measures for groundwater on-Site. Section 8.4 discusses the risks associated with LNAPL and soil that contain LNAPL. The off-Site areas near the Site have constituent concentrations that are low enough so that the estimates of risk associated with potential exposures under residential land use do not require corrective measures. These areas are summarized in Section 8.5.

8.1 RISKS ASSOCIATED WITH AOIS SUITABLE FOR INDUSTRIAL LAND USE WITHOUT FURTHER ACTION

Among the AOIs evaluated during the RFI, the following were determined to have no significant release of hazardous constituents to soil, based on a conservative approach in which the highest Site-related concentrations of constituents in soil at an AOI were used to estimate upper-bound cumulative cancer and noncancer risks:

AOI F-7 (Wastewater Collection Sumps)
AOI F-8 (Paint Sludge Storage Area)
AOI F-12 (Coal Storage Area)
AOI F-13 (Oily Pea Gravel, Concrete, and Debris Area)
AOI F-14 (Fuel AST Area)
AOI F-15 (Fuel AST Area: Oil/Solvent Catch Basin)
AOI W-3 (Former Plant 8 Flammable Liquid Storage Tank Farm)
AOI W-6 (Former Plant 8 Flammable Materials Storage Building)
AOI W-10 (Railroad Marshalling Area Drainage System)
AOI W-13 (Montcalm Substation)
AOI M-2 (Former Plating Operations Area)
AOI M-4 (Plant 25 Former Gasoline UST & Current Gasoline AST)
AOI M-5 (Former Fill Area A-2)
AOI M-7 (ELPO Building/Flammable Liquids Storage Building)
AOI M-9 (Former Plant 1 Heat Treat Oil Storage Area)
AOI M-11 (Plant 12 Former Gasoline Storage Area)
AOI M-13 (Former AST Location West of Plant 14)
AOI M-16 (Plant 25 Basement Sump Area)
AOI M-21 (Plant 14 Transformer Station)
AOI M-23 (Plants 25, 33, and 75 Substation and Power Building)
AOI M-24 (Former Plant 12 PCB Spill)
AOI M-25 (Plant 25 East Basement Sump Area)
AOI P-6 (Former UST Farm & Stoddard Solvent AST)

AOI P-9 (Pipeline Release)
AOI P-10 (Former Plant 18)
AOI P-11 (Trestle Pipeline Release)
SWDF
Area of Industrial Redevelopment

Table 8.1 summarizes the cumulative cancer risks and noncancer HIs for these AOIs.

Six other AOIs were evaluated further and determined to not warrant corrective measures to address constituents in soil, based on high-end estimates of cumulative cancer and noncancer risks using 95% upper confidence limits (UCLs) on the mean for chemicals with maximum concentrations that significantly contribute to estimates of cumulative risks and the highest Site-related concentrations for other constituents at the AOI:

AOI W-1 (West Yard)
AOI W-5 (Plant 8 Basement)
AOI W-8 (Plant 9 Basement)
AOI M-1 (WWTP)
AOI M-19 (Plant 5 South Access Railway)
Area of Industrial Redevelopment - Routine Worker

Table 8.2 summarizes the cumulative cancer risks and noncancer HIs for these AOIs.

Among the AOIs listed in this subsection, only AOIs F-15 and M-2 have constituents with concentrations that are higher than the Part 201 generic industrial cleanup criteria (screening criteria) based on inhalation of soil vapor in indoor air (i.e., 1,1-dichloroethene and PCE at AOI F-15, and 1,1-dichloroethene at AOI M-2). However, when the screening criteria are adjusted to use occupational air standards (OSHA Permissible Exposure Limits [PELs]), rather than Part 201 generic inhalation toxicity values, the ratio of the estimated indoor air concentrations of 1,1-dichloroethene and PCE to their PELs are at most $3.5\text{E-}4$ and $4.4\text{E-}5$, respectively. Therefore, soil concentrations at these AOIs do not present unacceptable risk via volatilization to indoor air, and therefore, do not warrant corrective measures.

8.2 RISKS ASSOCIATED WITH AOIS SUITABLE FOR INDUSTRIAL LAND USE AFTER CORRECTIVE MEASURES IMPLEMENTED

AOI W-9 (Former Central Foundry – Plant 8)

AOI W-9 has PCBs in soil around boring BW9-02 at concentrations that would present an unacceptable risk if workers were to have prolonged contact with soil in this area. As an IM the area around this boring has been fenced to prevent unauthorized worker access until soil removal is completed, as discussed in Section 9.2.

Aside from the fenced area around boring BW9-02, AOI W-9 has no other areas of soil that warrant corrective measures, based on high-end estimates of cumulative cancer and noncancer risks using 95% UCLs for benzo(a)pyrene and PCBs and the highest Site-related concentrations for other constituents at this AOI, as shown in Table 8.3

Area of Industrial Redevelopment - Construction Worker

The proposed Area of Industrial Redevelopment encompasses portions of AOIs W-1, W-8, and W-9. As discussed above, the PCBs in soil around boring BW9-02 are present at concentrations that would present an unacceptable risk if workers were to have prolonged contact with soil in this area. As an IM the area around this boring has been fenced to prevent unauthorized worker access until soil removal is completed, as discussed in Section 9.2.

The Area of Industrial Redevelopment has manganese in soil samples BW1-02-S(0-2), BW1-03-S(0-2), BW1-07-S(0-2), BW1-09-S(0-2), BW9-03-S(0-2)072803, BMWW8-02-S(0-2), SBSB5-04.0, SSTT4 (0-6), SSTT5 (0-6), SW8-03-S(0-2), SW8-04-S(0-2), SW8-05-S(0-2), SW8-09-S(0-2), SSTT2 (0-6), and SBTT3-5.0, antimony in soil sample SBSB5-04.0, and naphthalene in soil samples SSTT2 (0-6) and SBTT3-5.0 that would present an unacceptable risk for a larger-scale, short-term construction scenario. Larger-scale, short-term construction in these areas will be restricted in the updated Due Care Plan (to be revised in January 2004) until final redevelopment plans have been finalized. This area will be re-evaluated to determine if corrective measures are warranted, once the final redevelopment plans have been finalized. Any corrective measures identified as necessary for larger-scale, short-term construction will be completed as IMs.

Aside from the fenced area around boring BW9-02 and the few areas noted above, the Area of Industrial Redevelopment has no other areas of soil that warrant corrective measures, based on high-end estimates of cumulative cancer and noncancer risks using 95% UCLs for xylenes, benzo(a)pyrene, 2-methylnaphthalene, naphthalene, PCBs, antimony, arsenic, total chromium, cobalt, copper, iron, manganese, mercury, and thallium and the highest Site-related concentrations for other constituents at this area, as shown in Table 8.3.

8.3 RISKS ASSOCIATED WITH GROUNDWATER

Groundwater quality data were collected from four saturated zones during the RFI, as discussed in Section 2.8. Data from monitoring wells screened in the shallow unconfined water table zone are discussed in Section 8.3.1, data from monitoring wells screened in the glaciolacustrine (intermediate) zone are discussed in Section 8.3.2, and data from monitoring wells screened in the upper and lower sand and gravel outwash zones are discussed in Section 8.3.3. The screening criteria for groundwater include the Part 201 generic cleanup criteria based on residential drinking water use (MDEQ 2002), although none of these saturated zones currently serve as a drinking water supply for the Site or the immediate vicinity.

8.3.1 GROUNDWATER IN THE UNCONFINED WATER TABLE ZONE

Table 8.4 shows the detected constituents in the shallow unconfined water table zone and the ratios of the highest measured concentrations to the screening criteria. The Part 201 criteria based on inhalation of groundwater vapor in indoor air and the criteria based on direct contact by workers conducting excavations (MDEQ 2002) were used to identify groundwater in the shallow unconfined water table zone that could pose significant nonpotable exposures. The shallow unconfined water table zone is as shallow as three to four feet below ground surface at some locations at the Site. It should be noted that a deed restriction for potable groundwater use will be evaluated in Section 9.1 as part of the proposed corrective measures at the Site. While the drinking water pathway is not expected currently or in the future, drinking water criteria (MDEQ 2002) were used to identify groundwater in the shallow unconfined water table zone that could present significant potable exposures.

As shown in Table 8.4, organic chemicals with concentrations higher than the screening criteria in the shallow groundwater consist primarily of the following VOCs: benzene, 1,1-dichloroethene, and vinyl chloride. Each of these VOCs is found at concentrations higher than the screening criteria at only one to three AOIs. No VOC has a concentration higher than the criteria based on inhalation of vapors in indoor air or the criteria based on direct contact by excavation workers.

Table 8.4 also shows that the following organic constituents were detected at concentrations that are higher than the screening criteria: bis(2-ethylhexyl)phthalate, 2,4-dimethylphenol, methylphenol (total), pentachlorophenol, PCBs, and 2,3,7,8-TCDD TEQ. These organic constituents have a very small number of concentrations that are higher than the screening criteria. Only two concentrations of bis(2-ethylhexyl)phthalate (at AOIs M-2 and W-10), two concentrations 2,4-dimethylphenol (at AOIs P-9 and W-8), three concentrations of methylphenol (total) (at AOIs P-9 and W-8), and one concentration of pentachlorophenol (at AOI P-9) among

204 to 205 shallow groundwater samples collected across the Site are higher than the screening criteria.

The presence of PCBs and 2,3,7,8-TCDD TEQ in groundwater at concentrations higher than the screening criteria are related to the presence of these chemicals in LNAPLs on the water table at AOIs W-1 and W 8; as these samples most likely consist of a small aqueous component and a much larger LNAPL component. The Part 201 generic groundwater contact criteria were derived based on dermal contact with chemicals in the aqueous-phase. The estimated aqueous-phase concentrations in the groundwater do not pose a significant risk to workers who might contact groundwater while performing occasional excavations. The non-aqueous phase is discussed in Section 8.4.

Several metals are also present in the shallow groundwater at concentrations higher than the screening criteria, as shown in Table 8.4. The most prevalent of these are manganese, thallium, and vanadium. As discussed in Section 3.0 of the RFI Report (ENCORE, 2002c), the only thallium concentrations higher than the screening criteria were those that were obtained by Method 6010B, which was the method originally specified in the RFI Work Plan (ENCORE, 2001b). Based on a review of the thallium results from the initial phase of field work, U.S. EPA and GM determined that Method 6010B has a high potential for false detection of thallium at low concentrations in aqueous matrices (groundwater and surface water), and identified Method 6020 as a more appropriate method. All thallium analyses in subsequent phases of field work were done using Method 6020. The thallium concentrations obtained by Method 6020 do not exceed the screening criteria.

Certain constituents in on-Site groundwater in the shallow unconfined water table zone exceed drinking water screening criteria. However, as part of the corrective measures a deed restriction will be evaluated to prevent installation of potable water wells in the shallow unconfined water table zone at the Site. There are no aqueous concentrations in groundwater at the Site that exceed any other Part 201 criteria relevant to nonpotable exposures at the Site, and therefore, no other corrective measures, besides an evaluation of deed restriction on potable groundwater use, are warranted for groundwater in the shallow unconfined water table zone. As discussed in Section 6, off-Site delineation of on-Site monitoring wells that exceed residential criteria will be performed in 2004. This data will be evaluated when delineation is complete.

8.3.2 GROUNDWATER IN THE GLACIOLACUSTRINE (INTERMEDIATE) ZONE

The groundwater data from the intermediate zone have only five chemicals with concentrations higher than the Part 201 residential drinking water criteria (acetone, bis(2-ethylhexyl)phthalate, lead, thallium, vanadium), as shown in Table 8.5. Except for acetone, these chemicals have concentrations higher than the screening criteria in only one monitoring well in the

intermediate zone, and are not believed to be associated with a release from an AOI. As discussed in Section 4.2.9.1, the presence of acetone in the groundwater samples is likely associated with well construction materials (coated bentonite pellets), and therefore, the presence of acetone is not associated with a release from an AOI. Subsequent sampling and analysis during the semi-annual groundwater sampling events (November 2002 and May 2003) showed bis(2-ethylhexyl)phthalate and lead to be non-detect or below the screening criteria at IWD7. Based on recent groundwater results from this well and the frequency of detection, the concentrations of bis(2-ethylhexyl)phthalate and lead in well IDW7 are unlikely to be the result of a release. Therefore, no corrective measures are warranted for groundwater in the intermediate saturated zone.

8.3.3 GROUNDWATER IN THE UPPER AND LOWER SAND AND GRAVEL ZONE

In the deep zones, the only chemicals with concentrations higher than the drinking water criteria are acetone and methylene chloride, as shown on Table 8.5. However, the presence of acetone in the groundwater samples is believed to be unrelated to a release at any AOI. As discussed in Section 4.2.9.1, the presence of acetone in the groundwater samples is likely associated with well construction materials (coated bentonite pellets). Subsequent sampling and analysis during the most recent semi-annual groundwater sampling event (May 2003) showed acetone to be non-detect at GWP6 and GWD8, the two locations where acetone had previously exceeded the screening criteria. The presence of methylene chloride in the groundwater sample at DWD12 does not appear to be due to a release at any AOI, as it is generally considered a common laboratory contaminant (U.S. EPA 1989). During the two previous rounds of groundwater sampling at this location, the methylene chloride results were non-detect. On October 31, 2003, a groundwater sample and field duplicate were collected from this location to confirm the methylene chloride concentration from May 2003. The analytical results from these samples showed that methylene chloride was not detectable. Therefore, groundwater in the upper and lower sand and gravel zones do not warrant corrective measures.

8.4 RISKS ASSOCIATED WITH LNAPL AND SOIL CONTAINING LNAPL

Evaluation of the LNAPL data collected during the RFI determined that occasional intrusive activities at AOI W-1, AOI W-8, AOI W-10, AOI M-2, and AOI M-16 to the depth of LNAPL, that are limited in size and duration, do not present unacceptable risks to workers, as shown in Table 8.6.

The evaluation of vapors emitted from and assumed to migrate into active or proposed buildings at AOI W-8, AOI M-2, and AOI M-16, discussed in detail in Appendix F.3 of the Supplemental RFI Report (ENCORE 2003j), showed that these assumed vapors would not

9.0 EVALUATION OF ALTERNATIVES

This section presents an evaluation of alternatives for corrective measures for each AOI identified in Section 8.0 as presenting a potential risk via soil or groundwater.

9.1 SITEWIDE GROUNDWATER (AOIs W-1, W-5, W-8, W-9, W-10, W-11, M-1, M-2, M-5, M-16, F-7, P-9, AND P-11)

The results of the RFI and human health risk evaluation at AOIs W-1, W-5, W-8, W-9, W-10, W-11, M-1, M-2, M-5, M-16, F-7, P-9, and P-11 resulted in similar conclusions (i.e., exceedances of similar Part 201 criteria), and therefore will be discussed collectively in this section. Soils at these AOIs require NFA, with the exception of AOI W-9 which is addressed in Section 9.2. Corrective measures for groundwater at these AOIs are evaluated in this section. LNAPL detected in these AOIs is addressed in Section 9.7. Off-Site groundwater near the downgradient Site property boundary is also discussed.

The shallow groundwater zone, intermediate saturated zone, and deep saturated zone were investigated as part of the RFI. Several metals, VOCs, PCBs, and dioxins were determined to be present in the shallow saturated zone, however the concentrations present were determined to pose no risk to human health via the volatilization to indoor air or groundwater contact exposure pathways. Similarly, constituents detected in the intermediate saturated zone were determined to pose no risk via the potentially complete exposure pathways evaluated. The one constituent detected in the deep saturated zone was determined to be introduced by groundwater monitoring well installation, not a release from the Site. Therefore, the potential exposure pathway that must be addressed by corrective measures for groundwater at these AOIs is the drinking water pathway in the shallow saturated zone. Figure 9-1 shows the locations of the AOIs addressed in this section.

Semi-annual groundwater monitoring conducted over the past two years indicates constituents detected in the shallow saturated zone are present near the downgradient Site boundary. Results of the RFI also determined that groundwater movement into the storm sewer system is occurring in the vicinity of the West Yard. This water is collected, treated, and discharged from storm water outfalls under an NPDES permit.

On-Site Groundwater

Active remediation of on-Site groundwater by pumping and treating or treating in situ by any of the available remediation technologies would not be more protective of human health than institutional controls and groundwater monitoring, and would incur significant additional cost. Implementation of an active remediation system for on-Site groundwater could potentially reduce constituent concentrations to levels protective for drinking water use, however drinking

water use of the shallow zone is prevented by public health code at a depth of less than 25 feet, and is not expected on this industrial property at any time in the future. Remediation of groundwater to levels protective of drinking water use would not result in an improved or enhanced restoration of the groundwater. Further evaluation of those alternatives was, therefore, not performed for on-Site groundwater.

The shallow saturated zone does not recharge adjacent or underlying aquifers that are used as a drinking water source off-Site. It does, however, discharge to a surface water indirectly through the storm sewers. A downward vertical gradient exists across the Site, and therefore groundwater will be monitored to evaluate the potential for constituents to migrate downward, as discussed in Section 6.0.

Off-Site Groundwater

While the EI Report (ENVIRON, 2002) determined that the migration of contaminated groundwater at the Site is under control and current human exposures to “contamination” at or from the Site are under control, future potential exposure pathways off-Site must be evaluated as part of the corrective measures evaluation. Therefore, the constituents detected near the downgradient property boundary will be further evaluated to determine if they are present off Site, and if so, at what concentrations.

Manganese is present in groundwater samples collected from several monitoring wells upgradient of the Site in the shallow and intermediate zones at concentrations above the aesthetic generic RDWC. Manganese exceeds RDWC at the downgradient boundary of AOI F-12. Manganese is present in shallow groundwater at concentrations exceeding both aesthetic and health-based RDWC criteria. Manganese also exceeds aesthetic RDWC at the downgradient boundary of AOI W-1, and at the SWDF manganese has been detected in groundwater samples at concentrations exceeding aesthetic and health-based RDWC. These results are presented on Figures 4-9 and 4-11 of the RFI Supplemental Report No. 1 (ENCORE 2003j).

The Montcalm Toe Drain is providing control of very shallow groundwater flow (0 to 4 feet deep) north of Montcalm Street in the area indicated on Figure 9-1. The groundwater is collected in the drain and pumped to the SWDF, where it is treated with GAC and discharged to stormwater Outfall 001 under authorization of an NPDES permit. In addition, other IMs and corrective measures being considered for the Site include paving a significant portion of the West Yard as part of Site redevelopment activities (see Figure 9-2) which will result in reducing storm water flow to Outfall 001 and recovering LNAPL near the downgradient perimeter of the Site (see Section 9.7). Actions of this nature, along with IMs already implemented for storm sewers and LNAPL, would help to control/contain impacted groundwater within the Site property boundary.

The Well Construction Code Administrative Rules promulgated under Sections 33 and 63 of Michigan Act 306 and Section 12714 of Michigan Act 368 prohibit installation of wells at depths less than 25 feet below grade. This restriction of the use of off-Site groundwater to depths less than 25 feet may protect against the potential groundwater use of the impacted shallow zone along a portion of the Site downgradient boundary.

The future expected use of the Site is on-going industrial manufacturing operations by GM and industrial redevelopment of an approximate 70-acre parcel of the Site located in the southwest portion of the Site.

Additional delineation of LNAPL No. 3 and groundwater flow is planned for this area, and a recovery system for LNAPL Areas No. 1 and No. 2 will be designed (Section 9.7). These activities may present an opportunity to address off-Site groundwater concurrently, if a determination is made that active remediation is required to address levels of constituents detected in groundwater at the downgradient Site boundary or off Site. Furthermore, the Montcalm Toe Drain and any capping of the southwestern portion of the Site through redevelopment (e.g., construction of buildings and/or paved parking lots) will further aid in controlling/reducing any off-Site migration by reducing surface water infiltration into the shallow saturated zone.

9.1.1 SUMMARY OF ALTERNATIVES - ON-SITE GROUNDWATER

The alternative evaluated to address the on-Site drinking water exposure pathway is Institutional Controls with Groundwater Monitoring. A No Action alternative would not provide Site-specific institutional controls for the drinking water pathway to be carried forward with the deed to the property. The constituents present in groundwater do not pose a current or likely future health risk to human receptors at the Site. The on-Site groundwater is not currently used as a source of drinking water, and it is not expected to be used as a source of drinking water in the future. The installation of drinking water wells in the shallow saturated zone is prohibited under the Well Construction Code Administrative Rules. Therefore, the No Action alternative would likely be protective of potential routes of exposure. Semi-annual groundwater monitoring is currently conducted, and this can easily be integrated into the on-Site groundwater corrective measure and thereby provide a more reliable and effective remedy than institutional controls alone.

9.1.1.1 INSTITUTIONAL CONTROLS AND GROUNDWATER MONITORING - ON-SITE GROUNDWATER

Institutional Controls and Groundwater Monitoring for on-Site groundwater would include filing a deed restriction with the county Register of Deeds specifically prohibiting the installation of groundwater drinking water wells on the property, and implementing a

groundwater monitoring program to detect any indication of the potential for off-Site impacts to occur (see Section 6.0). The deed restriction would run with the property in perpetuity, or until groundwater at the Site is remediated to RDWC. Monitoring would be performed as part of this alternative to:

- detect changes in environmental conditions that may affect the implementation of the remedy (e.g., changing groundwater flow directions),
- verify that the plumes are not expanding,
- verify no unacceptable impact to downgradient properties, and

The proposed groundwater monitoring program is presented in Section 6.0. As part of corrective measures for on-Site shallow groundwater, the proposed groundwater monitoring program will be evaluated to assess the need for additional locations and parameters to be monitored to aid in the on-going evaluation of storm sewers and LNAPL areas at the Site. Corrective measures related to LNAPL areas and storm sewers at the Site are discussed in Sections 9.7 and 9.8, respectively.

The proposed groundwater monitoring program would be conducted semi-annually for 5 years, and annually thereafter for 25 years to evaluate concentrations of constituents in groundwater over time. The well locations are indicated on Figure 6-2. An assessment of the monitoring program will be performed upon completion of storm sewer IMs (assumed to be 2 years), and every 5 years thereafter to evaluate the effectiveness of the monitoring, and the need to modify the monitoring program. A review of the monitoring program will also be conducted when significant Site modifications occur due to Site redevelopment, storm sewer IMs/corrective measures, LNAPL IMs/corrective measures, or storm sewer system improvements that may affect groundwater flow at the Site. Installation of additional monitoring wells is anticipated to be required from time to time to evaluate future changes in Site conditions as a result of on-going plant operations and property redevelopment. Maintenance of the monitoring wells will also be required as part of this alternative, which might include periodic repair of well caps and covers, re-development of wells, and abandonment and/or replacement of specific wells if damage occurs at one or more well locations.

In addition evaluating a deed restriction for on-Site groundwater and performing groundwater monitoring, other elements of this corrective measure will include notification(s) to the NPDES permit authority and/or modification(s) of existing storm sewer discharge permits, evaluation of the need for groundwater-surface water interface (GSI) monitoring wells/compliance points, and establishing Site-specific GSI criteria or requesting a mixing zone determination from MDEQ in accordance with Michigan NREPA Part 201 rules. Implementation of corrective measures for on-Site groundwater will be integrated with storm sewer rehabilitation related to

NPDES permit compliance, and will, in part, be dependent upon on-going IMs and final corrective measures implemented for the storm sewers.

9.1.2 EVALUATION OF ALTERNATIVES - ON-SITE GROUNDWATER

9.1.2.1 LONG-TERM RELIABILITY AND EFFECTIVENESS

Institutional Controls and Groundwater Monitoring are highly reliable and effective in the long term. Although it is highly unlikely that the shallow saturated zone would be used as a drinking water supply, evaluation of a deed restriction is more reliable and effective than the existing well construction code to prohibit drinking water well installation, especially if the property or portions of the property are transferred to another owner. Groundwater monitoring and periodic evaluation of monitoring data as the Site is redeveloped, storm sewers are rehabilitated, and LNAPL is recovered will provide data to evaluate the constituent concentrations over time.

9.1.2.2 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

Institutional Controls and Groundwater Monitoring will not actively reduce the toxicity, mobility, or volume of constituents present in groundwater at the Site. The constituents will not be treated or immobilized by these corrective measures, and the volume of impacted groundwater will not be reduced. The results of the Site-specific risk assessment indicate a reduction of toxicity is not required to protect human health and the environment. The only potential unacceptable exposure pathway is use of groundwater from the shallow saturated zone as a source of drinking water, which is addressed by the proposed corrective measure. It should be noted that some reduction of mobility and volume of constituents may occur through natural attenuation processes.

9.1.2.3 SHORT-TERM EFFECTIVENESS AND RISK

Institutional Controls and Groundwater Monitoring pose a low short-term risk to human health. Personnel performing groundwater monitoring will have received training, health and safety procedures, and equipment required to perform this work safely. The short-term effectiveness of the alternative is high. The key institutional control to prevent groundwater use is already underway. A deed restriction can be filed with the county in a relatively short timeframe, and semi-annual groundwater monitoring is currently being conducted.

9.1.2.4 IMPLEMENTABILITY

Institutional Controls and Groundwater Monitoring are easily implementable. Preparation and filing of a deed restriction is easily implementable with available resources. Groundwater

monitoring wells utilized for the current semi-annual groundwater monitoring are in place at the Site, and are currently in use for monitoring. Installation of new wells, as necessary, and maintenance of the wells are also easily implementable based on the labor, materials, and resources required. Resources required for on-going groundwater monitoring and evaluation of monitoring data are also readily available, and these elements are also highly implementable.

9.1.2.5 COSTS

The estimated costs for the proposed on-Site groundwater corrective measures are presented on Table 9-1. Capital and annual costs are totaled for a period of 30 years, including no discount for present worth.

9.1.2.6 ACCEPTABILITY TO SURROUNDING COMMUNITY

Institutional Controls and Groundwater Monitoring are expected to be acceptable to the surrounding community. This alternative is expected to be acceptable to property owners downgradient of the Site because it provides periodic documentation of the constituent concentrations near the downgradient property line and at off-Site properties downgradient of the Site.

9.1.2.7 ACCEPTABILITY TO STATE OF MICHIGAN

Institutional Controls and Groundwater Monitoring are expected to be acceptable to the State of Michigan based on requirements of NREPA Part 201. The deed restriction provides protection against the use of the groundwater on-Site as a source of drinking water, and groundwater monitoring data will provide on-going verification of the constituent concentrations near the downgradient boundary of the Site. Groundwater-surface water discharge issues will be managed under the existing discharge permits, as appropriate, and a GSI monitoring program will be evaluated as part of the proposed alternative and incorporated into the same semi-annual groundwater monitoring program as appropriate.

9.1.3 PROPOSED ACTION - ON-SITE GROUNDWATER

The proposed action for on-Site groundwater at AOIs W-1, W-5, W-8, W-9, W-10, W-11, M-1, M-2, M-5, M-16, F-7, P-9, and P-11 is Institutional Controls and Groundwater Monitoring. This action is a reliable and effective alternative, and is highly implementable. Provisions for long-term monitoring and evaluation of potential changes in groundwater monitoring requirements allow for potential changes at the Site with respect to storm sewer rehabilitation, LNAPL recovery, and property redevelopment. The cost to implement this alternative is anticipated to be lower than costs for other alternatives that would reduce constituent concentrations below levels protective of drinking water use, which would result in no additional reduction of risk

based on the reasonably expected aquifer use at the Site. This alternative is also believed to be acceptable to the surrounding community and the state of Michigan. Proposed action for off-Site groundwater may be integrated with those for on-Site groundwater, if determined to be appropriate.

9.1.4 PROPOSED ACTION - OFF-SITE GROUNDWATER

No final corrective measures are proposed at this time for off-Site groundwater because the extent of impact to off-Site groundwater is not yet evaluated. Therefore, a work plan for delineating the extent of impact to off-Site groundwater will be submitted to U. S. EPA. Groundwater monitoring wells will be installed on off-Site properties downgradient of on-Site exceedances of RDWC, and samples will be collected from those wells and analyzed to evaluate the constituent concentrations in groundwater downgradient of Fiero, SWDF, and Montcalm Street, and to delineate the extent of any off-Site exceedances of RDWC. In addition, Sitewide groundwater monitoring will continue. The groundwater monitoring plan will be revised periodically as necessary to reflect the results of investigations, and notices of off-Site migration will be filed for constituents likely to be migrating off Site. An evaluation of the extent of capping to be implemented in the West Yard will be conducted as part of redevelopment efforts. Any capping would potentially benefit corrective measures related to Sitewide groundwater, LNAPL Areas, and storm sewers.

Upon completion of these items, a proposal for corrective action for off-Site groundwater will be submitted to U. S. EPA. Proposed action for off-Site groundwater may be integrated with those for on-Site groundwater, if determined to be appropriate. In the meantime, potential exposure to off-Site downgradient receptors is highly unlikely given the availability of the City of Pontiac water distribution system, the cited restriction on wells less than 25 feet deep, and the on-going operation of the Montcalm Toe Drain system.

9.2 AOI W-9 SOILS

Corrective Measures for groundwater at AOI W-9 are discussed under Section 9.1. This section addresses soils at AOI W-9. Based on soil sampling and the PCB delineation program conducted during RFI activities, an estimated area of 17,500 SF (140 feet by 125 feet) contains soil in the 0- to 2-foot interval that exceed Part 201 IDC of 20 mg/kg.

An IM work plan will be submitted to U.S. EPA in December 2003 to remove PCB-impacted soil from the area to address potential risk associated with these soils. This IM is discussed in Section 5.3. Soil removal is expected to be conducted in spring of 2004. The scope of the IM includes additional Site characterization and verification sampling as required under the TSCA rules at 40 CFR 761.61. The extent of soil removed under the IM is designed to meet

requirements for a self-implementing cleanup to 10 mg/kg PCBs under the rules for PCB remediation waste.

The anticipated future land use is redevelopment for construction of a new industrial facility. New building construction will include a concrete floor slab foundation on grade and associated paved parking lot.

Therefore, the evaluation of final corrective measures for soils at AOI W-9 includes alternatives to address risks associated with soils containing up to 10 mg/kg PCBs, and considers the plans for industrial redevelopment in the near future.

9.2.1 SUMMARY OF ALTERNATIVES

Corrective measures evaluated at AOI W-9 consist of no action, excavation of additional PCB-impacted soil, and capping remaining PCB-impacted soil with institutional controls. Requirements for capping PCB-impacted soil are described in 40 CFR 761.61(a)(7). Any alternatives involving the capping of PCB-impacted soil would require a deed restriction for the capped area. The deed restriction would require the Site owner to maintain the cap in perpetuity. The no action alternative could be protective of human health if the fence were maintained and the area were not redeveloped based on a risk evaluation (ENCORE, 2002c) but this alternative is inconsistent with the anticipated future land use. The excavation of additional PCB-impacted soil beyond what is being removed as an IM would allow the area to be operated free of land use restrictions, but would be more costly than other alternatives. It would not result in significant risk reduction over the basic soil removal option, given that a concrete floor slab and/or paved parking area will be constructed over the remaining impacted soils in any case.

The most practical alternative for AOI W-9 soils that is protective of human health, and also consistent with future land use, is capping the soils containing 10 mg/kg PCBs or greater and filing a deed restriction under 40 CFR 761.61. This is, therefore, the only alternative evaluated in detail for AOI W-9 soils.

9.2.1.1 CAP AND INSTITUTIONAL CONTROLS

Under 40 CFR 761.61(a)(4)(i), PCB-impacted soils less than or equal to 10 mg/kg may remain on-Site if the PCB-impacted soils with concentrations between 1 mg/kg and 10 mg/kg are covered with an asphalt, concrete, or soil cap.

Based on the PCB delineation program from the RFI activities, approximately 800 CY of soil that contains greater than 10 mg/kg is being removed and disposed of off-Site as part of an IM, and the remaining PCB - impacted soil will be capped in the area shown on Figure 9-2. Floor slabs

and paved parking areas constructed as part of Site redevelopment will constitute an acceptable cap for this area. The asphalt or concrete will be at least 6 inches thick. A maintenance program and due care documentation will be implemented to assure cap integrity, and a deed restriction will need to be instituted to protect workers and the public from potential exposure to remaining PCB impacted soils by excavating through the soil or disturbing the soil in any way. The area of excavation is shown in Figure 5-3, and the location of the soil cap and institutional controls is shown on Figure 9-2.

9.2.2 EVALUATION OF ALTERNATIVES

9.2.2.1 LONG-TERM RELIABILITY AND EFFECTIVENESS

Capping soils with 1 to 10 mg/kg PCBs is an effective and reliable alternative for the long-term, as long as the cap is maintained and the deed restriction is filed. The potential for direct contact with PCB soils will be removed via the construction and maintenance of a cap for the areas with PCB concentrations of 1 to 10 mg/kg.

9.2.2.2 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

Capping soils from 1 to 10 mg/kg would not reduce the toxicity or volume of PCB-impacted soil, but would reduce the mobility of the PCB-impacted soil to migrate to locations where there could be potential human receptors.

9.2.2.3 SHORT-TERM EFFECTIVENESS AND RISK

This alternative would be effective in the short term. Short-term risk associated with implementation of this alternative is relatively low. Short-term risk is associated with potential exposure by construction workers to airborne PCB-impacted dust particles during installation of an asphalt and/or concrete cap. The short-term risks associated with this alternative would be addressed by proper training, health and safety procedures, and engineering controls during implementation.

9.2.2.4 IMPLEMENTABILITY

Capping soils and filing a deed restriction would be easily implemented. Capping of the material between 1 and 10 mg/kg can be conducted prior to Site redevelopment, or performed as a part of the redevelopment. This option requires proper training and health and safety procedures for any construction personnel performing below-grade work in the area after the cap has been constructed. Long-term periodic maintenance of the cap will be specified in the deed restriction.

9.2.2.5 COSTS

The estimated cost to implement this alternative is presented in Table 9-2 for a period of 30 years, including no discount for present worth.

9.2.2.6 ACCEPTABILITY TO SURROUNDING COMMUNITY

This alternative is anticipated to be acceptable to the surrounding community. Future property owners or lessees would be aware of the restrictions on the Site through the deed restriction.

9.2.2.7 ACCEPTABILITY TO STATE OF MICHIGAN

This alternative is anticipated to be acceptable to the State of Michigan.

9.2.3 PROPOSED ACTION

The proposed action for AOI W-9 soils is a cap over soils containing from 1 to 10 mg/kg PCBs and institutional controls. This alternative is the lowest cost alternative consistent with anticipated future land use, can be easily implemented, and provides long-term reliability and effectiveness.

9.3 AOI M-4

AOI M-4 consists of two tanks (one former UST and one existing AST) adjacent to Plant 25 (formerly Plant 51) located in the northwest corner of the MFD portion of the Site. This area is considered an AOI because of a documented release from the former UST. Remediation of the documented release from the former UST was terminated in August 1987. During RFI activities, one soil boring and five monitoring wells were completed in the area of the previous remedial program and also downgradient of the former UST to determine groundwater quality conditions.

Soil and groundwater samples were collected during RFI activities for analysis of VOCs and lead. Concentrations of constituents detected in the soil samples collected from AOI M-4 do not exceed screening criteria. Concentrations of constituents detected in the AOI M-4 perched groundwater samples exceed the IDWC for benzene and ethylbenzene. The zone of contamination is estimated to be approximately 50 feet square and 12 feet thick (from 6 to 18 ft bgs).

9.3.1 SUMMARY OF ALTERNATIVES

This section presents the evaluation of alternatives for corrective measures to address exceedances of IDWC in groundwater at AOI M-4. Alternatives evaluated are in-situ biological

degradation, pump and treat with GAC, and institutional controls with groundwater monitoring for natural attenuation. In-situ biological degradation is considered because the BTEX-impacted area is limited, constituent concentrations are within the range that could be successfully degraded, and it would aid in the removal of constituents that may potentially be contributed to the shallow saturated zone.

The pump and treat alternative is evaluated for AOI M-4 because the perched impacted zone is isolated hydraulically from the shallow saturated zone, pump and treat would aid in removal of constituents that may potentially be contributing to the shallow saturated zone, and the hazardous constituents are readily treatable with this technology.

Institutional controls with groundwater monitoring is also evaluated because it is a cost-effective alternative that is consistent with the current and future land use and the proposed corrective measure for on-Site groundwater at other AOIs at the Site. Groundwater at the Site is not currently used as a source of drinking water, and is not anticipated to be as a source of drinking water in the future.

9.3.1.1 ORC® INJECTION

The use of oxygen releasing compound (ORC®) enhances breakdown of gasoline-related contaminants by promoting biological activity and subsequent degradation of organic compounds. An ORC® injection grid would be established at the area shown on Figure 9-3, and would be completed using a direct-push (Geoprobe) drilling rig. The injection grid would consist of 4 rows with 4 borings in each row (16 injection points) completed on approximately 15-foot centers. The ORC® slurry would be injected into the subsurface by drilling into the saturated zone of contamination using a slotted lead drilling rod, and pumping the slurry through the rods once the slotted section has reached the desired depth interval. The slurry would be continuously injected through the rods into the formation as the rods are pulled back out of the borehole to a point at the top of the saturated zone. A total of approximately three pounds (dry weight) of ORC® would be injected per saturated foot of the contamination zone. The remaining annulus from the top of the water table to the ground surface would be backfilled with bentonite pellets, and the paved ground surface would be repaired with concrete.

Following ORC® injection, two rounds of groundwater samples would be collected from monitoring wells associated with AOI M-4 to evaluate the effectiveness of the ORC®. Groundwater samples would be collected 6 months and 12 months following injection of the ORC®, and analyzed for BTEX. Constituent concentrations could likely be reduced to less than IDWC in approximately one year.

9.3.1.2 PUMP AND TREAT WITH GAC

Pump and treat technology would be successful at AOI M-4 because the Site conditions include dissolved constituents only (i.e., soils are not a source of contamination further contributing to the dissolved phase), the area is hydraulically isolated from surrounding soils with lower permeability, and hazardous constituents are easily treatable by GAC at the concentrations detected.

GAC treatment removes gasoline-related contaminants from groundwater through physical and chemical attraction of organic molecules to the carbon as groundwater is pumped through GAC vessels. For this alternative, a 4-inch diameter pumping well would be installed near the center of the zone of contamination. The pumping well would be screened across the entire saturated thickness. A submersible pump would be installed in the well, and groundwater would be pumped through two, disposable GAC vessels operated in series. Water pumped through the vessels would be discharged into a storm sewer line located approximately 40 feet west of the zone of contamination. Electrical power would be required to operate the pump.

This alternative would require authorization under a General National Pollutant Discharge Elimination System (NPDES) permit to discharge treated water into the existing storm sewer. Monthly sampling and reporting would be required to assure compliance with the NPDES permit. In addition, groundwater samples would be collected from the existing monitoring wells at AOI M-4. Groundwater samples would be collected semi-annually, and analyzed for BTEX until groundwater results remained below the IDWC for four consecutive events.

Discontinuing operation during the coldest months of the year would lower costs associated with this alternative. An estimated 12 months of operation would be required to achieve desired cleanup levels.

9.3.1.3 INSTITUTIONAL CONTROLS AND GROUNDWATER MONITORING

Exceedances of IDWC in groundwater can be addressed through the execution of a deed restriction to restrict the use of groundwater at the Site as a source of drinking water. A deed restriction and monitoring will be evaluated for on-Site groundwater at the AOIs evaluated in Section 9.1. Groundwater monitoring for natural attenuation would occur at AOI M-4 as part of this alternative. Monitoring wells at AOI M-4 would be sampled twice annually for analysis of BTEX.

9.3.2 EVALUATION OF ALTERNATIVES

In this section, the three alternatives for corrective measures to address exceedances of IDWC in groundwater at AOI M-4 are evaluated with respect to reliability, effectiveness, risk,

implementability, acceptability, and cost. Effectiveness refers to the degree to which each alternative is protective of human health and the environment, controls the source of releases, attains media cleanup standards (including the length of time until these standards are achieved), and complies with applicable standards for management of wastes. Implementability refers to the degree to which the alternative is compatible with the existing or planned use of the area, the availability of the technology, and the startup, operation and maintenance, and decommissioning activities required. Cost refers to the total capital, operation, and maintenance costs.

9.3.2.1 LONG-TERM RELIABILITY AND EFFECTIVENESS

ORC® injection would enhance breakdown of benzene and ethylbenzene to below IDWC levels. Semi-annual groundwater monitoring would determine when the constituents at AOI M-4 fall below IDWC levels. Once the media cleanup standards are met, the remediated area would be available for unrestricted use.

Pumping and treatment with GAC would also remove benzene and ethylbenzene from groundwater at AOI M-4 to levels below the IDWC. Semi-annual groundwater monitoring would occur to determine when the constituents at AOI M-4 fall below IDWC levels. Once the media cleanup standards are met, the remediated area would be available for unrestricted use. This alternative would possibly require a longer operation period than ORC® injection to meet the cleanup standards.

A deed restriction would restrict use of groundwater in the affected area, as drinking water wells could not be installed. Upon implementation, the deed restriction would immediately eliminate the exposure route via drinking water for benzene and ethylbenzene at AOI M-4. Semi-annual groundwater monitoring would occur to determine when constituent concentrations at AOI M-4 fall below IDWC levels. The groundwater is not currently used as a source of drinking water, and is not anticipated to be used as a source of drinking water in the future.

9.3.2.2 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

ORC® injection would reduce the volume of groundwater with exceedances of IDWC for benzene and ethylbenzene. The toxicity and mobility of these constituents would be reduced as biological degradation of the organic compounds occurs.

Pump and treat with GAC would reduce the mobility of groundwater with exceedances of IDWC for benzene and ethylbenzene by pumping impacted groundwater through a GAC system. The volume of groundwater impacted with benzene and ethylbenzene would be reduced with continued operation of the system. The toxicity of these constituents would not

be affected, but would be transferred to the GAC media and ultimately incinerated as part of GAC regeneration.

The institutional controls and groundwater monitoring alternative may reduce the toxicity, mobility, or volume of the hazardous substances present through natural attenuation. The potential exposure to the impacted groundwater at the Site would be eliminated through a deed restriction on the use of groundwater at AOI M-4 as a source of drinking water. This deed restriction could be incorporated into the proposed deed restriction for the AOIs evaluated in Section 9.1 for on-Site groundwater.

9.3.2.3 SHORT-TERM EFFECTIVENESS AND RISK

Short-term risk associated with implementation of any of these alternatives is low. Groundwater is not currently a source of drinking water at the Site and is not expected to be in the future. Short-term risks associated with the alternatives include potential exposure to impacted groundwater by on-Site personnel, installing the ORC® or pump and treat systems. These risks would be addressed by implementation of proper training, health and safety procedures, and engineering controls.

9.3.2.4 IMPLEMENTABILITY

ORC® injection is easily implemented by injecting the ORC® compound into the affected area using a Geoprobe drilling rig. This option requires no long-term use of equipment. Existing monitoring wells can be utilized for groundwater sampling to verify the effectiveness of the corrective measure.

Pumping with GAC treatment would also be easily implemented. This option would require power to operate the pump. Operation and maintenance of the pump and GAC system would be required, although corrective measures would be anticipated to be complete within one year. Existing monitoring wells would be utilized for groundwater sampling to verify the effectiveness of the corrective measure. A discharge permit, monitoring, and reporting would also be required to implement this alternative.

Institutional controls and groundwater monitoring would be easily implemented. An evaluation of deed restriction for groundwater use at AOI M-4 would be investigated in conjunction with the evaluation of a deed restriction for several AOIs evaluated in Section 9.1 for on-Site groundwater. Existing monitoring wells would be utilized for groundwater sampling to monitor groundwater quality at AOI M-4.

9.3.2.5 COSTS

The highest cost alternative evaluated is pumping and treatment with GAC due to the operating costs associated with this alternative. The next highest cost alternative is ORC® injection. The lowest cost alternative evaluated is institutional controls and groundwater monitoring. Tables 9-3, 9-4, and 9-5 present the capital, maintenance, and total costs for these alternatives.

9.3.2.6 ACCEPTABILITY TO SURROUNDING COMMUNITY

The three alternatives evaluated are anticipated to be acceptable to the surrounding community. Future property owners or lessees would be aware of the restrictions on the Site through the deed restriction, and the requirements of any monitoring, operation and maintenance through the deed restriction that would be in place as a result of implementing the institutional controls and groundwater monitoring alternative.

9.3.2.7 ACCEPTABILITY TO STATE OF MICHIGAN

The three alternatives evaluated are anticipated to be acceptable to the State of Michigan.

9.3.3 PROPOSED ACTION

The proposed action for AOI M-4 is institutional controls and groundwater monitoring. This alternative was chosen because it is the lowest cost alternative, can be easily implemented, and provides long-term reliability and effectiveness against potential human health risks. This option requires a deed restriction prohibiting the installation of drinking water wells at the Site. However, a deed restriction will be evaluated for several AOIs, as evaluated in Section 9.1, and AOI M-4 can be included in the Site-wide evaluation. Reducing BTEX concentrations would not restore the shallow saturated zone to improve its use for the community. If BTEX concentrations are reduced below drinking water criteria as a result of natural attenuation, the use of the shallow saturated zone would not change because it will not be used a source of drinking water in the future.

9.4 AOI P-6

AOI P-6 consists of a former UST tank farm and former Stoddard solvent AST located west of the northwest corner of the Emissions Control Building. A release from one or more of the USTs was discovered in June 1984 and more recently in January 2001. The former UST tank farm contained seven USTs that stored several types of materials, including unleaded gasoline, Indolene I clear gas, GM calibration solvent, and water. A concrete paved parking lot is

currently at the location of the former UST tank farm and former AST. The USTs were taken out of service in November 1986 and removed in July 1987.

Five soil borings and eight monitoring wells were installed during RFI activities. Soil and groundwater samples were collected for analysis of VOCs, SVOCs, and lead. Concentrations of constituents detected in the soil samples collected from AOI P-6 do not exceed screening criteria. Concentrations of constituents detected in the AOI P-6 perched groundwater samples exceed the IWDC for benzene, ethylbenzene, and toluene. The zone of contamination is calculated to be approximately 25 feet by 100 feet, and 16 feet thick .

9.4.1 SUMMARY OF ALTERNATIVES

This section presents the evaluation of alternatives to address exceedances of IDWC in groundwater samples collected from AOI P-6. Alternatives evaluated are in-situ biological degradation, pump and treat with GAC, and institutional controls with groundwater monitoring for natural attenuation. In-situ biological degradation is considered because the BTEX-impacted area is limited, constituent concentrations are within the range that could be successfully degraded, and it would aid in removal of constituents that may potentially be contributed to the shallow saturated zone.

The pump and treat alternative is evaluated for AOI P-6 because the perched impacted zone is isolated hydraulically from the shallow saturated zone, would aid in removal of constituents that may potentially be contributing to the shallow saturated zone, and the hazardous constituents are readily treatable with this technology.

Institutional controls with groundwater monitoring is also evaluated because it is a cost-effective alternative that is also consistent with the current and future land use and the proposed corrective measure for on-Site groundwater at other AOIs at the Site. Groundwater at the Site is not currently used as a source of drinking water, and is not anticipated to be used as a source of drinking water in the future.

9.4.1.1 IN-SITU ORC® INJECTION

The use of ORC® enhances breakdown of gasoline-related contaminants by promoting biological activity and subsequent degradation of organic compounds. An ORC® injection grid would be established at the area shown on Figure 9-4 and would be completed using a direct-push (Geoprobe) drilling rig. The injection grid would consist of 2 rows with 7 borings in each row (14 injection points) completed on approximately 15-foot centers. The ORC® slurry would be injected into the subsurface by drilling into the saturated zones of contamination using a slotted lead drilling rod, and pumping the slurry through the rods once the slotted section has reached the desired depth interval. The slurry would be continuously injected through the rods

into the formation as the rods are pulled back out of the borehole to a point at the top of the saturated zone. A total of approximately 4.8 pounds (dry weight) of ORC® would be injected per saturated foot of the contamination zone. The remaining annulus from the top of the water table to the ground surface would be backfilled with bentonite pellets, and the paved ground surface would be repaired with concrete.

Following ORC® injection, two rounds of groundwater samples would be collected from monitoring wells associated with AOI P-6 to evaluate the effectiveness of the ORC®. Groundwater samples would be collected 6 months and 12 months following injection of the ORC®, and analyzed for BTEX. Constituent concentrations could likely be reduced to less than IDWC is approximately one year.

9.4.1.2 PUMP AND TREAT WITH GAC

Pump and treat technology would be successful at AOI P-6 because the Site conditions include dissolved constituents only (i.e., soils are not a source of contamination further contributing to the dissolved phase), the area is hydraulically isolated from surrounding soils with lower permeability, and hazardous constituents are easily treatable by GAC at the concentrations detected. GAC treatment removes gasoline-related contaminants from groundwater through physical and chemical attraction of organic molecules to the GAC as groundwater is pumped through GAC vessels. For this alternative, a 4-inch diameter pumping well would be installed near the center of the zone of contamination. The pumping well would be screened across the entire thickness of the zone of contamination. A submersible pump would be installed in the well, and groundwater would be pumped through two, disposable GAC vessels operated in series. Water pumped through the GAC vessels would be discharged into a storm sewer line located approximately 25 feet north of the zone of contamination. Electrical power would be required to operate the pump.

This alternative would require a General NPDES permit to discharge treated water into the existing storm sewer. Monthly sampling and reporting would be required to assure compliance with the NPDES permit. In addition, groundwater samples would be collected from existing monitoring wells at AOI P-6. Groundwater samples would be collected semi-annually and analyzed for BTEX until groundwater results remained below the IDWC for four consecutive events.

Discontinuing operation during the coldest months of the year would lower costs associated with this alternative. An estimated 12 months of operation would be required to achieve desired cleanup levels.

9.4.1.3 INSTITUTIONAL CONTROLS AND GROUNDWATER MONITORING

Exceedances of IDWC in groundwater can be addressed through the execution of a deed restriction to restrict the use of groundwater at the Site as a source of drinking water. A deed restriction will be evaluated for on-Site groundwater at the AOIs evaluated in Section 9.1. Groundwater monitoring for natural attenuation would occur at AOI P-6 as part of this alternative. Monitoring wells at AOI P-6, would be sampled twice annually for analysis of BTEX.

9.4.2 EVALUATION OF ALTERNATIVES

In this section, the three alternatives for corrective measures to address exceedances of IDWC in groundwater at AOI P-6 are evaluated with respect to reliability, effectiveness, risk, implementability, acceptability, and cost.

9.4.2.1 LONG-TERM RELIABILITY AND EFFECTIVENESS

ORC® injection would enhance breakdown of benzene, ethylbenzene, and toluene to below IDWC levels. Semi-annual groundwater monitoring would occur to determine when all constituents at AOI P-6 fall below IDWC levels. Once the media cleanup standards are met, the remediated area would be available for unrestricted use.

Pumping and treatment with GAC would also remove benzene, ethylbenzene, and toluene from groundwater at AOI P-6 to levels below the IDWC. Semi-annual groundwater monitoring would occur to determine when the constituents at AOI P-6 fall below IDWC levels. Once the media cleanup standards are met, the remediated area would be available for unrestricted use. This alternative would possibly require a longer operation period than ORC® injection to meet the cleanup standards.

A deed restriction would restrict use of groundwater in the affected area, as drinking water wells could not be installed. Upon implementation, the deed restriction would immediately eliminate the exposure route via drinking water for benzene, ethylbenzene, and toluene at AOI P-6. Semi-annual groundwater monitoring would occur to determine when constituent concentrations at AOI P-6 fall below IDWC levels. The groundwater is not currently used as a source of drinking water, and is not anticipated to be used as a source of drinking water in the future.

9.4.2.2 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

ORC® injection would reduce the volume of groundwater with exceedances of IDWC for benzene, ethylbenzene, and toluene. The toxicity and mobility of these constituents would be reduced as biological degradation of the organic compounds occurs.

Pump and treat with GAC will reduce the mobility of groundwater with exceedances of IDWC for benzene, ethylbenzene, and toluene by pumping impacted groundwater through GAC treatment system. The volume of groundwater impacted with benzene, ethylbenzene, and toluene would be reduced with continued operation of the system. The toxicity of these constituents would not be affected, but would be transferred to the GAC media and ultimately incinerated as part of GAC regeneration.

The institutional controls and groundwater monitoring alternative may reduce the toxicity, mobility, or volume of the hazardous substances present through natural attenuation. The potential exposure to impacted groundwater at the Site would be eliminated through a deed restriction on the use of groundwater at AOI P-6 as a source of drinking water. This deed restriction could be incorporated into the proposed deed restriction for the AOIs evaluated in Section 9.1 for on-Site groundwater.

9.4.2.3 SHORT-TERM EFFECTIVENESS AND RISK

Short-term risk associated with implementation of any of these alternatives is low. Groundwater is not currently a source drinking water at the Site and is not expected to be in the future. Short-term risks associated with the alternatives include potential exposure to impacted groundwater by on-Site personnel installing the ORC or pump and treat systems. These risks would be addressed by implementation of proper training, health and safety procedures, and engineering controls.

9.4.2.4 IMPLEMENTABILITY

ORC® injection is easily implemented by injecting the ORC® compound into the affected area using a Geoprobe drilling rig. This option requires no long-term use of equipment. Existing monitoring wells can be utilized for groundwater sampling to verify the effectiveness of the corrective measure.

Pumping with GAC treatment would also be easily implemented. This option would require power to operate the pump. Operation and maintenance of the pump and GAC system would be required, although corrective measures would be anticipated to be completed within one year. Existing monitoring wells would be utilized for groundwater sampling to verify the

effectiveness of the corrective measure. A discharge permit, monitoring, and reporting would also be required to implement this alternative.

Institutional controls and groundwater monitoring could be easily implemented. A deed restriction for groundwater use at AOI P-6 would be evaluated in conjunction with the an evaluation for a deed restriction for several AOIs evaluated in Section 9.1 for on-Site groundwater. Existing monitoring wells would be utilized for groundwater sampling to monitor groundwater quality at AOI P-6.

9.4.2.5 COSTS

The highest cost alternative evaluated is pumping and GAC treatment due to the operating costs associated with this alternative. The next highest cost alternative is ORC® injection. The lowest cost alternative evaluated is institutional controls and groundwater monitoring. Tables 9-6, 9-7, and 9-8 present the estimated costs for these alternatives.

9.4.2.6 ACCEPTABILITY TO SURROUNDING COMMUNITY

The three alternatives evaluated are anticipated to be acceptable to the surrounding community. Future property owners or lessees would be aware of the restrictions on the Site through the deed restriction, and the requirements of any monitoring, operation, and maintenance through the deed restriction that would be in place as a result of implementing the institutional controls and groundwater monitoring alternative.

9.4.2.7 ACCEPTABILITY TO STATE OF MICHIGAN

The three alternatives evaluated are anticipated to be acceptable to the State of Michigan.

9.4.3 PROPOSED ACTION

The proposed action for AOI P-6 is institutional controls and groundwater monitoring. This alternative was chosen because it is the lowest cost alternative, can be easily implemented, and provides long-term reliability and effectiveness against potential human health risks. This option requires a deed restriction prohibiting the installation of drinking water wells at the Site. However, a deed is being evaluated for several AOIs, as evaluated in Section 9.1, and AOI P-6 can be included in the Site-wide deed restriction evaluation. Reducing BTEX concentrations would not restore the shallow saturated zone to improve its use for the community. If BTEX concentrations are reduced below drinking water criteria as a result of natural attenuation, the use of the shallow saturated zones would not change because it will not be used as a source of drinking water in the future.

9.5 PONTIAC SCHOOL BOARD (PSB) PROPERTY

Analytical results for five sediment samples collected from inside the sewer pipe during RFI activities indicated that five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected at concentrations exceeding RDC criteria. Four test pits, ten soil borings, and two monitoring wells were also completed at the PSB property. No SVOCs were detected above screening criteria in soil or groundwater samples collected from these locations outside the sewer pipe.

These results demonstrate that SVOCs present in sediment from inside the sewer pipe are not present in soil or groundwater outside the sewer pipe. In addition, risk-based analysis of the concentrations of constituents detected in soil determined that reasonable maximum exposures are below U.S. EPA-established levels for determining whether corrective measures are warranted (see Section 8.5.1). The PSB property was evaluated and determined to have no significant residential exposures to hazardous constituents in soil based on the results of the RFI. As such, corrective measures for the PSB property will address sediments within the storm sewer pipe.

9.5.1 SUMMARY OF IM IMPLEMENTED

As discussed in Section 5.1, an IM has been proposed, approved, and implemented for the PSB property. The storm sewer was in extremely poor condition and could not be cleaned in place. Therefore, the IM for the PSB property consisted of removing approximately 1,000 lineal feet of 24-inch corrugated metal storm sewer pipe and its contents. The removed materials were transported for disposal at an off-Site landfill. Clean overburden material from outside the storm sewer pipe was segregated, staged separately from other materials, and transported for off-Site disposal. The clean overburden and sand backfill was used to backfill and compact the excavation.

This IM is summarized in the document Work Plan for the Storm Sewer Pipe Removal at the PSB property, (ENCORE, March 2003). The U.S. EPA reviewed this work plan and provided comments. This IM addressed identified potential impacts to human health at the PSB property. This IM is expected to be completed by December 2003.

9.5.2 EVALUATION OF ALTERNATIVES

Because implementation of this IM addressed identified potential risks associated with hazardous constituents, further evaluation of additional corrective measures is not required. Documentation of implementation of the IM will be compiled in a report upon the completion of the IM and submitted to U.S. EPA.

9.5.3 PROPOSED ACTION

No corrective action is proposed for the PSB property beyond implementation of the IM already approved by U.S. EPA.

9.6 HARRIS LAKE

Harris Lake is an 8-acre lake with a small drainage area that receives storm water input from surrounding areas via several culverts, which convey precipitation and surface runoff. The lake appears to have been used as a fill area, with the fill materials including foundry sand, wooden floor blocks, and construction and demolition debris. Investigation of Harris Lake identified the presence of oily material in the upper layer of lake sediment. A Baseline Human Health Risk Assessment for Harris Lake (ENCORE, 2002cdetermined that potential human exposures to soil, sediment, and surface water under both current and reasonably expected future use are not expected to pose unacceptable risk. In addition, a BERA (Exponent, 2002) concluded that the IM implemented at Harris Lake will adequately address any potential ecological risks. For aesthetic purposes, the impacted sediment was addressed under an IM.

9.6.1 SUMMARY OF IM IMPLEMENTED

The IM conducted at Harris Lake is summarized in the Nearshore Sediment Removal Program Design Report (ENCORE, September 2002) and Nearshore Sediment Removal Program Bid Documents (ENCORE, April 2003). The U.S. EPA reviewed these documents outlining the IM and provided comments.

The IM for Harris Lake consisted of removal of sediment and soil from Harris Lake and targeted areas on the shoreline and inlet ditch, and replacement of the removed sediment and soil with clean, imported backfill. Based on consideration of steep bottom slopes found throughout much of the nearshore zone, low dissolved oxygen concentrations in deeper water (greater than 12 feet of water depth), and limited benthic activities in the intermediate zone between 5 and 12 feet water depth, the following activities were conducted.

Nearshore sediments extending from the waterline to less than or equal to 5 feet of water depth were removed, dewatered, and transported off-Site for disposal at a permitted landfill. The removed areas were backfilled with clean imported fill material and disturbed support areas were restored. These sediments covered approximately 46,000 SF of the lake bottom. The removal extended below the soft sediments into the clean native soils to predetermined depths. Approximately 5,400 CY of sediments were removed and disposed of off site. Water generated during sediment dewatering was treated and discharged back into the lake.

Sediments in certain areas with water depths greater than 5 feet and less than or equal to 12 feet were covered with clean imported material to provide substrate for benthic macroinvertebrate communities. Fill placement in these areas was limited to where lake bottom slopes are less than or equal to 3 horizontal to 1 vertical (3H:1V) to allow long-term stability of the fill material on these slopes. The coverage area included a 6,000 SF area along the western end and 11,000 SF area along the eastern end of Harris Lake. A minimum of 6 inches of clean imported fill was placed atop these sediments. No activities were performed in areas where the water depth is greater than 12 feet.

An additional quantity of approximately 2,100 CY of sediment/soil was removed from the Harris Lake shoreline and inlet ditch. The inlet ditch area and three specific shoreline areas were excavated to clean native soils and restored to grade with clean imported fill. A geotextile and a layer of rip-rap was placed in the inlet and outlet ditches.

The IM was completed on October 21 2003, and a report documenting activities is currently being prepared for submittal to U.S. EPA.

9.6.2 EVALUATION OF ALTERNATIVES

The IM addressed aesthetic concerns at Harris Lake. Because no potential risks were associated with the oily material, evaluation of additional corrective measures is not necessary.

9.6.3 PROPOSED ACTION

No corrective action is proposed for the Harris Lake property beyond implementation of the IM that was recently completed.

9.7 LNAPL AREAS

Removal of LNAPL in various areas of the Site will be initiated in an effort to reduce LNAPL volumes and mobility. Corrective measures with respect to the LNAPL areas are discussed in terms of the available technologies to recover LNAPL from the affected areas. Six LNAPL areas have been identified at the Site. Descriptions of the LNAPL types in LNAPL Areas Nos. 1 through 5 are as follows:

- LNAPL Area 1: highly degraded No. 6 fuel oil, moderately degraded kerosene, and highly degraded diesel No. 2; PCBs, dioxins, VOCs and PAHs have been detected in samples;
- LNAPL Area 2: moderately degraded diesel No. 2 and highly degraded No. 6 fuel oil; PCBs, dioxins, VOCs and PAHs have been detected in samples;

- LNAPL Area 3: weathered diesel No. 2 and highly degraded No. 6 fuel oil; PCBs, dioxins, VOCs and PAHs have been detected in samples;
- LNAPL Area 4: mildly weathered No. 2 fuel oil and highly degraded asphalt; VOCs, SVOCs, PCBs, and inorganics have been detected in samples; and
- LNAPL Area 5 – moderately weathered No. 2 fuel oil (or No. 2 diesel fuel) and a highly degraded heavy oil (or asphalt); VOCs, SVOCs, PCBs, and inorganics have been detected in samples.

LNAPL Area No. 6 has not yet been sampled. More detailed descriptions of the LNAPL present in each area are provided in Section 4.5.

The RFI Report (ENCORE, 2002c) and RFI Supplemental Report No. 1 (ENCORE, 2003j) have concluded that the presence of LNAPL at the Site does not currently pose an unacceptable risk to human health. Proposed LNAPL recovery techniques take into consideration that the removal of all LNAPL and associated residuals from a given area is not required for the protection of human health. The corrective measures will focus on the removal of as much free product as feasible given Site-specific considerations and limitations. The implementation of polishing technologies for the removal of residual LNAPL is not proposed in this report.

NREPA obligates parties responsible for activities causing a release of hazardous substances to initiate the recovery of such substances that are present as free product. The purpose of this section is to present the options available for the remediation of LNAPL, evaluate the suitability of the applicable technologies for the Site, and propose corrective measures for LNAPL Areas No. 1, No. 2, and No. 4. The investigations of LNAPL Areas No. 3, No. 5, and No. 6 are currently on-going, and any proposed corrective measures will be presented under separate cover.

Selection of an appropriate and effective LNAPL removal technique is dependent upon the type and quantity of LNAPL present and the accessibility to the LNAPL plumes. These factors are considered in the discussion of the LNAPL remedial alternatives. Furthermore, calculations were performed to estimate the volume and areal extent of LNAPL in Areas Nos. 1 through 4, the results of which are presented in Table 9-9. The estimated volumes are utilized to determine estimated disposal costs associated with the proposed remedial alternatives. These calculations are based on assumptions drawn from Site data, and do not differentiate between mobile and immobile, or recoverable and non-recoverable LNAPL due to the unknown partitioning of the LNAPL between mobile and immobile phases.

The following sections discuss various LNAPL remediation technologies. LNAPL remediation alternatives appropriate for the LNAPL areas are evaluated and corrective measures are proposed for LNAPL Areas No. 1, No. 2, and No. 4.

9.7.1 SUMMARY OF ALTERNATIVES

There are various technologies available for the remediation of the LNAPL present at the Site. Three LNAPL remediation strategies are considered for use at the Site:

1. Extraction of mobile LNAPL from the subsurface using an extraction well network or collection trenches;
2. Subsurface containment of the LNAPL plume utilizing a slurry wall and capping containment system; or
3. Excavation of the LNAPL plume with the surrounding soil.

The following sections further discuss the extraction, containment, and excavation remediation strategies and any applicable configuration options available for each strategy.

9.7.1.1 LNAPL EXTRACTION SYSTEMS

The LNAPL extraction options being considered for the Site include an extraction well network and a collection trench system.

9.7.1.1.1 EXTRACTION WELL SYSTEM

An extraction well system would consist of one or more extraction well(s) installed within the LNAPL plume with a well screen(s) straddling the LNAPL layer. Groundwater and LNAPL flow into the extraction well and would be removed through pumping or another method of liquid extraction. Typically, each extraction well would be connected to a piping system that transports the collected liquid for treatment (i.e., oil/water separation). Separated LNAPL would either be disposed of at an appropriately licensed facility or recycled (if possible). Separated groundwater would be further treated as necessary.

Extraction wells can be oriented vertically or horizontally. Vertical wells are most commonly utilized, but horizontal wells have specific applications where they can be effective. Possible disadvantages of horizontal wells include potential for screen smearing, complexity of equipment required for recovery, and potential inability to set the well at the desired pumping depth to facilitate LNAPL recovery. Consequently, the use of horizontal wells at the Site is not recommended.

A passive extraction system allows LNAPL and groundwater to flow into an extraction well without water table depression. Passive systems typically utilize skimmers, canisters, or absorbent filters to collect LNAPL from an extraction well.

Active extraction systems employ consistent pumping of liquid from an extraction well to produce drawdown of the water table and to extract the LNAPL and/or groundwater from the well. Active extraction systems can be designed to collect LNAPL only, groundwater and LNAPL in separate phases, or groundwater and LNAPL in a combined phase. These different LNAPL recovery approaches are summarized as follows:

- Total Fluids Recovery – a single pump is utilized to collect groundwater and LNAPL in a single phase;
- Dual-Pump System - utilizes two pumps in a single well; one pump extracts groundwater to the desired level of drawdown while the other pump recovers free product; and
- Dual-Phase Recovery (Bioslurping) – utilizes vacuum extraction of free product from the wells along with groundwater and vapor extraction to remove VOCs. This method can be configured with a single pump or dual pumps. Single pump systems extract LNAPL, groundwater, and soil vapors under vacuum. A ‘slurp’ tube is placed down each well to extract free product. Dual-pump systems use soil vapor extraction (SVE) with total fluids recovery. Bioslurping has limited effectiveness at depths greater than 20 feet and with heavier fuel components. Consequently, bioslurping is not considered a viable recovery approach for the Site, and is not considered further in the evaluation of alternatives for the remediation of Site LNAPL areas.

If LNAPL viscosity is high, enhanced recovery techniques can be used to fluidize the LNAPL by injecting steam or hot water through the extraction well system (or utilizing dedicated injection wells) into the LNAPL zone to decrease the viscosity of the LNAPL promoting flow towards the collection points. Subsequent treatment of the injected steam or hot water is typically required with the use of enhanced recovery. Enhanced recovery involves substantial capital costs for the hot water/steam injection equipment and injection wells. The LNAPL at the Site is not of sufficiently high viscosity for enhanced recovery to be warranted. Enhanced recovery will therefore not be considered further in the evaluation of alternatives for the LNAPL areas at the Site.

9.7.1.1.2 COLLECTION TRENCH SYSTEM

LNAPL recovery can also be accomplished by installing a permeable trench oriented to hydraulically contain groundwater flow and contaminant plume migration, in lieu of individual LNAPL extraction wells. The collection trench would consist of either a single horizontal perforated pipe or a horizontal perforated pipe within a granular media that would

be placed below the static LNAPL elevation to collect and convey liquids by gravity flow toward a sump(s) or wet well(s). The sump(s) would be pumped under level control to remove collected LNAPL and depress the groundwater table to induce LNAPL migration toward the recovery trench (total fluids recovery). The collection trench system is useful in applications involving thin LNAPL layers that may otherwise be difficult to recover with extraction wells. The volume of collected LNAPL in the sump(s) would produce an LNAPL layer of sufficient thickness to allow recovery by periodic pumping. Pumping would typically be accomplished using total fluids recovery as discussed in the previous section. Piezometers would be located along the alignment of the collection trench system to enable monitoring of the groundwater and LNAPL elevations to aid in proper operation of the collection system (i.e., LNAPL in contact with the perforated pipe).

9.7.1.2 SLURRY WALL AND CAPPING CONTAINMENT SYSTEM

A slurry wall is a subsurface barrier wall that is installed around or downgradient of a source area to contain contaminated groundwater. A slurry wall can potentially be installed around LNAPL source areas to contain and prevent further migration of the free product. A typical installation would involve excavating a continuous vertical trench down to a low-permeability layer (e.g. clay/till) and backfilling with a soil/bentonite slurry or other suitable low-permeability material. The slurry wall would provide physical containment of horizontal groundwater flow such that the LNAPL plume would be contained. The surface area could also be capped to minimize storm water infiltration. Limited groundwater pumping would be required to prevent groundwater mounding and maintain groundwater levels. This technology can also be implemented in conjunction with other removal and treatment technologies.

9.7.1.3 EXCAVATION OF LNAPL-IMPACTED SOILS

The physical removal of soil and LNAPL would be accomplished through direct excavation. This removal approach would involve characterization, handling, transportation, and disposal of contaminated soils above and within the LNAPL zone, followed by backfilling and grading of the excavated area with clean fill.

Excavation would typically be considered and would be economical for situations where the LNAPL is at a relatively shallow depth and the unsaturated (vadose) zone is generally clean and reusable as fill.

9.7.2 LNAPL AREAS NO. 1 AND NO. 2: EVALUATION OF ALTERNATIVES

LNAPL Areas No. 1 and No. 2 are being treated as a single LNAPL Area in the evaluation of corrective measure alternatives due to their proximity to one another. This approach will provide a more cost efficient means of accomplishing remedial goals in these areas.

Three alternatives are evaluated for LNAPL recovery in LNAPL Areas No. 1 and No. 2. The alternatives include an extraction well network, a collection trench system, and excavation of LNAPL-impacted soils. Capping containment is not evaluated as an alternative for LNAPL Areas No. 1 and No. 2 because capping of portions or all of the area is expected to occur as part of the proposed industrial redevelopment activities in this area. Furthermore, subsurface containment would not be cost-effective based on the large areal extent of LNAPL Areas No. 1 and No. 2.

The extraction well network would consist of a series of extraction wells spaced in a grid format within both LNAPL areas (see Figure 9-5). The number of extraction wells is based on the permeability of the observed geology in LNAPL Areas No. 1 and No. 2. Due to the relatively low permeability of the surrounding formation, passive systems were not considered for LNAPL Areas No. 1 and No. 2 due to expected performance limitations. Using an active recovery system, the maximum estimated radius of influence for each extraction well is expected to be 30 feet, resulting in a maximum well spacing of 60 feet. This well spacing indicates the need for approximately 60 wells to provide full coverage of the area. Well screens would be positioned from above the prevailing LNAPL elevation to below the deepest LNAPL detection within each respective area. The total fluids recovery approach would be employed by utilizing pumps placed in each well to remove accumulated LNAPL and groundwater and depress the local groundwater table to induce additional LNAPL migration from the zone of influence. The system would be designed to minimize the volume of groundwater that would be removed during pumping. Since both groundwater and LNAPL are recovered in a combined phase, processing through an on-Site oil/water separator would be required prior to disposal. Separated LNAPL will be transported off-Site for disposal. Based on the PCB concentrations in both LNAPL areas, the LNAPL would require incineration at an appropriately licensed TSCA disposal facility. Special disposal options are not required for the low-level dioxins observed in the LNAPL. Groundwater would be processed through an on-Site wastewater treatment system (e.g., oil/water separation and GAC) prior to discharge to the storm sewer system or surface water body under an NPDES permit.

The collection trench system alternative would consist of three perforated collection trenches, two running east-west in LNAPL Area No. 1 and one running north-south in LNAPL Area No. 2 (see Figure 9-6). Approximately 2,000 linear feet of collection trenches would be set at an elevation below all detections of LNAPL (up to approximately 20-feet bgs). The depth of the trenches may vary in areas with different localized LNAPL depths. Excavation of the trenches would be accomplished utilizing shoring or trench boxes to minimize the volume of soil that may require disposal. The collection trenches would have up to ten recovery points (i.e. sumps) to facilitate groundwater and LNAPL recovery. A perforated collection pipe would be placed in the center of the trench, surrounded by granular material. The collection trenches would be sloped toward the collection sumps. Each sump would have a submersible pump, an

independent downhole level control, and flow meter. The pump intake would be set below the perforated collection pipe invert to allow drawdown of the water table to insure LNAPL will contact the perforated collection pipe. The system would be designed to minimize the volume of groundwater that would be removed. Collected liquids would flow to one of a series of collection sumps, where they would be extracted by pumping (total fluids) and conveyed for further treatment (i.e., oil/water separation). Separated LNAPL would be transported off-Site for incineration at an appropriately licensed TSCA disposal facility. Groundwater would be processed through an on-Site treatment system prior to discharge to the storm sewer or surface water body under an NPDES permit.

The excavation of LNAPL-impacted soils would consist of the removal of approximately 125,000 CY of impacted soil, which would be transported off-Site for disposal, as necessary. It should be noted that the impacted soils in this area of the Site may contain waste materials such as foundry sand, refuse, and sludge that were historically managed in this area, as identified in the CCR (ENCORE, 2001a). It is anticipated that most of the soil above the water table could be landfilled as non-hazardous waste. It is expected that the LNAPL-saturated soil would require disposal at a TSCA facility (i.e., landfill or incineration). The excavation would be backfilled with clean fill from an off-Site location.

9.7.2.1 LONG-TERM RELIABILITY AND EFFECTIVENESS

Given that the LNAPL in Areas No. 1 and No. 2 does not currently pose a risk to human health, either of these options would remain protective of human health. Neither of these systems is designed to remove residuals that would remain once LNAPL recovery rates decline as the volume of mobile LNAPL is reduced. However, the remaining residuals would not pose an unacceptable risk to human health. Both recovery methods would be effective in reducing the migration of LNAPL in these areas and reducing impacts to groundwater. The long-term reliability and effectiveness of the extraction well system would depend upon significantly more maintenance, equipment replacement and power requirements than the collection trench system due to the number of wells and associated pumping equipment. The collection trench system would require significantly less mechanical equipment, and would therefore require less maintenance.

The extraction well system would allow more long-term operational flexibility based on any changing subsurface conditions (e.g. fluctuating groundwater levels) and would allow pumping at select extraction wells in targeted areas of the plume, as necessary, as the LNAPL mobilization and recovery rates decline after the initial years of operation.

Excavation of LNAPL-impacted soils would provide an effective long-term remedy with a majority of the LNAPL being removed.

9.7.2.2 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

Each of the three alternatives would provide reduction of toxicity, mobility and volume. The extraction well system and collection trench system would both provide a reduction in LNAPL volume and the concentrations of dissolved phase constituents in the groundwater due to the groundwater and product recovered by the systems. These systems would also provide short-term and long-term reduction of mobility of the LNAPL due to the reduction of the volume of the LNAPL present in the subsurface and the hydraulic containment provided by each system. The extraction well system would allow larger volumes of LNAPL to be collected by focusing LNAPL removal in targeted areas as the initial LNAPL recovery rates decline over time. Excavation of the LNAPL would provide the most effective reduction of mobility and volume, as most of the volume of LNAPL and residuals would be removed.

The results of the Site-specific risk assessment indicate a reduction in toxicity is not required to protect human health.

9.7.2.3 SHORT-TERM EFFECTIVENESS AND RISK

The extraction well and collection trench systems provide good short-term effectiveness for preventing further migration of LNAPL and contaminated groundwater. Each of these alternatives is considered a long-term solution for LNAPL removal. Excavation of LNAPL-impacted soils provides the most effective short-term alternative due to the immediate removal of larger quantities of LNAPL.

Short-term risk associated with the implementation of the extraction well system would be low, as conventional well construction techniques would be used. Short-term risk for the collection trench and excavation alternatives would be higher than the extraction well option due to increased exposure to impacted soil, LNAPL, and groundwater during construction activities. The excavation of LNAPL may result in significant short-term risks due to exposure to a large volume of LNAPL that would be present in the open excavation. The rate of excavation or limitation on the area of excavation that is open at any given time may require restriction to reduce short-term risks. Installation of the collection trenches and perforated collection pipes would require personnel to enter the excavated trench where impacted soils and LNAPL may exist. Proper training, health and safety procedures, and engineering controls during implementation would address the short-term risks.

9.7.2.4 IMPLEMENTABILITY

The extraction well system would be the most easily implemented as conventional well installation techniques would be utilized.

The collection trench system is not as easily implemented as the extraction well system, as open trenching would be required and shoring utilized to allow occupancy by installation crews, and to minimize the volume of soil that may require disposal. The dewatering of the trench would be required, as excavation would extend below the groundwater table. Installation of the perforated pipe would require personnel to wear appropriate personal protective equipment to avoid exposure to LNAPL or impacted soils during installation.

The excavation of LNAPL is easily implemented using conventional excavation techniques. The rate of excavation or size of the excavation would be restricted to manage short-term risks associated with exposure to the LNAPL and impacted soil.

9.7.2.5 COSTS

Implementation of the extraction well network would require a relatively high capital investment due to the number of extraction wells and pumps to be installed, and the extensive piping network and electrical controls required to service the recovery points. Long-term operation and maintenance costs for the extraction well system are the highest of the three alternatives due to the necessity to maintain, operate and eventually replace at least 60 recovery pumps over an extended period of time. Estimated costs for the extraction well system are presented in Table 9-10.

Implementation of the collection trench system would require less capital investment based on the ease of installation of the trenches, and the reduced number of pumps and electrical controls. The excavation of impacted soils and LNAPL raises the capital cost of this alternative. Long-term operation and maintenance costs are considerably lower than the extraction well system since there are only 7 to 10 recovery pumps to operate and maintain. The cost of operation of the treatment system components and LNAPL disposal would approximately be the same for either recovery option. Cost estimates for the collection trench system are presented in Table 9-11.

Based on the assumptions made, costs for the extraction well and collection trench systems are similar. The uncertainty in soil disposal costs and the actual number of extraction wells required would have an effect on actual costs.

Excavation of LNAPL-impacted soils is cost prohibitive to implement due to the large volume of soil to be removed and the associated disposal costs. This alternative would not require any long-term operation and maintenance costs. Costs for this alternative are an order of magnitude higher than either of the other recovery options. Cost estimates for the excavation of LNAPL-impacted soil are presented in Table 9-12.

Based on an evaluation of the capital, operating, and maintenance costs, the collection trench system is the most cost-effective alternative for removal of LNAPL in this area of the site.

9.7.2.6 ACCEPTABILITY TO SURROUNDING COMMUNITY

The three alternatives evaluated are anticipated to be acceptable to the surrounding community. Future property owners or lessees would be aware of the requirements of any monitoring, operation, maintenance, or deed restriction that may be in place as a result of implementing the corrective measures.

9.7.2.7 ACCEPTABILITY TO STATE OF MICHIGAN

The three alternatives evaluated are anticipated to be acceptable to the State of Michigan. The excavation of LNAPL-impacted soils alternative would likely be the most acceptable alternative to the State because the technique removes a large volume of LNAPL from the Site along with impacted soil. The extraction well network total fluids recovery system would likely be least accepted by the State because of the potential for an uneven recovery pattern that a well network could produce, as opposed to the more effective ability of the collection trench system to cut off the LNAPL plumes.

9.7.2.8 PROPOSED ACTION

Both the extraction well and collection trench systems provide an effective LNAPL recovery alternative for the Site. A more detailed comparison of the costs and performance of each system is dependent on further definition of LNAPL characteristics (depth variability), hydraulic properties of the soils, and final proposed Site redevelopment activities. Additional design data would allow better definition of the system configuration and associated components and a better evaluation of the anticipated performance and overall cost. The proposed corrective action for LNAPL Area No. 1 and No. 2 is active removal of LNAPL using either the collection trench or extraction well systems.

Additional evaluation of soil conditions and the existence of any subsurface structures would also allow the assessment of horizontal wells as an extraction well alternative.

The selection between an extraction well system and collection trench system would need to take into consideration the effects on groundwater levels of any capping or paving in the West Yard area associated with proposed industrial redevelopment activities.

9.7.3 LNAPL AREA NO. 3: EVALUATION OF ALTERNATIVES

Further investigation and evaluation of corrective measures for LNAPL Area No. 3 will be conducted following the additional investigations outlined in Section 5.5. The scope of work for the additional investigation will be presented to U.S. EPA in an IM Work Plan. The proposed corrective measures for LNAPL Area No. 3 will remove sufficient LNAPL to allow for future industrial redevelopment in the DA. No additional corrective measures would be expected following completion of the IM.

9.7.4 LNAPL AREA NO. 4: EVALUATION OF ALTERNATIVES

Based on the limited areal extent and thickness of LNAPL Area No. 4 and its proximity to active production in Plants 5 and 23, recovery of the LNAPL manually using a disposable polyethylene bailer or a peristaltic pump with dedicated polyethylene tubing is the only alternative evaluated and proposed for this area. Pumping or other active recovery techniques that require intrusive work for installation are not considered practical given the limited areal extent and thickness of the LNAPL in this area. The LNAPL is present in only one monitoring well (MWM2-06) in AOI M-2. Using a bailer or peristaltic pump, LNAPL will be removed while minimizing the volume of groundwater to be treated and/or disposed. The LNAPL will be manually removed on a regular basis, with the length of time for effective removal of the LNAPL being dependent on how quickly LNAPL recovers in the well following each manual removal event. From time to time, the groundwater in the monitoring well may need to be pumped or drawn down to promote migration of LNAPL to the well. Collected LNAPL would be transferred to a 55-gallon drum for disposal.

9.7.4.1 LONG-TERM RELIABILITY AND EFFECTIVENESS

Using a bailer or peristaltic pump will immediately recover LNAPL from the plume. Given the limited volume and areal extent of the LNAPL, it is expected that the removal of the LNAPL using a bailer or peristaltic pump will be effective in significantly reducing the mobile LNAPL from LNAPL Area No. 4.

9.7.4.2 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

LNAPL recovery using the bailer or peristaltic pump will immediately reduce the volume of LNAPL in the monitoring well upon implementation. The mobility of the LNAPL will be minimized as the volume of LNAPL in the area is reduced. This method will remove a majority of the LNAPL, thus reducing toxicity associated with the LNAPL. This method will not eliminate residual LNAPL remaining in the pore space of the soil. However, as discussed in the RFI Supplemental Report No. 1 (ENCORE, 2003j), the LNAPL or any remaining residuals do not pose an unacceptable risk or hazard to human health.

9.7.4.3 SHORT-TERM EFFECTIVENESS AND RISK

The use of a bailer or peristaltic pump does not result in any significant short-term risk. Short-term risks associated with this method include potential exposure to impacted groundwater or LNAPL by on-Site field personnel conducting the removal activities. These risks would be addressed by implementation of proper equipment training and health and safety procedures.

9.7.4.4 IMPLEMENTABILITY

This method is easily and cost effectively implemented since it does not require construction or installation of electrical or mechanical removal equipment. In addition, the recovery does not require extensive or costly operation, maintenance, or repairs to operating equipment. Existing monitoring wells can be utilized for LNAPL recovery and monitoring, as necessary, to verify the effectiveness of the corrective measure.

9.7.4.5 COSTS

Table 9-13 presents the estimated cost for this alternative.

9.7.4.6 ACCEPTABILITY TO SURROUNDING COMMUNITY

The alternative evaluated is anticipated to be acceptable to the surrounding community. Future property owners or lessees would be aware of the requirements of any monitoring, operation, or maintenance that may be in place as a result of implementing the corrective measure.

9.7.4.7 ACCEPTABILITY TO STATE OF MICHIGAN

The alternative evaluated is anticipated to be acceptable to the State of Michigan.

9.7.4.8 PROPOSED ACTION

The proposed action for LNAPL Area No. 4 is to employ manual removal of the LNAPL using a bailer or peristaltic pump. Occasional drawdown of the groundwater table in MWM2-06 may be necessary to promote migration of the LNAPL to the well. The effectiveness of this corrective measure can be easily monitored utilizing existing monitoring wells. This alternative was chosen because of the relatively small size of the LNAPL plume, the location of the plume (under an active portion of Plant 56), the ease of implementation, and the low cost associated with the recovery.

9.7.5 LNAPL AREA NO. 5: EVALUATION OF ALTERNATIVES

Investigation of AOI M-16 is currently ongoing which includes the delineation of LNAPL Area No. 5. Consequently, an evaluation of alternatives for LNAPL recovery in this area is not currently available, and will be presented under separate cover. A supplement to this CMP will evaluate alternatives once delineation is complete.

9.7.6 LNAPL AREA NO. 6: EVALUATION OF ALTERNATIVES

The objective of the proposed corrective measures for LNAPL Area No. 6 will remove sufficient LNAPL to allow for future industrial redevelopment in the DA. The corrective measures for LNAPL Area No. 6 will be presented to U.S. EPA in an IM Work Plan. It is not expected that additional corrective measures would be required following completion of the IM.

9.8 STORM SEWERS

The following sections predominantly detail the options for corrective measures associated with the portion of the Site storm sewer system discharging to Outfall 001. Corrective measures associated with outfalls other than Outfall 001 are either yet to be determined or finalized due to ongoing investigations, as discussed below. Corrective measures for the portions of the Site sewer system discharging to outfalls other than Outfall 001 are not addressed in detail by this CMP, but will be further addressed in subsequent documents, as necessary.

Sampling and analyses for PCBs was conducted on the storm sewer systems servicing Outfall 001, 002, 010, 011, and the Glenwood Avenue and SPO Outfall storm sewer systems concurrently with the RFI (ENCORE, 2002c). Fiero Outfalls 001, 002, and 003 were not investigated at the time as a total of nine AOIs associated with Fiero were concluded to require NFA in the CCR (ENCORE, 2001a). The Powertrain Engineering and ELPO Parking Outfalls did not exist at the time of the RFI investigations, as the two outfalls were created as part of the Glenwood roadway extension. It should be noted that prior to the road construction, the ELPO Parking and Powertrain Engineering sewer systems were serviced by Outfalls 001 and 002, respectively, which were evaluated during the RFI investigations. Subsequent investigations of the Fiero Outfall 001, 002, and 003 storm sewer systems were conducted in late 2002 and 2003, and are ongoing.

During the Storm Sewer Supplemental IM investigations, performed concurrent with the RFI (ENCORE, 2003c), storm sewer areas of interest (defined as storm sewer reaches containing sediments, water and/or oil with elevated levels of PCBs) were identified. The storm sewer areas of interest consisted of the following:

- Main storm sewer reaches south of Plant 12 (Outfall 002),

- Main storm sewer reaches south and east of Plant 15 (Outfall 002), and
- Various manholes and catch basins situated in the MFD North (Outfall 002), Powertrain (Outfalls 010 and 011), and SPO (SPO Outfall) areas.

The storm sewer areas of interest were cleaned in September to October 2002. Post cleaning confirmatory sampling of the storm sewer reaches, manholes, and catch basins was performed in October 2003, allowing a sufficient time interval for sedimentation to occur in the storm sewers. The analytical results indicate that PCB impacted sediments continue to be detected at manholes and catch basins servicing Outfalls 002, 010, and the SPO Outfall. The PCB impacted sediments are potentially residuals from the 2002 cleaning events. An investigation, proposed for 2004, will address the potential source of the sediments. A report will be compiled summarizing the results of the investigation.

The objective of the proposed corrective measures for Outfall 001 is to decrease the hydraulic loading to the SWDF as well as ensure compliance with the Site NPDES permit. The Storm Sewer Feasibility Analysis presents options for the physical rehabilitation of the Site storm sewer system and subsequent environmental remedial measures. The Storm Sewer Feasibility Analysis is presented as Appendix A. The corrective measures proposed in the following sections are included in this CMP to provide a complete accounting of Site conditions affecting proposed RCRA corrective measures at specific AOIs. However, corrective measures for storm sewers will continue to be managed under the NPDES regulatory framework, with notifications, periodic reporting, and approvals obtained from the MDEQ and/or U.S. EPA as applicable.

The following discussion is related to the effectiveness of the IMs implemented to date with respect to Outfalls 001, 002, 010, 011, and the Glenwood Avenue Outfall, as well as evaluations of proposed options for both physical rehabilitation of Site storm sewer reaches discharging to Outfall 001 and potential subsequent remedial measures.

9.8.1 SUMMARY OF INTERIM MEASURES IMPLEMENTED

IMs implemented to date have been summarized in Section 5.4. The effectiveness of each IM is presented below.

9.8.1.1 PLUGGING OF NONESSENTIAL STORM SEWER BRANCHES AND LATERALS

The plugging of nonessential storm sewer branches and laterals of the Outfall 001 storm sewer system (DA, West Yard, and in the vicinity of the WWTP) has been effective in reducing hydraulic loading to the SWDF, decreasing the potential for direct overflows from the SWDF during long duration or intense rain events, as confirmed by the Site Utility Manager

9.8.1.2 DIVERSION OF STORMWATER FLOWS NORTH OF PLANT 14 FROM OUTFALL 001 TO OUTFALL 002

The diversion of stormwater flows north of Plant 14 from Outfall 001 to Outfall 002 has been effective in reducing hydraulic loading to the SWDF, decreasing the frequency of direct overflows from the SWDF during long duration or intense rain events.

9.8.1.3 INSTALLATION OF A GAC UNIT AT OUTFALL 001

The installation of a granular activated carbon unit at Outfall 001 has eliminated PCBs in the effluent during dry weather flows and during rain events that do not exceed the capacity limitations of the SWDF detention basin or screw pumps.

9.8.1.4 ANNUAL MAINTENANCE OF THE SWDF

Annual draining, cleaning, and maintenance of the SWDF basin and equipment servicing Outfall 001 has been occurring since 1999 following the detection of PCBs in the effluent. The draining and cleaning has been effective in the following manners: preventing sedimentation from reducing the storage volume of the detention basin; allowing a detailed visual inspection of treatment equipment; allowing an inspection of structural conditions of the detention basin; and reducing suspended solids from the stored stormwater prior to treatment through the GAC units.

9.8.1.5 ALTERATIONS TO THE SWDF

Modifications to the SWDF basin servicing, completed in 2002, servicing Outfall 001 to increase the storage capacity consist of reconstructing a sump for the GAC units at a greater depth and the resetting of screw pump controls. The alterations have been effective in increasing the effective storage capacity of the SWDF by approximately 200,000 gallons, by allowing an increase in the basin drawdown, and decreasing the potential for overflows from the detention basin overflow weir.

9.8.1.6 INITIAL CLEANING AND VIDEOTAPING OF STORM SEWER REACHES

The initial cleaning and videotaping of approximately 15,000 linear feet of storm sewer reaches in the DA (Outfall 001) and Metal Fabrication Division (MFD) South and North (Outfalls 001 and 002, respectively) has been performed to aid in mapping of the system, to identify potential sources of contamination, and to control contaminant transport in the Site storm sewer system.

9.8.1.7 ADDITIONAL CLEANING AND VIDEOTAPING OF STORM SEWER REACHES

The additional cleaning and videotaping of approximately 5,000 linear feet of storm sewer areas of interest (defined as storm sewer reaches containing sediments, water and/or oil with elevated levels of PCBs), that were identified in the Metal Fabrication Division (MFD) North and South (Outfall 002), has been an effective IM in controlling contaminant transport in the Site storm sewer system. Random visual observations have not noted the recurrence of significant sedimentation, and confirmatory sampling has been completed to quantify the recurrence of PCBs in the storm sewer reaches.

9.8.1.8 REMEDIATION OF PCB IMPACTED SEDIMENTS

The removal of PCB-impacted sediments that were detected throughout various MFD North (Outfall 002), Powertrain (Outfalls 010, 011, and the Glenwood Avenue Outfall), and SPO manholes and catch basins has been an effective IM in controlling contaminant transport in the Site storm sewer system. Visual observations have not noted the recurrence of significant sedimentation.

9.8.1.9 REMEDIATION OF PCBS IN ELECTRICAL SUBSTATION 'O'

The remediation of elevated levels of PCB impacted sediments in exterior electrical Substation 'O' (Outfall 001) has been effective in eliminating the potential for PCB impacted stormwater runoff to be conveyed to the Site stormwater system.

9.8.1.10 REROUTING OF FORMER PLANT 18 STORMWATER RUNOFF

The rerouting of Former Plant 18 (Outfall 002) PCB impacted stormwater runoff to the SWDF (Outfall 001) has been effective in preventing the conveyance of stormwater runoff to Site sewer systems not serviced by GAC units for PCB removal.

9.8.1.11 REMEDIATION OF PLANT 14 BILGE SUMP

The remediation of PCB impacted oils in a Plant 14 scrap tunnel bilge sump (Outfall 001) has reduced the potential for the PCB impacted oils to reach the Site storm sewers via infiltration.

9.8.2 CONCLUSIONS OF INTERIM MEASURES IMPLEMENTED

The IMs discussed in Sections 5.4 and 9.8.1 represent the extent of IMs that are feasible given the current known conditions, physical condition, and configuration of the sewers, as discussed below.

9.8.2.1 OUTFALL 001 SYSTEM

The limitations of the IMs applied to the Outfall 001 storm sewer system are dictated by the current physical condition and configuration of the system. The north-south 36-inch to 42-inch Outfall 001 storm sewer reach located in the DA from manhole ST11A to manhole ST6 has been assessed by a videotaped inspection review to be in poor condition and structurally deficient. Sections of the storm sewer reach have been observed to be missing, allowing sewer bedding material, backfill material, and groundwater infiltration with its associated constituents to impact the system. The north-south 66-inch to 84-inch Outfall 001 storm sewer in the DA is aligned through LNAPL Area No. 3, and a noted depression in the groundwater contour map suggests that the sewer may have some influence on the LNAPL plume. LNAPL Area No. 3 is being addressed through a separate IM. Presently, the IMs performed to date and the treatment provided by the SWDF are actively alleviating the environmental issues affecting the Outfall 001 system, although further remediation is required to reduce the potential for overflows from the SWDF.

9.8.3 EVALUATION OF ALTERNATIVES

The Storm Sewer Feasibility Analysis (Appendix A) is an evaluation of various alternatives for implementing corrective measures to reduce hydraulic loading of PCB impacted stormwater to the SWDF, which services Outfall 001 of the Site storm sewer system. The objective of the Storm Sewer Feasibility Analysis (Appendix A) is to provide a comparative analysis of corrective measures with a recommended approach to attain the Storm Sewer Supplemental IM (ENCORE, 2002c) objectives. The corrective measures can be separated into the following three constructs: reduction of the hydraulic loading to the SWDF by diverting stormwater runoff not impacted by PCBs to outfalls other than Outfall 001 (i.e., Outfall 002, Michigan Department of Transportation [MDOT] storm sewer) or, alternatively, either collecting and treating a substantially greater volume of stormwater at the SWDF, or continuing to route flows to Outfall 001 and bypassing those portions of the stormwater runoff deemed to be not impacted by PCBs around the SWDF while collecting and treating those portions deemed to be contaminated by PCBs. See Appendix A for detailed discussions of rehabilitation options and corrective measures for Outfall 001 of the Site storm sewer system including associated figures and cost analyses.

9.8.4 PROPOSED ACTIONS

9.8.4.1 OUTFALL 001

Proposed actions for the Site storm sewer system, prior to the implementation of final corrective measures, consist of continued monitoring and assessment of the IMs performed to date.

Continued monitoring and assessment should be accomplished by confirmatory sampling, periodic documented observations and inspections, and continued annual O&M of the SWDF.

The proposed final corrective measures for the Outfall 001 storm sewer system consists of diverting the stormwater runoff from the Plant 14, Plant 14 5 Truck Dock, and the Plant 49 rooftops to an outfall other than Outfall 001, thereby reducing hydraulic loading to the SWDF and decreasing the potential for overflows. Additionally, those areas of the West Yard and DA not addressed by future development plans should be capped by pavement to prevent infiltration, in conjunction with the proper abandonment (i.e., flow filling) of the storm sewers located in the subsurface of those areas.

In the DA, the Outfall 001 storm sewer system should be monitored as part of on-going monitoring programs associated with the Site-wide groundwater corrective measures and LNAPL Area No. 3 corrective measures. In addition to evaluating filing a deed restriction and performing groundwater monitoring, other elements of this corrective measure should include the following: notification(s) to the NPDES permit authority and/or modification(s) of existing storm sewer discharge permits; identification of groundwater-surface water interface (GSI) monitoring wells/compliance points; establishing Site-specific GSI criteria or requesting a mixing zone determination from MDEQ in accordance w/Michigan NREAP Part 201; and periodic evaluation of groundwater monitoring data. Implementation of corrective measures for Site-wide groundwater will be integrated with storm sewer rehabilitation related to NPDES permit compliance, and will, in part, be dependent upon on-going IMs and final corrective measures implemented for the storm sewers.

Proposed final corrective measures for the Outfall 001 storm sewer system are dependent upon factors including the future use of existing buildings and future land development in the DA. Therefore, the proposed final corrective measures are at least partially dependent on future land use decisions.

9.8.4.2 OUTFALLS EXCLUDING OUTFALL 001

Any final corrective measures that may be required for the portions of the Site storm sewer system discharging to outfalls other than Outfall 001 are to be determined pending the results of ongoing investigations. Outfalls other than Outfall 001 proposed for further action consist of Outfalls 002, 010, 011, Fiero Outfalls 001, 002, and 003, and the SPO Outfall. No further action is proposed for the Glenwood Avenue Outfall. Proposed final corrective measures for the outfalls requiring further action will be addressed and presented under separate cover.

Proposed measures for those outfalls excluding Outfall 001 consist of the completion of, and continued monitoring and assessment of the IMs performed to date. Continued monitoring and assessment should be accomplished by regularly scheduled confirmatory sampling and

periodic documented observations and inspections. Additional cleaning and/or investigations should be performed on those areas where contaminants continue to be detected. The storm sewer systems should also be monitored as part of on-going monitoring programs associated with the Site-wide groundwater corrective measures.

9.8.4.2.1 OUTFALL 002

Approximately 5,000 linear feet of main storm sewer reaches servicing Plants 12, 15, and 18 were cleaned in 2002 and 2003 to remove PCB impacted sediments from the sewers. In addition, PCB sampling of various MFD North (Outfall 002) manholes and catch basins was performed to evaluate the effectiveness of cleaning activities performed in late 2002. Confirmatory sampling and analyses performed in October 2003 indicate that PCB impacted sediments continue to be present in the storm sewers. Additional sampling and investigations, proposed for 2004, are proposed to determine whether the contaminated sediments are residuals from the cleaning operations, or if source area exists.

9.8.4.2.2 OUTFALLS 010, 011, AND GLENWOOD AVENUE OUTFALL

Post cleaning confirmatory sampling of the storm sewer system storm sewer areas of interest (defined as storm sewer reaches containing sediments, water and/or oil with elevated levels of PCBs) that were identified throughout various Powertrain (Outfalls 010, 011, and Glenwood Avenue Outfall) and SPO manholes and catch basins, was performed in October 2003. The analytical results indicate that PCB impacted sediments continue to be detected at manholes and catch basins servicing Outfalls 010 and the SPO Outfall. The PCB impacted sediments are potentially residuals from the 2002 cleaning events. An investigation, proposed for 2004, will address the potential source of the sediments.

9.8.4.2.3 FIERO OUTFALLS 001, 002, AND 003

Water and sediment sampling and analyses from the Fiero Outfalls 001, 002, and 003 storm sewer systems identified metals contamination in the sewers. Sampling and analyses of sediments from the Fiero rooftop has identified the rooftop as a source of the metals contamination. Cleaning and encapsulation of the Fiero rooftop and cleaning of the Fiero storm sewer reaches is proposed as a corrective measure for the Fiero storm sewer system.

10.0 FINAL CORRECTIVE MEASURES PROPOSED

The Site AOIs that are designated NFA in the CCR (ENCORE, 2001a), the RFI Report (ENCORE, 2002c), and Supplemental RFI Report No. 1 (ENCORE, 2003j) are summarized in Table 10-1. Results of RFI activities and the associated human health and ecology-based risk assessments have determined that corrective measures are not required at these 52 AOIs and 2 off-Site areas.

The areas that currently have IMs on-going or proposed include the following:

- AOI W-9 – Former Central Foundry PCB soil removal;
- LNAPL Area No. 3 (AOI W-8);
- LNAPL Area No. 6 (AOI W-9);
- Site Storm Sewers;
- PSB; and
- Harris Lake.

Details of the IMs associated with these areas are discussed in Section 5.0. The status of these areas are summarized in Table 10-1. Proposed corrective measures for LNAPL Areas No. 3 and No. 6 will be submitted to the U.S. EPA in an IM Work Plan(s).

Corrective measures are proposed in this CMP for the following AOIs:

- W-1, W-5, W-8, W-9, W-10, W-11, M-1, M-2, M-5, M-16, F-7, P-9 and P-11 (included in proposed corrected measures for Site-wide groundwater);
- M-4 for localized groundwater;
- P-6 for localized groundwater;
- LNAPL Area No. 1 (AOIs W-1 and W-10) for LNAPL;
- LNAPL Area No. 2 (AOI W-10) for LNAPL; and
- LNAPL Area No. 4 (AOI M-2) for LNAPL.

The proposed corrective measures for each of these areas are detailed in Section 9.0, and summarized in Table 10-1. Additionally, completed and proposed IMs for Site storm sewers are further evaluated in Section 9.0 and the Storm Sewer Feasibility Analysis (Appendix A).

Corrective measures remain to be proposed for the following areas:

- LNAPL Area No. 5 (AOIs M-2 and M-16); and

- Off-Site Property.

The status of these areas is summarized in Table 10-1. Corrective measures for LNAPL Area No. 5 will be evaluated following the completion of LNAPL delineation in the area. Further evaluation and delineation of constituents in off-Site groundwater will be conducted, and proposed corrective measures will be submitted to the U.S. EPA under separate cover if necessary.

Tables

TABLE 1-1 Status of AOIs and Off-Site Areas Pontiac North Campus Pontiac, Michigan																	
AOI #	AOI Description	Further Investigation	CCR No Further Action	RFI No Further Action (4)	Summary of Primary Materials Managed	RFI Activities	Laboratory Analysis Performed	Analytical Results That Exceed Part 201 Industrial Criteria ⁽²⁾		Risk Evaluation					Proposed Activity		
								Soil	Groundwater	Soil	Sediment	Groundwater	Surface Water	LNAPL	Soil	Groundwater	LNAPL
Study Area 1 - Fiero																	
F-1	Satellite Accumulation Area - Located in the Powerhouse - Consists of 2 areas: SAA1 (1 55-gal drum) and SAA2 (15 55-gal drums) - SAA1 identified as a SWMU 1		X		- Storage of waste paint thinner and waste oils	- Aug 2000 Site visit, both SAAs in good condition (no cracks in concrete or no extensive staining observed) - No documented releases				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-2	Waste Gasoline Accumulation Area - Located in the maintenance area of Plant 17 - Consists of 1 55-gal drum placed on a concrete floor		X		- Storage of waste gasoline	- Aug 2000 Site visit, no evidence of waste accumulation - No documented releases				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-3	Container Storage Area - Located outside on the south side of the storage dock of the assembly plant - Consisted of a concrete pad (65 by 90 ft, 8" thickness) - Max capacity 380 55-gal drums and 2 ASTs - Closure activities completed in 1989		X		- Ignitable waste - Chlorinated solvents - Paint waste	- No documented releases - Submitted RCRA Closure report to MDNR in 1995				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-4	Closed Container Storage Area - Located outside Plant 17 in the southwest driveway - Max capacity 370 55-gal drums and 2 ASTs - Operated from 1977 to 1985		X		- Scraped sealers - Adhesives - Paint thinners - Waste solvents	- No documented releases - Clean closure certified from MDNR in 1988				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-5	Former Wastewater Treatment Plant - Located on Portland St., 100 yds north of Owen St. - Former WWTP was paved over and is used as a driveway - Constructed of above-grade steel tanks on a concrete pad with secondary containment - Liquids from plant were decanted to the City of Pontiac POTW - Operated from 1973 to 1983		X		- Wastewater - Wastewater treatment sludge - Paint sludge - Bonderite sludge	- No former investigations or remedial actions - No documented releases				NE	NA	NE	NA	NA	No further Action	No Further Action	NA
F-6	Waste Purge Thinner UST - Located north of Plant 17, west of paint mix building - Affected soils discovered during UST closure activities in 1989 - 12,000-gal single-walled steel tank		X		- Waste purge thinner	- Approx 60 cubic yards of surface soil removed - RCRA Closure Report submitted in 1995 to MDNR				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-7	Wastewater Collection Sumps - Located in the basement of the Powerhouse	X			- Industrial wastewater	- Cleaned and inspected sumps - Installed 3 groundwater monitoring wells - Sump pits repaired - Collected 1 soil sample - Collected 3 groundwater samples	- VOCs - SVOCs - PCBs - Inorganics	Total Chromium (335 mg/kg)	1,1-DCE (0.02 mg/L) TCE (0.0063 mg/L)	Exceeds IPSIC Cumulative Industrial Risks at or below EPA target levels	NA	Exceeds IDWC and RDWC	NA	NA	No Further Action (Industrial) ⁽¹⁾	Perform CMP	NA
F-8	Paint Sludge Storage Area - Located north of Building 17 - The concrete pad is 12 by 24 ft and is unbermed - It is covered with a corrugated roof	X			- Storage of nonhazardous paint sludge and sludge from filtering waste bonderite	- Road salt removed and concrete pad, trench, and sump were inspected for integrity of concrete - Installed 1 groundwater monitoring well - Trench and sump properly abandoned - Collected 1 subsurface soil sample	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	Thallium (0.0054 mg/L)	Concentrations below generic Industrial criteria	NA	Exceeds IDWC	NA	NA	No Further Action (Industrial) ⁽¹⁾	No Further Action	NA
F-9	Temporary Container Storage Area - Located east of the Powerhouse - Site records do not indicate operation of this unit - Aug 2000 Site walk, no signs of the CSA nor any evidence of past releases		X		- Store containers of waste gasoline, solvent, and paint wastes	- No documented releases - No previous investigation or remedial actions				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-10	High Pressure Fly Ash Storage Silo - Located east of the Powerhouse - Capped concrete cylinder, total capacity 500 to 600 tons - Ash is watered down during transfer process to reduce dust		X		- Store non-hazardous high-pressure fly ash	- No documented releases - No previous investigation or remedial actions - Silo in good condition				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-11	Low Pressure Fly Ash Storage Silo - Consists of 2 silos located east of the Powerhouse - Each silo stores approx. 200 to 300 tons of fly ash		X		- Store non-hazardous low-pressure fly ash	- No documented releases - No previous investigation or remedial actions - Silo in good condition				NE	NA	NE	NA	NA	No Further Action	No Further Action	NA
F-12	Coal Storage Area - Located southeast of the Powerhouse - This area is used for stockpiling coal for the Powerhouse - Reported solvents added to coal to increase BTU			X	- Coal	- Installed 2 groundwater monitoring wells	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	No exceedances	Concentrations below generic Industrial criteria	NA	Concentrations below generic Industrial criteria	NA	NA	No Further Action (Industrial) ⁽¹⁾	No Further Action	NA
F-13	Oily Pea Gravel, Concrete, and Debris Area - Located at the northeast corner of Plant 17 - The oily material was removed in February 1996			X	- Oily pea gravel, concrete, and debris	- Completed 3 soil borings	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	Groundwater not analyzed	Concentrations below generic Industrial criteria	NA	NE	NA	NA	No Further Action (Industrial) ⁽¹⁾	No Further Action	NA
F-14	Fuel AST Area - Located west of the low-pressure fly ash storage silos - The area includes 3 ASTs: 1,000-gal diesel tank (relocated), 300-gal diesel tank (removed), and a 560-gal gasoline tank (removed) - Current 1,000-gal diesel tank has a secondary containment - Former location no containment			X	- Diesel fuel and gasoline	- Completed 2 soil borings	- BTEX - SVOCs - Lead	No exceedances	Groundwater not analyzed	Concentrations below generic Industrial criteria	NA	NE	NA	NA	No Further Action (Industrial) ⁽¹⁾	No Further Action	NA
F-15	Fuel AST Area: Oil/Solvent Catch Basin - Located in the Fiero Loading dock - Contents of catch basin was an oil sludge - Catch basin cleaned and inspected			X	- Unknown	- Completed 5 soil borings - Installed 1 groundwater monitoring well - Catch basin properly abandoned	- VOCs - SVOCs - PCBs - Inorganics	PCE (81 mg/kg) 1,1-DCE (2.2 mg/kg)	No exceedances	Exceeds ISVIC Cumulative Industrial Risks at or below EPA target levels	NA	Concentrations below generic Industrial criteria	NA	NA	No Further Action (Industrial) ⁽¹⁾	No Further Action	NA

Note: Shaded columns represent information from Current Conditions Report for AOI not in RFI Report

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

General Motors - Pontiac North Campus, Pontiac, Michigan																	
Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria	
F-07	VOC	Acetone	67-64-1	T	ID	4			5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04		
F-07	VOC	Benzene	71-43-2	T	A	4			1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01		
F-07	VOC	Bromodichloromethane	75-27-4	T	B2	4	2	2.00E-03	2.20E-03	1.70E-04	1.00E-03	1.0E-01	2.2E-02	3.7E+01	5.9E-05	1.4E+01	1.6E-04
F-07	VOC	Bromoform	75-25-2	T	B2	4			1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02		
F-07	VOC	Bromomethane	74-83-9	T	D	4			2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01		
F-07	VOC	2-Butanone	78-93-3	T	ID	4			4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05		
F-07	VOC	Carbon Disulfide	75-15-0	T		4	1	4.70E-04	4.70E-04	2.00E-04	1.00E-03	8.0E-01	5.9E-04	5.5E+02	8.5E-07	1.2E+03	3.9E-07
F-07	VOC	Carbon Tetrachloride	56-23-5	T	B2	4			1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00		
F-07	VOC	Chlorobenzene	108-90-7	T	D	4			1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01		
F-07	VOC	Chloroethane	75-00-3	T		4	2	3.30E-03	4.70E-03	2.60E-04	1.00E-03	4.3E-01	1.1E-02	5.7E+03	8.2E-07	4.4E+02	1.1E-05
F-07	VOC	Chloroform	67-66-3	T	B2	4	3	2.90E-04	9.50E-03	1.40E-04	1.40E-04	1.0E-01	9.5E-02	1.8E+02	5.3E-05	1.5E+02	6.3E-05
F-07	VOC	Chloromethane	74-87-3	T	D	4	1	2.80E-04	2.80E-04	1.30E-04	1.00E-03	2.6E-01	1.1E-03	4.5E+01	6.2E-06	4.9E+02	5.7E-07
F-07	VOC	Cumene	98-82-8	T	D	4			1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01		
F-07	VOC	Cyclohexane	110-82-7	T	ID	4			1.30E-04	1.00E-03							
F-07	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4			6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01		
F-07	VOC	Dibromochloromethane	124-48-1	T	C	4			2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01		
F-07	VOC	1,2-Dibromoethane	106-93-4	T	B2	4			2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02		
F-07	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4			1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02		
F-07	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4			1.50E-04	1.00E-03	6.6E-03				2.0E+00		
F-07	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4			1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00		
F-07	VOC	Dichlorodifluoromethane	75-71-8	T		4			2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02		
F-07	VOC	1,1-Dichloroethane	75-34-3	T	C	4	4	6.00E-03	2.30E-02		8.8E-01	2.6E-02		2.3E+03	1.0E-05	2.4E+03	9.6E-06
F-07	VOC	1,2-Dichloroethane	107-06-2	T	B2	4			2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01		
F-07	VOC	1,1-Dichloroethene	75-35-4	T	C	7	6	1.10E-03	2.00E-02	2.20E-04	2.20E-04	7.0E-03	2.9E+00	1.3E+00	1.5E-02	1.1E+01	1.8E-03
F-07	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4	4	2.30E-04	5.60E-04		7.0E-02	8.0E-03		2.1E+02	2.7E-06	2.0E+02	2.8E-06
F-07	VOC	trans-1,2-Dichloroethene	156-60-5	T		4			1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02		
F-07	VOC	1,2-Dichloropropane	78-87-5	T	B2	4			1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01		
F-07	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4			2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00		
F-07	VOC	Ethyl Benzene	100-41-4	T	D	4			1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02		
F-07	VOC	2-Hexanone	591-78-6	T		4			4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03		
F-07	VOC	Methyl Acetate	79-20-9	T		4			4.10E-04	1.00E-02							
F-07	VOC	Methyl tert-butyl ether	1634-04-4	T		4			1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02		
F-07	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4			2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04		
F-07	VOC	Methylcyclohexane	108-87-2	T		4			1.50E-04	1.00E-03							
F-07	VOC	Methylene Chloride	75-09-2	T	B2	4			3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02		
F-07	VOC	Styrene	100-42-5	T		4			1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00		
F-07	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4			2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00		
F-07	VOC	Tetrachloroethene	127-18-4	T	C-B2	7	6	5.60E-04	6.30E-03	1.20E-04	1.20E-04	5.0E-03	1.3E+00	1.7E+02	3.7E-05	1.2E+01	5.3E-04
F-07	VOC	Toluene	108-88-3	T	D	4	3	2.00E-04	2.60E-04	1.80E-04	1.80E-04	1.0E+00	2.6E-04	5.3E+02	4.9E-07	5.3E+02	4.9E-07
F-07	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4			1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01		
F-07	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4	4	6.30E-03	1.00E-02		2.0E-01	5.0E-02	1.3E+03	7.7E-06	1.3E+03	7.7E-06	
F-07	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4			3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01		
F-07	VOC	Trichloroethene	79-01-6	T	C-B2	4	2	3.90E-04	4.20E-04	1.40E-04	1.00E-03	5.0E-03	8.4E-02	9.7E+01	4.3E-06	2.2E+01	1.9E-05
F-07	VOC	Trichlorofluoromethane	75-69-4	T		4			2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03		
F-07	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4			3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02		
F-07	VOC	Vinyl Chloride	75-01-4	T	A	4			1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00		
F-07	VOC	Xylenes (total)	1330-20-7	T	ID	4			3.30E-04	1.00E-03	1.0E+01		1.9E+02		1.9E+02		
F-07	SVOC	Acenaphthene	83-32-9	T		4			8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00		
F-07	SVOC	Acenaphthylene	208-96-8	T	D	4			7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00		
F-07	SVOC	Acetophenone	98-86-2	T	D	4			2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03		
F-07	SVOC	Anthracene	120-12-7	T	D	4			6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02		
F-07	SVOC	Atrazine	1912-24-9	T		4			2.50E-03	5.00E-03	3.0E-03				5.4E+00		
F-07	SVOC	Benzaldehyde	100-52-7	T		4			2.80E-03	1.00E-02							
F-07	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4			7.00E-04	5.00E-03	2.1E-03				9.4E-03		
F-07	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4			7.30E-04	5.00E-03	5.0E-03				2.0E-03		
F-07	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4			9.40E-04	5.00E-03	2.0E-03				2.0E-03		
F-07	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4			8.50E-04	5.00E-03	5.0E-03				5.0E-03		
F-07	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4			8.40E-04	5.00E-03	5.0E-03				5.0E-03		
F-07	SVOC	Biphenyl	92-52-4	T	D	4			2.60E-03	1.00E-02							
F-07	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4			8.70E-04	5.00E-03							
F-07	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4			9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00		
F-07	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4			2.70E-03	5.00E-03	6.0E-03				3.2E-01		
F-07	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4			8.80E-04	5.00E-03							
F-07	SVOC	Butylbenzylphthalate	85-68-7	T	C	4			8.80E-04	5.00E-03	1.2E+00				2.7E+00		
F-07	SVOC	Caprolactam	105-60-2	T		4	1	4.10E-03	4.10E-03	2.50E-03	1.00E-02	5.8E+00	7.1E-04		3.9E+05	1.1E-08	
F-07	SVOC	Carbazole	86-74-8	T	B2	4			8.20E-04	1.00E-02	8.5E-02				7.4E+00		

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-07	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
F-07	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	1.00E-02						
F-07	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
F-07	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
F-07	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	5.00E-03						
F-07	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-07	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
F-07	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	5.00E-03						
F-07	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
F-07	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
F-07	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
F-07	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
F-07	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
F-07	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
F-07	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
F-07	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	2.00E-02						
F-07	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
F-07	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.00E-03						
F-07	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
F-07	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
F-07	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
F-07	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
F-07	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
F-07	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
F-07	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
F-07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
F-07	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
F-07	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
F-07	SVOC	Methylphenol (total)	1319-77-3	T		4				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
F-07	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
F-07	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	2.00E-02						
F-07	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	2.00E-02						
F-07	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	2.00E-02						
F-07	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
F-07	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
F-07	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	2.00E-02						
F-07	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
F-07	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
F-07	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	5.00E-03						
F-07	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
F-07	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
F-07	SVOC	Phenol	108-95-2	T	ID	4				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
F-07	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
F-07	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
F-07	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
F-07	P/PCB	PCBs (total)	1336-36-3	D	B2	2				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-07	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-07	INORG	Antimony	7440-36-0	D		4	1	3.00E-03	3.00E-03	2.20E-03	2.50E-02	6.0E-03	5.0E-01			6.8E+01	4.4E-05
F-07	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-07	INORG	Arsenic	7440-38-2	D	A	4	2	1.24E-02	4.16E-02	3.90E-03	1.00E-02	5.0E-02	8.3E-01			4.3E+00	9.7E-03
F-07	INORG	Arsenic	7440-38-2	T	A	4	2	2.36E-02	3.00E-02	3.90E-03	1.00E-02	5.0E-02	6.0E-01			4.3E+00	7.0E-03
F-07	INORG	Barium	7440-39-3	D	D	4	4	1.85E-02	6.46E-02			2.0E+00	3.2E-02			1.4E+04	4.6E-06
F-07	INORG	Barium	7440-39-3	T	D	4	4	1.73E-02	5.72E-02			2.0E+00	2.9E-02			1.4E+04	4.1E-06
F-07	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-07	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-07	INORG	Cadmium	7440-43-9	D	B1	4				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
F-07	INORG	Cadmium	7440-43-9	T	B1	4	1	3.80E-04	3.80E-04	2.80E-04	5.00E-03	5.0E-03	7.6E-02			1.9E+02	2.0E-06
F-07	INORG	Chromium (total)	7440-47-3	D		4				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-07	INORG	Chromium (total)	7440-47-3	T		4	2	1.50E-03	2.90E-03	1.40E-03	1.00E-02	1.0E-01	2.9E-02			4.6E+02	6.3E-06
F-07	INORG	Cobalt	7440-48-4	D	B1	4				1.30E-03	2.00E-02	4.0E-02				2.4E+03	
F-07	INORG	Cobalt	7440-48-4	T	B1	4				1.30E-03	2.00E-02	4.0E-02				2.4E+03	
F-07	INORG	Copper	7440-50-8	D	D	4	1	1.54E-02	1.54E-02	4.20E-03	5.00E-03	1.4E+00	1.1E-02			7.4E+03	2.1E-06
F-07	INORG	Copper	7440-50-8	T	D	4	1	1.79E-02	1.79E-02	4.20E-03	5.00E-03	1.4E+00	1.3E-02			7.4E+03	2.4E-06
F-07	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	3.00E-03	4.0E-03					
F-07	INORG	Lead	7439-92-1	T	B2	4	1	3.00E-03	3.00E-03	2.50E-03	3.00E-03	4.0E-03	7.5E-01				
F-07	INORG	Manganese	7439-96-5	D	D	4	4	1.10E-03	2.69E-01			8.6E-01	3.1E-01			9.1E+03	3.0E-05

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-07	INORG	Manganese	7439-96-5	T	D	4	4	1.50E-03	2.34E-01			8.6E-01	2.7E-01			9.1E+03	2.6E-05
F-07	INORG	Mercury	7439-97-6	D	D	4				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-07	INORG	Mercury	7439-97-6	T	D	4	1	1.70E-04	1.70E-04	6.90E-05	2.00E-04	2.0E-03	8.5E-02	5.6E-02	3.0E-03	5.6E-02	3.0E-03
F-07	INORG	Nickel	7440-02-0	D	A	4	2	2.70E-03	3.60E-03	2.20E-03	2.00E-02	1.0E-01	3.6E-02			7.4E+04	4.9E-08
F-07	INORG	Nickel	7440-02-0	T	A	4	2	4.10E-03	4.90E-03	2.20E-03	2.00E-02	1.0E-01	4.9E-02			7.4E+04	6.6E-08
F-07	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-07	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-07	INORG	Silver	7440-22-4	D	D	4				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-07	INORG	Silver	7440-22-4	T	D	4				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-07	INORG	Thallium	7440-28-0	D		4	1	2.50E-05	2.50E-05	1.80E-05	1.00E-02	2.0E-03	1.3E-02			1.3E+01	1.9E-06
F-07	INORG	Thallium	7440-28-0	T		4	1	2.50E-05	2.50E-05	1.80E-05	1.00E-02	2.0E-03	1.3E-02			1.3E+01	1.9E-06
F-07	INORG	Vanadium	7440-62-2	D		4	3	8.40E-04	2.47E-02	8.20E-04	8.20E-04	4.5E-03	5.5E+00			9.7E+02	2.5E-05
F-07	INORG	Vanadium	7440-62-2	T		4	2	7.80E-03	1.71E-02	8.20E-04	1.00E-02	4.5E-03	3.8E+00			9.7E+02	1.8E-05
F-07	INORG	Zinc	7440-66-6	D	D	4	2	1.58E-02	2.08E-02	1.20E-02	2.00E-02	2.4E+00	8.7E-03			1.1E+05	1.9E-07
F-07	INORG	Zinc	7440-66-6	T	D	4	3	1.24E-02	1.69E-01	2.00E-02	2.00E-02	2.4E+00	7.0E-02			1.1E+05	1.5E-06
F-08	VOC	Acetone	67-64-1	T	ID	2				5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04	
F-08	VOC	Benzene	71-43-2	T	A	2				1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01	
F-08	VOC	Bromodichloromethane	75-27-4	T	B2	2				1.70E-04	1.00E-03	1.0E-01		3.7E+01		1.4E+01	
F-08	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
F-08	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
F-08	VOC	2-Butanone	78-93-3	T	ID	2				4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	
F-08	VOC	Carbon Disulfide	75-15-0	T		2				2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03	
F-08	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
F-08	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
F-08	VOC	Chloroethane	75-00-3	T		2				2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02	
F-08	VOC	Chloroform	67-66-3	T	B2	2	2	9.60E-04	2.80E-03			1.0E-01	2.8E-02	1.8E+02	1.6E-05	1.5E+02	1.9E-05
F-08	VOC	Chloromethane	74-87-3	T	D	2				1.30E-04	1.00E-03	2.6E-01		4.5E+01		4.9E+02	
F-08	VOC	Cumene	98-82-8	T	D	2				1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01	
F-08	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	1.00E-03						
F-08	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
F-08	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	1.00E-03	1.0E-01		1.8E+01		1.1E+01	
F-08	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
F-08	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
F-08	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
F-08	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
F-08	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
F-08	VOC	1,1-Dichloroethane	75-34-3	T	C	2				1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03	
F-08	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
F-08	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
F-08	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
F-08	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
F-08	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
F-08	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
F-08	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
F-08	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
F-08	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	1.00E-02						
F-08	VOC	Methyl tert-butyl ether	1634-04-4	T		2				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
F-08	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
F-08	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	1.00E-03						
F-08	VOC	Methylene Chloride	75-09-2	T	B2	2				3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
F-08	VOC	Styrene	100-42-5	T		2				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
F-08	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
F-08	VOC	Tetrachloroethene	127-18-4	T	C-B2	2				2.30E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01	
F-08	VOC	Toluene	108-88-3	T	D	2				1.80E-04	1.00E-03	1.0E+00		5.3E+02		5.3E+02	
F-08	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
F-08	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				1.50E-04	1.00E-03	2.0E-01		1.3E+03		1.3E+03	
F-08	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
F-08	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
F-08	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
F-08	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
F-08	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
F-08	VOC	Xylenes (total)	1330-20-7	T	ID	2				3.30E-04	1.00E-03	1.0E+01		1.9E+02		1.9E+02	
F-08	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
F-08	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
F-08	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
F-08	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-08	SVOC	Atrazine	1912-24-9	T		2			2.50E-03	5.00E-03	3.0E-03				5.4E+00	
F-08	SVOC	Benzaldehyde	100-52-7	T		2			2.80E-03	1.00E-02						
F-08	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2			7.00E-04	5.00E-03	2.1E-03				9.4E-03	
F-08	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2			7.30E-04	5.00E-03	5.0E-03				2.0E-03	
F-08	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2			9.40E-04	5.00E-03	2.0E-03				2.0E-03	
F-08	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2			8.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-08	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2			8.40E-04	5.00E-03	5.0E-03				5.0E-03	
F-08	SVOC	Biphenyl	92-52-4	T	D	2			2.60E-03	1.00E-02						
F-08	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2			8.70E-04	5.00E-03						
F-08	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2			9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
F-08	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2			2.70E-03	5.00E-03	6.0E-03				3.2E-01	
F-08	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2			8.80E-04	5.00E-03						
F-08	SVOC	Butylbenzylphthalate	85-68-7	T	C	2			8.80E-04	5.00E-03	1.2E+00				2.7E+00	
F-08	SVOC	Caprolactam	105-60-2	T		2			2.50E-03	1.00E-02	5.8E+00				3.9E+05	
F-08	SVOC	Carbazole	86-74-8	T	B2	2			8.20E-04	1.00E-02	8.5E-02				7.4E+00	
F-08	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2			9.90E-04	5.00E-03	1.5E-01				7.9E+01	
F-08	SVOC	4-Chloroaniline	106-47-8	T		2			6.10E-04	1.00E-02						
F-08	SVOC	2-Chloronaphthalene	91-58-7	T		2			8.50E-04	5.00E-03	1.8E+00				6.7E+00	
F-08	SVOC	2-Chlorophenol	95-57-8	T		2			1.00E-03	5.00E-03	4.5E-02				9.4E+01	
F-08	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2			7.90E-04	5.00E-03						
F-08	SVOC	Chrysene	218-01-9	T	B2	2			7.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-08	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2			7.90E-04	5.00E-03	2.0E-03				2.0E-03	
F-08	SVOC	Dibenzofuran	132-64-9	T	D	2			1.10E-03	5.00E-03						
F-08	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2			9.30E-04	2.00E-02	1.1E-03				1.8E-01	
F-08	SVOC	2,4-Dichlorophenol	120-83-2	T		2			8.50E-04	1.00E-02	7.3E-02				4.8E+01	
F-08	SVOC	Diethylphthalate	84-66-2	T	D	2			6.50E-04	5.00E-03	5.5E+00				1.1E+03	
F-08	SVOC	2,4-Dimethylphenol	105-67-9	T		2			8.50E-04	5.00E-03	3.7E-01				5.2E+02	
F-08	SVOC	Dimethylphthalate	131-11-3	T	D	2			7.60E-04	5.00E-03	7.3E+01				4.2E+03	
F-08	SVOC	Di-n-butylphthalate	84-74-2	T	D	2			6.70E-04	5.00E-03	8.8E-01				1.1E+01	
F-08	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2			1.30E-03	2.00E-02	2.0E-02				9.5E+00	
F-08	SVOC	2,4-Dinitrophenol	51-28-5	T		2			3.00E-03	2.00E-02						
F-08	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2			7.90E-04	5.00E-03	7.7E-03				8.6E+00	
F-08	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2			5.70E-04	5.00E-03						
F-08	SVOC	Di-n-octylphthalate	117-84-0	T		2			1.10E-03	5.00E-03	1.3E-01				4.0E-01	
F-08	SVOC	Fluoranthene	206-44-0	T	D	2			8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
F-08	SVOC	Fluorene	86-73-7	T	D	2			1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
F-08	SVOC	Hexachlorobenzene	118-74-1	T	B2	2			7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
F-08	SVOC	Hexachlorobutadiene	87-68-3	T	C	2			7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
F-08	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	2			1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
F-08	SVOC	Hexachloroethane	67-72-1	T	C	2			7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
F-08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2			6.30E-04	5.00E-03	2.0E-03				2.0E-03	
F-08	SVOC	Isophorone	78-59-1	T	C	2			6.30E-04	5.00E-03	7.7E-01				9.9E+02	
F-08	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2			6.40E-04	5.00E-03	2.6E-01				2.5E+01	
F-08	SVOC	Methylphenol (total)	1319-77-3	T		2			1.30E-03	5.00E-03	3.7E-01				8.1E+02	
F-08	SVOC	Naphthalene	91-20-3	T	C	2			7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
F-08	SVOC	2-Nitroaniline	88-74-4	T		2			7.00E-04	2.00E-02						
F-08	SVOC	3-Nitroaniline	99-09-2	T	C	2			7.10E-04	2.00E-02						
F-08	SVOC	4-Nitroaniline	100-01-6	T	C	2			1.30E-03	2.00E-02						
F-08	SVOC	Nitrobenzene	98-95-3	T	D	2			8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
F-08	SVOC	2-Nitrophenol	88-75-5	T		2			2.10E-03	5.00E-03	2.0E-02				7.9E+01	
F-08	SVOC	4-Nitrophenol	100-02-7	T		2			1.90E-03	2.00E-02						
F-08	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2			1.40E-03	5.00E-03	2.7E-01				3.5E+01	
F-08	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2			6.70E-04	5.00E-03	5.0E-03				3.6E-01	
F-08	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2			7.80E-04	5.00E-03						
F-08	SVOC	Pentachlorophenol	87-86-5	T	B2	2			2.40E-03	5.00E-03	1.0E-03				2.0E-01	
F-08	SVOC	Phenanthrene	85-01-8	T	D	2			8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
F-08	SVOC	Phenol	108-95-2	T	ID	2			2.60E-03	5.00E-03	4.4E+00				2.9E+04	
F-08	SVOC	Pyrene	129-00-0	T	D	2			1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
F-08	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2			1.20E-03	5.00E-03	7.3E-01				1.7E+02	
F-08	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2			1.70E-03	5.00E-03	1.2E-01				1.0E+01	
F-08	P/PCB	PCBs (total)	1336-36-3	D	B2	1			4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-08	P/PCB	PCBs (total)	1336-36-3	T	B2	2			8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-08	INORG	Antimony	7440-36-0	D		2			2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-08	INORG	Antimony	7440-36-0	T		2			2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-08	INORG	Arsenic	7440-38-2	D	A	2			3.90E-03	1.00E-02	5.0E-02				4.3E+00	
F-08	INORG	Arsenic	7440-38-2	T	A	2			3.90E-03	1.00E-02	5.0E-02				4.3E+00	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-08	INORG	Barium	7440-39-3	D	D	2	2	5.46E-02	5.75E-02			2.0E+00	2.9E-02			1.4E+04	4.1E-06
F-08	INORG	Barium	7440-39-3	T	D	2	2	5.49E-02	5.82E-02			2.0E+00	2.9E-02			1.4E+04	4.2E-06
F-08	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-08	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-08	INORG	Cadmium	7440-43-9	D	B1	2	1	3.20E-04	3.20E-04	5.00E-03	5.00E-03	5.0E-03	6.4E-02			1.9E+02	1.7E-06
F-08	INORG	Cadmium	7440-43-9	T	B1	2				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
F-08	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-08	INORG	Chromium (total)	7440-47-3	T		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-08	INORG	Cobalt	7440-48-4	D	B1	2	2	1.40E-03	2.80E-03			4.0E-02	7.0E-02			2.4E+03	1.2E-06
F-08	INORG	Cobalt	7440-48-4	T	B1	2	1	3.00E-03	3.00E-03	1.30E-03	1.30E-03	4.0E-02	7.5E-02			2.4E+03	1.3E-06
F-08	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-08	INORG	Copper	7440-50-8	T	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-08	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-08	INORG	Lead	7439-92-1	T	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-08	INORG	Manganese	7439-96-5	D	D	2	1	3.60E-01	3.60E-01	9.00E-04	9.00E-04	8.6E-01	4.2E-01			9.1E+03	4.0E-05
F-08	INORG	Manganese	7439-96-5	T	D	2	2	1.06E-01	3.64E-01			8.6E-01	4.2E-01			9.1E+03	4.0E-05
F-08	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-08	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-08	INORG	Nickel	7440-02-0	D	A	2	2	6.20E-03	6.70E-03			1.0E-01	6.7E-02			7.4E+04	9.1E-08
F-08	INORG	Nickel	7440-02-0	T	A	2	2	5.00E-03	7.70E-03			1.0E-01	7.7E-02			7.4E+04	1.0E-07
F-08	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-08	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-08	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-08	INORG	Silver	7440-22-4	T	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-08	INORG	Thallium	7440-28-0	D		2	2	4.10E-05	5.40E-03			2.0E-03	2.7E+00			1.3E+01	4.2E-04
F-08	INORG	Thallium	7440-28-0	T		2	1	4.30E-05	4.30E-05	1.00E-02	1.00E-02	2.0E-03	2.2E-02			1.3E+01	3.3E-06
F-08	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-08	INORG	Vanadium	7440-62-2	T		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-08	INORG	Zinc	7440-66-6	D	D	2	1	1.33E-02	1.33E-02	1.20E-02	1.20E-02	2.4E+00	5.5E-03			1.1E+05	1.2E-07
F-08	INORG	Zinc	7440-66-6	T	D	2	1	2.12E-02	2.12E-02	1.20E-02	1.20E-02	2.4E+00	8.8E-03			1.1E+05	1.9E-07
F-12	VOC	Acetone	67-64-1	T	ID	8	1	7.05E-04	7.05E-04	5.10E-04	2.80E-03	7.3E-01	9.7E-04	1.0E+06	7.1E-10	3.1E+04	2.3E-08
F-12	VOC	Benzene	71-43-2	T	A	8				1.60E-04	9.20E-04	5.0E-03		3.5E+01		1.1E+01	
F-12	VOC	Bromodichloromethane	75-27-4	T	B2	8				1.70E-04	8.00E-04	1.0E-01		3.7E+01		1.4E+01	
F-12	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	9.20E-04	1.0E-01		3.1E+03		1.4E+02	
F-12	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	6.00E-04	1.0E-02		9.0E+00		7.0E+01	
F-12	VOC	2-Butanone	78-93-3	T	ID	8				4.10E-04	1.50E-03	1.3E+01		2.4E+05		2.4E+05	
F-12	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	6.00E-04	8.0E-01		5.5E+02		1.2E+03	
F-12	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	9.20E-04	5.0E-03		2.4E+00		4.6E+00	
F-12	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	9.50E-04	1.0E-01		4.7E+02		8.6E+01	
F-12	VOC	Chloroethane	75-00-3	T		8				2.60E-04	7.20E-04	4.3E-01		5.7E+03		4.4E+02	
F-12	VOC	Chloroform	67-66-3	T	B2	8	1	1.60E-04	1.60E-04	1.40E-04	8.80E-04	1.0E-01	1.6E-03	1.8E+02	8.9E-07	1.5E+02	1.1E-06
F-12	VOC	Chloromethane	74-87-3	T	D	8				1.30E-04	1.20E-03	2.6E-01		4.5E+01		4.9E+02	
F-12	VOC	Cumene	98-82-8	T	D	8				1.20E-04	9.80E-04	8.0E-01		5.6E+01		5.6E+01	
F-12	VOC	Cyclohexane	110-82-7	T	ID	8				1.30E-04	8.20E-04						
F-12	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
F-12	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	9.20E-04	1.0E-01		1.1E+02		1.8E+01	
F-12	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	8.50E-04	1.0E-03		1.5E+01		2.5E-02	
F-12	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	9.50E-04	6.0E-01		1.6E+02		1.6E+02	
F-12	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	9.50E-04	6.6E-03				2.0E+00	
F-12	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	9.50E-04	7.5E-02		7.4E+01		6.4E+00	
F-12	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	1.20E-03	1.7E+00		3.0E+02		3.0E+02	
F-12	VOC	1,1-Dichloroethane	75-34-3	T	C	8	8	5.05E-04	2.50E-02			8.8E-01	2.8E-02	2.3E+03	1.1E-05	2.4E+03	1.0E-05
F-12	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	7.00E-04	5.0E-03		5.9E+01		1.9E+01	
F-12	VOC	1,1-Dichloroethene	75-35-4	T	C	8	5	1.21E-03	5.80E-03	2.40E-04	3.10E-04	7.0E-03	8.3E-01	1.3E+00	4.5E-03	1.1E+01	5.3E-04
F-12	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8	2	1.30E-03	1.60E-03	2.20E-04	4.40E-04	7.0E-02	2.3E-02	2.1E+02	7.6E-06	2.0E+02	8.0E-06
F-12	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	8.20E-04	1.0E-01		2.0E+02		2.2E+02	
F-12	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
F-12	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	8.80E-04	8.5E-03		2.6E+01		5.5E+00	
F-12	VOC	Ethyl Benzene	100-41-4	T	D	8				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
F-12	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	1.40E-03	1.0E+00		8.7E+03		5.2E+03	
F-12	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	1.40E-03						
F-12	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	6.80E-04	2.4E-01		4.7E+04		6.1E+02	
F-12	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	5.20E-04	1.8E+00		2.0E+04		1.3E+04	
F-12	VOC	Methylcyclohexane	108-87-2	T		8				1.50E-04	1.00E-03						
F-12	VOC	Methylene Chloride	75-09-2	T	B2	8				2.90E-04	7.20E-04	5.0E-03		1.4E+03		2.2E+02	
F-12	VOC	Styrene	100-42-5	T		8				1.50E-04	8.80E-04	1.0E-01		3.1E+02		9.7E+00	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

General Motors - Pontiac North Campus, Pontiac, Michigan																		
Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria	
F-12	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C		8			2.50E-04	9.00E-04	8.5E-03		7.7E+01		4.7E+00		
F-12	VOC	Tetrachloroethene	127-18-4	T	C-B2		8			2.30E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01		
F-12	VOC	Toluene	108-88-3	T	D		8	1	4.70E-04	4.70E-04	1.80E-04	9.80E-04	1.0E+00	4.7E-04	5.3E+02	8.9E-07	5.3E+02	8.9E-07
F-12	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D		8			1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01		
F-12	VOC	1,1,1-Trichloroethane	71-55-6	T	D		8	8	1.38E-04	7.30E-02		2.0E-01	3.7E-01	1.3E+03	5.6E-05	1.3E+03	5.6E-05	
F-12	VOC	1,1,2-Trichloroethane	79-00-5	T	C		8			3.00E-04	9.00E-04	5.0E-03		1.1E+02		2.1E+01		
F-12	VOC	Trichloroethene	79-01-6	T	C-B2		8	1	1.40E-04	1.40E-04	1.40E-04	1.00E-03	5.0E-03	2.8E-02	9.7E+01	1.4E-06	2.2E+01	6.4E-06
F-12	VOC	Trichlorofluoromethane	75-69-4	T			8			2.80E-04	1.40E-03	2.6E+00		1.1E+03		1.1E+03		
F-12	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T			8			3.20E-04	8.00E-04	1.7E+02		1.7E+02		1.7E+02		
F-12	VOC	Vinyl Chloride	75-01-4	T	A		8			1.50E-04	9.00E-04	2.0E-03		1.3E+01		1.0E+00		
F-12	VOC	Xylenes (total)	1330-20-7	T	ID		8	1	3.48E-04	3.48E-04	3.30E-04	1.10E-03	1.0E+01	3.5E-05	1.9E+02	1.8E-06	1.9E+02	1.8E-06
F-12	SVOC	Acenaphthene	83-32-9	T			7			8.00E-04	8.00E-04	1.3E+00		4.2E+00		4.2E+00		
F-12	SVOC	Acenaphthylene	208-96-8	T	D		7			7.10E-04	7.10E-04	5.2E-02		3.9E+00		3.9E+00		
F-12	SVOC	Acetophenone	98-86-2	T	D		7			2.60E-03	2.60E-03	1.5E+00		6.1E+03		6.1E+03		
F-12	SVOC	Anthracene	120-12-7	T	D		7			6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02		
F-12	SVOC	Atrazine	1912-24-9	T			7			2.50E-03	2.50E-03	3.0E-03				5.4E+00		
F-12	SVOC	Benzaldehyde	100-52-7	T			7			2.80E-03	2.80E-03							
F-12	SVOC	Benzo(a)anthracene	56-55-3	T	B2		7			7.00E-04	7.00E-04	2.1E-03				9.4E-03		
F-12	SVOC	Benzo(a)pyrene	50-32-8	T	B2		7			7.30E-04	7.30E-04	5.0E-03				2.0E-03		
F-12	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2		7			9.40E-04	9.40E-04	2.0E-03				2.0E-03		
F-12	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D		7			8.50E-04	8.50E-04	5.0E-03				5.0E-03		
F-12	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2		7			8.40E-04	8.40E-04	5.0E-03				5.0E-03		
F-12	SVOC	Biphenyl	92-52-4	T	D		7			2.60E-03	2.60E-03							
F-12	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D		7			8.70E-04	8.70E-04							
F-12	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2		7			9.70E-04	9.70E-04	2.0E-03		2.1E+02		5.7E+00		
F-12	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2		7			2.70E-03	2.70E-03	6.0E-03				3.2E-01		
F-12	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D		7			8.80E-04	8.80E-04							
F-12	SVOC	Butylbenzylphthalate	85-68-7	T	C		7			8.80E-04	8.80E-04	1.2E+00				2.7E+00		
F-12	SVOC	Caprolactam	105-60-2	T			7			2.50E-03	2.50E-03	5.8E+00				3.9E+05		
F-12	SVOC	Carbazole	86-74-8	T	B2		7			8.20E-04	8.20E-04	8.5E-02				7.4E+00		
F-12	SVOC	4-Chloro-3-methylphenol	59-50-7	T			7			9.90E-04	9.90E-04	1.5E-01				7.9E+01		
F-12	SVOC	4-Chloroaniline	106-47-8	T			5			6.10E-04	6.10E-04							
F-12	SVOC	2-Chloronaphthalene	91-58-7	T			7			8.50E-04	8.50E-04	1.8E+00				6.7E+00		
F-12	SVOC	2-Chlorophenol	95-57-8	T			7			1.00E-03	1.00E-03	4.5E-02				9.4E+01		
F-12	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T			7			7.90E-04	7.90E-04							
F-12	SVOC	Chrysene	218-01-9	T	B2		7			7.50E-04	7.50E-04	5.0E-03				5.0E-03		
F-12	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2		7			7.90E-04	7.90E-04	2.0E-03				2.0E-03		
F-12	SVOC	Dibenzofuran	132-64-9	T	D		7			1.10E-03	1.10E-03							
F-12	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2		7			9.30E-04	9.30E-04	1.1E-03				1.8E-01		
F-12	SVOC	2,4-Dichlorophenol	120-83-2	T			7			8.50E-04	8.50E-04	7.3E-02				4.8E+01		
F-12	SVOC	Diethylphthalate	84-66-2	T	D		7			6.50E-04	6.50E-04	5.5E+00				1.1E+03		
F-12	SVOC	2,4-Dimethylphenol	105-67-9	T			7			8.50E-04	8.50E-04	3.7E-01				5.2E+02		
F-12	SVOC	Dimethylphthalate	131-11-3	T	D		7			7.60E-04	7.60E-04	7.3E+01				4.2E+03		
F-12	SVOC	Di-n-butylphthalate	84-74-2	T	D		7			6.70E-04	6.70E-04	8.8E-01				1.1E+01		
F-12	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T			7			1.30E-03	1.30E-03	2.0E-02				9.5E+00		
F-12	SVOC	2,4-Dinitrophenol	51-28-5	T			7			3.00E-03	3.00E-03							
F-12	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2		7			7.90E-04	7.90E-04	7.7E-03				8.6E+00		
F-12	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2		7			5.70E-04	5.70E-04							
F-12	SVOC	Di-n-octylphthalate	117-84-0	T			7			1.10E-03	1.10E-03	1.3E-01				4.0E-01		
F-12	SVOC	Fluoranthene	206-44-0	T	D		7			8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01		
F-12	SVOC	Fluorene	86-73-7	T	D		7			1.00E-03	1.00E-03	8.8E-01		2.0E+00		2.0E+00		
F-12	SVOC	Hexachlorobenzene	118-74-1	T	B2		7			7.40E-04	7.40E-04	1.0E-03		3.0E+00		4.6E-03		
F-12	SVOC	Hexachlorobutadiene	87-68-3	T	C		7			7.30E-04	7.30E-04	1.5E-02		3.2E+00		4.0E-01		
F-12	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E		7			1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00		
F-12	SVOC	Hexachloroethane	67-72-1	T	C		7			7.40E-04	7.40E-04	7.3E-03		5.0E+01		1.9E+00		
F-12	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2		7			6.30E-04	6.30E-04	2.0E-03				2.0E-03		
F-12	SVOC	Isophorone	78-59-1	T	C		7			6.30E-04	6.30E-04	7.7E-01				9.9E+02		
F-12	SVOC	2-Methylnaphthalene	91-57-6	T	ID		7			6.40E-04	6.40E-04	2.6E-01				2.5E+01		
F-12	SVOC	Methylphenol (total)	1319-77-3	T			7			1.30E-03	1.30E-03	3.7E-01				8.1E+02		
F-12	SVOC	Naphthalene	91-20-3	T	C		7			7.50E-04	7.50E-04	5.2E-01		3.1E+01		3.1E+01		
F-12	SVOC	2-Nitroaniline	88-74-4	T			7			7.00E-04	7.00E-04							
F-12	SVOC	3-Nitroaniline	99-09-2	T	C		7			7.10E-04	7.10E-04							
F-12	SVOC	4-Nitroaniline	100-01-6	T	C		7			1.30E-03	1.30E-03							
F-12	SVOC	Nitrobenzene	98-95-3	T	D		7			8.10E-04	8.10E-04	3.4E-03		5.5E+02		1.1E+01		
F-12	SVOC	2-Nitrophenol	88-75-5	T			7			2.10E-03	2.10E-03	2.0E-02				7.9E+01		
F-12	SVOC	4-Nitrophenol	100-02-7	T			7			1.90E-03	1.90E-03							

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-12	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	7			1.40E-03	1.40E-03	2.7E-01				3.5E+01	
F-12	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	7			6.70E-04	6.70E-04	5.0E-03				3.6E-01	
F-12	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	7			7.80E-04	7.80E-04						
F-12	SVOC	Pentachlorophenol	87-86-5	T	B2	7			2.40E-03	2.40E-03	1.0E-03				2.0E-01	
F-12	SVOC	Phenanthrene	85-01-8	T	D	7			8.20E-04	8.20E-04	5.2E-02		1.0E+00		1.0E+00	
F-12	SVOC	Phenol	108-95-2	T	ID	7			2.60E-03	2.60E-03	4.4E+00				2.9E+04	
F-12	SVOC	Pyrene	129-00-0	T	D	7			1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
F-12	SVOC	2,4,5-Trichlorophenol	95-95-4	T		7			1.20E-03	1.20E-03	7.3E-01				1.7E+02	
F-12	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	7			1.70E-03	1.70E-03	1.2E-01				1.0E+01	
F-12	P/PCB	PCBs (total)	1336-36-3	D	B2	2			8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
F-12	P/PCB	PCBs (total)	1336-36-3	T	B2	8			8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
F-12	INORG	Antimony	7440-36-0	D		3			2.20E-03	2.20E-03	6.0E-03				6.8E+01	
F-12	INORG	Antimony	7440-36-0	T		7	1	2.20E-03	2.20E-03	2.20E-03	6.0E-03	3.7E-01			6.8E+01	3.2E-05
F-12	INORG	Arsenic	7440-38-2	D	A	3			3.90E-03	3.90E-03	5.0E-02				4.3E+00	
F-12	INORG	Arsenic	7440-38-2	T	A	7			2.10E-03	3.90E-03	5.0E-02				4.3E+00	
F-12	INORG	Barium	7440-39-3	D	D	3	3	3.70E-02	8.63E-02		2.0E+00	4.3E-02			1.4E+04	6.2E-06
F-12	INORG	Barium	7440-39-3	T	D	7	7	2.46E-02	8.63E-02		2.0E+00	4.3E-02			1.4E+04	6.2E-06
F-12	INORG	Beryllium	7440-41-7	D	B1	3	1	4.70E-04	4.70E-04	5.40E-04	5.40E-04	4.0E-03	1.2E-01		2.9E+02	1.6E-06
F-12	INORG	Beryllium	7440-41-7	T	B1	7			5.40E-04	6.00E-04	4.0E-03				2.9E+02	
F-12	INORG	Cadmium	7440-43-9	D	B1	3			2.80E-04	2.80E-04	5.0E-03				1.9E+02	
F-12	INORG	Cadmium	7440-43-9	T	B1	7	1	3.50E-04	3.50E-04	2.80E-04	2.80E-04	5.0E-03	7.0E-02		1.9E+02	1.8E-06
F-12	INORG	Chromium (total)	7440-47-3	D		3			1.40E-03	1.40E-03	1.0E-01				4.6E+02	
F-12	INORG	Chromium (total)	7440-47-3	T		7			1.40E-03	1.50E-03	1.0E-01				4.6E+02	
F-12	INORG	Cobalt	7440-48-4	D	B1	3	2	2.40E-03	2.88E-03	1.30E-03	1.30E-03	4.0E-02	7.2E-02		2.4E+03	1.2E-06
F-12	INORG	Cobalt	7440-48-4	T	B1	7	6	9.30E-04	2.93E-03	1.30E-03	1.30E-03	4.0E-02	7.3E-02		2.4E+03	1.2E-06
F-12	INORG	Copper	7440-50-8	D	D	3			4.20E-03	4.20E-03	1.4E+00				7.4E+03	
F-12	INORG	Copper	7440-50-8	T	D	7			1.70E-03	4.20E-03	1.4E+00				7.4E+03	
F-12	INORG	Lead	7439-92-1	D	B2	3			2.50E-03	2.50E-03	4.0E-03					
F-12	INORG	Lead	7439-92-1	T	B2	7			1.60E-03	2.50E-03	4.0E-03					
F-12	INORG	Manganese	7439-96-5	D	D	3	3	1.08E+00	1.46E+00		8.6E-01	1.7E+00			9.1E+03	1.6E-04
F-12	INORG	Manganese	7439-96-5	T	D	7	7	1.01E+00	1.34E+00		8.6E-01	1.6E+00			9.1E+03	1.5E-04
F-12	INORG	Mercury	7439-97-6	D	D	3			6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
F-12	INORG	Mercury	7439-97-6	T	D	7			6.90E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
F-12	INORG	Nickel	7440-02-0	D	A	3	3	3.40E-03	6.50E-03		1.0E-01	6.5E-02			7.4E+04	8.8E-08
F-12	INORG	Nickel	7440-02-0	T	A	7	4	3.20E-03	6.80E-03	2.20E-03	2.90E-03	1.0E-01	6.8E-02		7.4E+04	9.2E-08
F-12	INORG	Selenium	7782-49-2	D	D	3			4.50E-03	4.50E-03	5.0E-02				9.7E+02	
F-12	INORG	Selenium	7782-49-2	T	D	7	1	3.43E-03	3.43E-03	4.50E-03	4.70E-03	5.0E-02	6.9E-02		9.7E+02	3.5E-06
F-12	INORG	Silver	7440-22-4	D	D	3			1.50E-03	1.50E-03	3.4E-02				1.5E+03	
F-12	INORG	Silver	7440-22-4	T	D	7			9.80E-04	1.50E-03	3.4E-02				1.5E+03	
F-12	INORG	Thallium	7440-28-0	D		3	2	2.90E-05	4.30E-05	5.00E-03	5.00E-03	2.0E-03	2.2E-02		1.3E+01	3.3E-06
F-12	INORG	Thallium	7440-28-0	T		7	2	1.90E-05	5.05E-05	3.30E-05	5.00E-03	2.0E-03	2.5E-02		1.3E+01	3.9E-06
F-12	INORG	Vanadium	7440-62-2	D		3			8.20E-04	8.20E-04	4.5E-03				9.7E+02	
F-12	INORG	Vanadium	7440-62-2	T		7			6.70E-04	8.20E-04	4.5E-03				9.7E+02	
F-12	INORG	Zinc	7440-66-6	D	D	3			1.20E-02	1.20E-02	2.4E+00				1.1E+05	
F-12	INORG	Zinc	7440-66-6	T	D	7	1	1.79E-02	1.79E-02	1.20E-02	1.40E-02	2.4E+00	7.4E-03		1.1E+05	1.6E-07
F-15	VOC	Acetone	67-64-1	T	ID	2			5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04	
F-15	VOC	Benzene	71-43-2	T	A	2			1.60E-04	1.00E-03	5.0E-03				3.5E+01	
F-15	VOC	Bromodichloromethane	75-27-4	T	B2	2			1.70E-04	1.00E-03	1.0E-01				3.7E+01	
F-15	VOC	Bromoform	75-25-2	T	B2	2			1.80E-04	1.00E-03	1.0E-01				3.1E+03	
F-15	VOC	Bromomethane	74-83-9	T	D	2			2.00E-04	1.00E-03	1.0E-02				9.0E+00	
F-15	VOC	2-Butanone	78-93-3	T	ID	2			4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	
F-15	VOC	Carbon Disulfide	75-15-0	T		2			2.00E-04	1.00E-03	8.0E-01				5.5E+02	
F-15	VOC	Carbon Tetrachloride	56-23-5	T	B2	2			1.20E-04	1.00E-03	5.0E-03				2.4E+00	
F-15	VOC	Chlorobenzene	108-90-7	T	D	2			1.40E-04	1.00E-03	1.0E-01				4.7E+02	
F-15	VOC	Chloroethane	75-00-3	T		2			2.60E-04	1.00E-03	4.3E-01				5.7E+03	
F-15	VOC	Chloroform	67-66-3	T	B2	2	1	5.40E-04	5.40E-04	1.40E-04	1.40E-04	1.0E-01	5.4E-03	3.0E-06	1.5E+02	3.6E-06
F-15	VOC	Chloromethane	74-87-3	T	D	2	1	4.10E-04	4.10E-04	1.30E-04	1.30E-04	2.6E-01	1.6E-03	9.1E-06	4.9E+02	8.4E-07
F-15	VOC	Cumene	98-82-8	T	D	2			1.20E-04	1.00E-03	8.0E-01				5.6E+01	
F-15	VOC	Cyclohexane	110-82-7	T	ID	2			1.30E-04	1.00E-03						
F-15	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2			6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
F-15	VOC	Dibromochloromethane	124-48-1	T	C	2			2.60E-04	1.00E-03	1.0E-01				1.8E+01	
F-15	VOC	1,2-Dibromoethane	106-93-4	T	B2	2			2.20E-04	1.00E-03	1.0E-03				2.5E-02	
F-15	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2			1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
F-15	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2			1.50E-04	1.00E-03	6.6E-03				2.0E+00	
F-15	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2			1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
F-15	VOC	Dichlorodifluoromethane	75-71-8	T		2			2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-15	VOC	1,1-Dichloroethane	75-34-3	T	C	2	2.00E-03	7.60E-03			8.8E-01	8.6E-03	2.3E+03	3.3E-06	2.4E+03	3.2E-06
F-15	VOC	1,2-Dichloroethane	107-06-2	T	B2	2			2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
F-15	VOC	1,1-Dichloroethene	75-35-4	T	C	2			2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
F-15	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2			2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
F-15	VOC	trans-1,2-Dichloroethene	156-60-5	T		2			1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
F-15	VOC	1,2-Dichloropropane	78-87-5	T	B2	2			1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
F-15	VOC	1,3-Dichloropropane (total)	542-75-6	T	B2	2			2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
F-15	VOC	Ethyl Benzene	100-41-4	T	D	2			1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
F-15	VOC	2-Hexanone	591-78-6	T		2			4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
F-15	VOC	Methyl Acetate	79-20-9	T		2			4.10E-04	1.00E-02						
F-15	VOC	Methyl tert-butyl ether	1634-04-4	T		2			1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
F-15	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2			2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
F-15	VOC	Methylcyclohexane	108-87-2	T		2			1.50E-04	1.00E-03						
F-15	VOC	Methylene Chloride	75-09-2	T	B2	2			3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
F-15	VOC	Styrene	100-42-5	T		2			1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
F-15	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2			2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
F-15	VOC	Tetrachloroethene	127-18-4	T	C-B2	2	2.80E-04	2.80E-04	2.30E-04	2.30E-04	5.0E-03	5.6E-02	1.7E+02	1.6E-06	1.2E+01	2.3E-05
F-15	VOC	Toluene	108-88-3	T	D	2	2.90E-04	3.60E-04			1.0E+00	3.6E-04	5.3E+02	6.8E-07	5.3E+02	6.8E-07
F-15	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2			1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
F-15	VOC	1,1,1-Trichloroethane	71-55-6	T	D	1	6.10E-04	6.10E-04	1.00E-03	1.00E-03	2.0E-01	3.1E-03	1.3E+03	4.7E-07	1.3E+03	4.7E-07
F-15	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2			3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
F-15	VOC	Trichloroethene	79-01-6	T	C-B2	2			1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
F-15	VOC	Trichlorofluoromethane	75-69-4	T		2			2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
F-15	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2			3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
F-15	VOC	Vinyl Chloride	75-01-4	T	A	2			1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
F-15	VOC	Xylenes (total)	1330-20-7	T	ID	2	6.40E-04	6.40E-04	1.00E-03	1.00E-03	1.0E+01	6.4E-05	1.9E+02	3.4E-06	1.9E+02	3.4E-06
F-15	SVOC	Acenaphthene	83-32-9	T		2			8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
F-15	SVOC	Acenaphthylene	208-96-8	T	D	2			7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
F-15	SVOC	Acetophenone	98-86-2	T	D	2			2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
F-15	SVOC	Anthracene	120-12-7	T	D	2			6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
F-15	SVOC	Atrazine	1912-24-9	T		2			2.50E-03	5.00E-03	3.0E-03				5.4E+00	
F-15	SVOC	Benzaldehyde	100-52-7	T		2			2.80E-03	1.00E-02						
F-15	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2			7.00E-04	5.00E-03	2.1E-03				9.4E-03	
F-15	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2			7.30E-04	5.00E-03	5.0E-03				2.0E-03	
F-15	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2			9.40E-04	5.00E-03	2.0E-03				2.0E-03	
F-15	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2			8.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-15	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2			8.40E-04	5.00E-03	5.0E-03				5.0E-03	
F-15	SVOC	Biphenyl	92-52-4	T	D	2			2.60E-03	1.00E-02						
F-15	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2			8.70E-04	5.00E-03						
F-15	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2			9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
F-15	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2			2.70E-03	5.00E-03	6.0E-03				3.2E-01	
F-15	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2			8.80E-04	5.00E-03						
F-15	SVOC	Butylbenzylphthalate	85-68-7	T	C	2			8.80E-04	5.00E-03	1.2E+00				2.7E+00	
F-15	SVOC	Caprolactam	105-60-2	T		2			2.50E-03	1.00E-02	5.8E+00				3.9E+05	
F-15	SVOC	Carbazole	86-74-8	T	B2	2			8.20E-04	1.00E-02	8.5E-02				7.4E+00	
F-15	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2			9.90E-04	5.00E-03	1.5E-01				7.9E+01	
F-15	SVOC	4-Chloroaniline	106-47-8	T		2			6.10E-04	1.00E-02						
F-15	SVOC	2-Chloronaphthalene	91-58-7	T		2			8.50E-04	5.00E-03	1.8E+00				6.7E+00	
F-15	SVOC	2-Chlorophenol	95-57-8	T		2			1.00E-03	5.00E-03	4.5E-02				9.4E+01	
F-15	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2			7.90E-04	5.00E-03						
F-15	SVOC	Chrysene	218-01-9	T	B2	2			7.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-15	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2			7.90E-04	5.00E-03	2.0E-03				2.0E-03	
F-15	SVOC	Dibenzofuran	132-64-9	T	D	2			1.10E-03	5.00E-03						
F-15	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2			9.30E-04	2.00E-02	1.1E-03				1.8E-01	
F-15	SVOC	2,4-Dichlorophenol	120-83-2	T		2			8.50E-04	1.00E-02	7.3E-02				4.8E+01	
F-15	SVOC	Diethylphthalate	84-66-2	T	D	2			6.50E-04	5.00E-03	5.5E+00				1.1E+03	
F-15	SVOC	2,4-Dimethylphenol	105-67-9	T		2			8.50E-04	5.00E-03	3.7E-01				5.2E+02	
F-15	SVOC	Dimethylphthalate	131-11-3	T	D	2			7.60E-04	5.00E-03	7.3E+01				4.2E+03	
F-15	SVOC	Di-n-butylphthalate	84-74-2	T	D	2			6.70E-04	5.00E-03	8.8E-01				1.1E+01	
F-15	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2			1.30E-03	2.00E-02	2.0E-02				9.5E+00	
F-15	SVOC	2,4-Dinitrophenol	51-28-5	T		2			3.00E-03	2.00E-02						
F-15	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2			7.90E-04	5.00E-03	7.7E-03				8.6E+00	
F-15	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2			5.70E-04	5.00E-03						
F-15	SVOC	Di-n-octylphthalate	117-84-0	T		2			1.10E-03	5.00E-03	1.3E-01				4.0E-01	
F-15	SVOC	Fluoranthene	206-44-0	T	D	2			8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
F-15	SVOC	Fluorene	86-73-7	T	D	2			1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-15	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
F-15	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
F-15	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	2				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
F-15	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
F-15	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
F-15	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
F-15	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
F-15	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
F-15	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
F-15	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	2.00E-02						
F-15	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	2.00E-02						
F-15	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	2.00E-02						
F-15	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
F-15	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
F-15	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	2.00E-02						
F-15	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
F-15	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
F-15	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	5.00E-03						
F-15	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
F-15	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
F-15	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
F-15	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
F-15	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
F-15	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
F-15	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-15	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-15	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-15	INORG	Antimony	7440-36-0	T		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-15	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
F-15	INORG	Arsenic	7440-38-2	T	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
F-15	INORG	Barium	7440-39-3	D	D	2	2	1.78E-02	2.14E-02			2.0E+00	1.1E-02			1.4E+04	1.5E-06
F-15	INORG	Barium	7440-39-3	T	D	2	2	1.81E-02	2.15E-02			2.0E+00	1.1E-02			1.4E+04	1.5E-06
F-15	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-15	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-15	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
F-15	INORG	Cadmium	7440-43-9	T	B1	2	1	4.10E-04	4.10E-04	5.00E-03	5.00E-03	5.0E-03	8.2E-02			1.9E+02	2.2E-06
F-15	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-15	INORG	Chromium (total)	7440-47-3	T		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-15	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	2.00E-02	4.0E-02				2.4E+03	
F-15	INORG	Cobalt	7440-48-4	T	B1	2	2	1.60E-03	1.70E-03			4.0E-02	4.3E-02			2.4E+03	7.1E-07
F-15	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-15	INORG	Copper	7440-50-8	T	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-15	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-15	INORG	Lead	7439-92-1	T	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-15	INORG	Manganese	7439-96-5	D	D	2	2	3.99E-01	6.33E-01			8.6E-01	7.4E-01			9.1E+03	7.0E-05
F-15	INORG	Manganese	7439-96-5	T	D	2	2	3.93E-01	6.57E-01			8.6E-01	7.6E-01			9.1E+03	7.2E-05
F-15	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-15	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-15	INORG	Nickel	7440-02-0	D	A	2	1	6.60E-03	6.60E-03	2.00E-02	2.00E-02	1.0E-01	6.6E-02			7.4E+04	8.9E-08
F-15	INORG	Nickel	7440-02-0	T	A	2	2	2.80E-03	7.40E-03			1.0E-01	7.4E-02			7.4E+04	1.0E-07
F-15	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-15	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-15	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-15	INORG	Silver	7440-22-4	T	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-15	INORG	Thallium	7440-28-0	D		2	1	6.40E-05	6.40E-05	1.00E-02	1.00E-02	2.0E-03	3.2E-02			1.3E+01	4.9E-06
F-15	INORG	Thallium	7440-28-0	T		2	1	5.40E-05	5.40E-05	1.00E-02	1.00E-02	2.0E-03	2.7E-02			1.3E+01	4.2E-06
F-15	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-15	INORG	Vanadium	7440-62-2	T		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-15	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
F-15	INORG	Zinc	7440-66-6	T	D	2				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
M-01	VOC	Acetone	67-64-1	T	ID	6				5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04	
M-01	VOC	Benzene	71-43-2	T	A	6				1.60E-04	1.00E-03	5.0E-03				1.1E+01	
M-01	VOC	Bromodichloromethane	75-27-4	T	B2	6	1	1.90E-04	1.90E-04	1.70E-04	1.00E-03	1.0E-01	1.9E-03		5.1E-06	1.4E+01	1.4E-05
M-01	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	1.00E-03	1.0E-01				1.4E+02	
M-01	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
M-01	VOC	2-Butanone	78-93-3	T	ID	6				4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria	
M-01	VOC	Carbon Disulfide	75-15-0	T		6			2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03		
M-01	VOC	Carbon Tetrachloride	56-23-5	T	B2	6			1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00		
M-01	VOC	Chlorobenzene	108-90-7	T	D	6			1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01		
M-01	VOC	Chloroethane	75-00-3	T		6			2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02		
M-01	VOC	Chloroform	67-66-3	T	B2	6	3	4.20E-04	6.70E-04	1.40E-04	1.40E-04	1.0E-01	6.7E-03	1.8E+02	3.7E-06	1.5E+02	4.5E-06
M-01	VOC	Chloromethane	74-87-3	T	D	6			1.30E-04	1.00E-03	2.6E-01		4.5E+01		4.9E+02		
M-01	VOC	Cumene	98-82-8	T	D	6			1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01		
M-01	VOC	Cyclohexane	110-82-7	T	ID	6			1.30E-04	1.00E-03							
M-01	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6			6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01		
M-01	VOC	Dibromochloromethane	124-48-1	T	C	6			2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01		
M-01	VOC	1,2-Dibromoethane	106-93-4	T	B2	6			2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02		
M-01	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6			1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02		
M-01	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6			1.50E-04	1.00E-03	6.6E-03				2.0E+00		
M-01	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6			1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00		
M-01	VOC	Dichlorodifluoromethane	75-71-8	T		6	4	6.70E-04	2.40E-02	2.60E-04	2.60E-04	1.7E+00	1.4E-02	3.0E+02	8.0E-05	3.0E+02	8.0E-05
M-01	VOC	1,1-Dichloroethane	75-34-3	T	C	6			1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03		
M-01	VOC	1,2-Dichloroethane	107-06-2	T	B2	6			2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01		
M-01	VOC	1,1-Dichloroethene	75-35-4	T	C	6			2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01		
M-01	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6			2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02		
M-01	VOC	trans-1,2-Dichloroethene	156-60-5	T		6			1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02		
M-01	VOC	1,2-Dichloropropane	78-87-5	T	B2	6			1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01		
M-01	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6			2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00		
M-01	VOC	Ethyl Benzene	100-41-4	T	D	6			1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02		
M-01	VOC	2-Hexanone	591-78-6	T		6			4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03		
M-01	VOC	Methyl Acetate	79-20-9	T		6			4.10E-04	1.00E-02							
M-01	VOC	Methyl tert-butyl ether	1634-04-4	T		6			1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02		
M-01	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6			2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04		
M-01	VOC	Methylcyclohexane	108-87-2	T		6			1.50E-04	1.00E-03							
M-01	VOC	Methylene Chloride	75-09-2	T	B2	6			3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02		
M-01	VOC	Styrene	100-42-5	T		6			1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00		
M-01	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6			2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00		
M-01	VOC	Tetrachloroethene	127-18-4	T	C-B2	6	2	3.80E-04	4.10E-04	2.30E-04	1.00E-03	5.0E-03	8.2E-02	1.7E+02	2.4E-06	1.2E+01	3.4E-05
M-01	VOC	Toluene	108-88-3	T	D	6	1	4.40E-04	4.40E-04	1.80E-04	1.00E-03	1.0E+00	4.4E-04	5.3E+02	8.3E-07	5.3E+02	8.3E-07
M-01	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6			1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01		
M-01	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6	3	5.30E-04	1.00E-03	1.50E-04	1.00E-03	2.0E-01	5.0E-03	1.3E+03	7.7E-07	1.3E+03	7.7E-07
M-01	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6			3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01		
M-01	VOC	Trichloroethene	79-01-6	T	C-B2	6			1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01		
M-01	VOC	Trichlorofluoromethane	75-69-4	T		6			2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03		
M-01	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6			3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02		
M-01	VOC	Vinyl Chloride	75-01-4	T	A	6			1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00		
M-01	VOC	Xylenes (total)	1330-20-7	T	ID	6	1	3.70E-04	3.70E-04	3.30E-04	1.00E-03	1.0E+01	3.7E-05	1.9E+02	1.9E-06	1.9E+02	1.9E-06
M-01	SVOC	Acenaphthene	83-32-9	T		6			8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00		
M-01	SVOC	Acenaphthylene	208-96-8	T	D	6			7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00		
M-01	SVOC	Acetophenone	98-86-2	T	D	6			2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03		
M-01	SVOC	Anthracene	120-12-7	T	D	6			6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02		
M-01	SVOC	Atrazine	1912-24-9	T		6			2.50E-03	5.00E-03	3.0E-03				5.4E+00		
M-01	SVOC	Benzaldehyde	100-52-7	T		6			2.80E-03	1.00E-02							
M-01	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6			7.00E-04	5.00E-03	2.1E-03				9.4E-03		
M-01	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6			7.30E-04	5.00E-03	5.0E-03				2.0E-03		
M-01	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6			9.40E-04	5.00E-03	2.0E-03				2.0E-03		
M-01	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6			8.50E-04	5.00E-03	5.0E-03				5.0E-03		
M-01	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6			8.40E-04	5.00E-03	5.0E-03				5.0E-03		
M-01	SVOC	Biphenyl	92-52-4	T	D	6			2.60E-03	1.00E-02							
M-01	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6			8.70E-04	5.00E-03							
M-01	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6			9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00		
M-01	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6			2.70E-03	5.00E-03	6.0E-03				3.2E-01		
M-01	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6			8.80E-04	5.00E-03							
M-01	SVOC	Butylbenzylphthalate	85-68-7	T	C	6			8.80E-04	5.00E-03	1.2E+00				2.7E+00		
M-01	SVOC	Caprolactam	105-60-2	T		6			2.50E-03	1.00E-02	5.8E+00				3.9E+05		
M-01	SVOC	Carbazole	86-74-8	T	B2	6			8.20E-04	1.00E-02	8.5E-02				7.4E+00		
M-01	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6			9.90E-04	5.00E-03	1.5E-01				7.9E+01		
M-01	SVOC	4-Chloroaniline	106-47-8	T		3			6.10E-04	1.00E-02							
M-01	SVOC	2-Chloronaphthalene	91-58-7	T		6			8.50E-04	5.00E-03	1.8E+00				6.7E+00		
M-01	SVOC	2-Chlorophenol	95-57-8	T		6			1.00E-03	5.00E-03	4.5E-02				9.4E+01		
M-01	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6			7.90E-04	5.00E-03							
M-01	SVOC	Chrysene	218-01-9	T	B2	6			7.50E-04	5.00E-03	5.0E-03				5.0E-03		

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-01	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
M-01	SVOC	Dibenzofuran	132-64-9	T	D	6				1.10E-03	5.00E-03						
M-01	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	3				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
M-01	SVOC	2,4-Dichlorophenol	120-83-2	T	D	6				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
M-01	SVOC	Diethylphthalate	84-66-2	T	D	6				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
M-01	SVOC	2,4-Dimethylphenol	105-67-9	T	D	6				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
M-01	SVOC	Dimethylphthalate	131-11-3	T	D	6				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
M-01	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
M-01	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T	D	6				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
M-01	SVOC	2,4-Dinitrophenol	51-28-5	T	D	6				3.00E-03	2.00E-02						
M-01	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
M-01	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.00E-03						
M-01	SVOC	Di-n-octylphthalate	117-84-0	T	D	6				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
M-01	SVOC	Fluoranthene	206-44-0	T	D	6				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
M-01	SVOC	Fluorene	86-73-7	T	D	6				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
M-01	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
M-01	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
M-01	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
M-01	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
M-01	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
M-01	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
M-01	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
M-01	SVOC	Methylphenol (total)	1319-77-3	T	D	6				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
M-01	SVOC	Naphthalene	91-20-3	T	C	6				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
M-01	SVOC	2-Nitroaniline	88-74-4	T	D	6				7.00E-04	2.00E-02						
M-01	SVOC	3-Nitroaniline	99-09-2	T	C	3				7.10E-04	2.00E-02						
M-01	SVOC	4-Nitroaniline	100-01-6	T	C	6				1.30E-03	2.00E-02						
M-01	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
M-01	SVOC	2-Nitrophenol	88-75-5	T	D	6				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
M-01	SVOC	4-Nitrophenol	100-02-7	T	D	6				1.90E-03	2.00E-02						
M-01	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
M-01	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
M-01	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	5.00E-03						
M-01	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
M-01	SVOC	Phenanthrene	85-01-8	T	D	6				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
M-01	SVOC	Phenol	108-95-2	T	ID	6				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
M-01	SVOC	Pyrene	129-00-0	T	D	6				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
M-01	SVOC	2,4,5-Trichlorophenol	95-95-4	T	D	6				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
M-01	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
M-01	P/PCB	PCBs (total)	1336-36-3	D	B2	3				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-01	P/PCB	PCBs (total)	1336-36-3	D	B2	6				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-01	INORG	Antimony	7440-36-0	D	D	6	2	4.20E-03	6.00E-03	2.20E-03	2.50E-02	6.0E-03	1.0E+00			6.8E+01	8.8E-05
M-01	INORG	Antimony	7440-36-0	T	D	6	2	5.00E-03	7.70E-03	2.20E-03	2.50E-02	6.0E-03	1.3E+00			6.8E+01	1.1E-04
M-01	INORG	Arsenic	7440-38-2	D	A	6	3	4.20E-03	6.40E-03	3.90E-03	1.00E-02	5.0E-02	1.3E-01			4.3E+00	1.5E-03
M-01	INORG	Arsenic	7440-38-2	T	A	6	5	4.70E-03	7.00E-03	1.00E-02	1.00E-02	5.0E-02	1.4E-01			4.3E+00	1.6E-03
M-01	INORG	Barium	7440-39-3	D	D	6	6	1.41E-02	1.77E-01			2.0E+00	8.9E-02			1.4E+04	1.3E-05
M-01	INORG	Barium	7440-39-3	T	D	6	6	1.36E-02	1.72E-01			2.0E+00	8.6E-02			1.4E+04	1.2E-05
M-01	INORG	Beryllium	7440-41-7	D	B1	6				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-01	INORG	Beryllium	7440-41-7	T	B1	6				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-01	INORG	Cadmium	7440-43-9	D	B1	6				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
M-01	INORG	Cadmium	7440-43-9	T	B1	6	1	3.80E-04	3.80E-04	2.80E-04	5.00E-03	5.0E-03	7.6E-02			1.9E+02	2.0E-06
M-01	INORG	Chromium (total)	7440-47-3	D	D	4	1	3.64E-02	3.64E-02	1.40E-03	1.00E-02	1.0E-01	3.6E-01			4.6E+02	7.9E-05
M-01	INORG	Chromium III	16065-83-1	D	D	2	1	3.87E-02	3.87E-02	1.40E-03	1.40E-03	3.8E+01	1.0E-03			2.9E+05	1.3E-07
M-01	INORG	Chromium III	16065-83-1	T	D	6	2	4.85E-02	4.85E-02	1.40E-03	1.00E-02	3.8E+01	1.3E-03			2.9E+05	1.7E-07
M-01	INORG	Chromium VI	18540-29-9	D	A	2				6.90E-03	6.90E-03	1.0E-01				4.6E+02	
M-01	INORG	Chromium VI	18540-29-9	T	A	6	1	3.38E-02	3.38E-02	6.90E-03	2.00E-02	1.0E-01	3.4E-01			4.6E+02	7.3E-05
M-01	INORG	Cobalt	7440-48-4	D	B1	6	4	2.20E-03	2.90E-03	1.30E-03	1.30E-03	4.0E-02	7.3E-02			2.4E+03	1.2E-06
M-01	INORG	Cobalt	7440-48-4	T	B1	6	4	2.20E-03	2.80E-03	1.30E-03	1.30E-03	4.0E-02	7.0E-02			2.4E+03	1.2E-06
M-01	INORG	Copper	7440-50-8	D	D	6				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
M-01	INORG	Copper	7440-50-8	T	D	6				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
M-01	INORG	Cyanide (total)	57-12-5	T	D	11	7	5.50E-03	1.30E+00	1.70E-03	1.80E-03	2.0E-01	6.5E+00			5.7E+01	2.3E-02
M-01	INORG	Lead	7439-92-1	D	B2	6				2.50E-03	3.00E-03	4.0E-03					
M-01	INORG	Lead	7439-92-1	T	B2	6				2.50E-03	3.00E-03	4.0E-03					
M-01	INORG	Manganese	7439-96-5	D	D	6	5	9.40E-04	5.46E-01	9.00E-04	9.00E-04	8.6E-01	6.3E-01			9.1E+03	6.0E-05
M-01	INORG	Manganese	7439-96-5	T	D	6	5	2.63E-02	5.48E-01	9.00E-04	9.00E-04	8.6E-01	6.4E-01			9.1E+03	6.0E-05
M-01	INORG	Mercury	7439-97-6	D	D	6				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-01	INORG	Mercury	7439-97-6	T	D	6				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
M-01	INORG	Nickel	7440-02-0	D	A	6	2	2.40E-03	3.00E-03	2.20E-03	2.20E-03	1.0E-01	3.0E-02			7.4E+04	4.1E-08
M-01	INORG	Nickel	7440-02-0	T	A	6	1	3.70E-03	3.70E-03	2.20E-03	2.00E-02	1.0E-01	3.7E-02			7.4E+04	5.0E-08
M-01	INORG	Selenium	7782-49-2	D	D	6	2	5.00E-03	5.60E-03	4.50E-03	5.00E-03	5.0E-02	1.1E-01			9.7E+02	5.8E-06
M-01	INORG	Selenium	7782-49-2	T	D	6	2	4.50E-03	6.50E-03	4.50E-03	5.00E-03	5.0E-02	1.3E-01			9.7E+02	6.7E-06
M-01	INORG	Silver	7440-22-4	D	D	6				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-01	INORG	Silver	7440-22-4	T	D	6				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-01	INORG	Thallium	7440-28-0	D		6	3	2.60E-05	5.40E-05	5.00E-03	1.00E-02	2.0E-03	2.7E-02			1.3E+01	4.2E-06
M-01	INORG	Thallium	7440-28-0	T		6	1	4.50E-05	4.50E-05	1.80E-05	1.00E-02	2.0E-03	2.3E-02			1.3E+01	3.5E-06
M-01	INORG	Vanadium	7440-62-2	D		6	2	1.00E-03	1.70E-03	8.20E-04	1.00E-02	4.5E-03	3.8E-01			9.7E+02	1.8E-06
M-01	INORG	Vanadium	7440-62-2	T		6	1	2.80E-03	2.80E-03	8.20E-04	1.00E-02	4.5E-03	6.2E-01			9.7E+02	2.9E-06
M-01	INORG	Zinc	7440-66-6	D	D	6	1	1.89E-02	1.89E-02	1.20E-02	2.00E-02	2.4E+00	7.9E-03			1.1E+05	1.7E-07
M-01	INORG	Zinc	7440-66-6	T	D	6				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
M-02	VOC	Acetone	67-64-1	T	ID	36	16	8.25E-04	3.40E+00	5.10E-04	6.90E-02	7.3E-01	4.7E+00	1.0E+06	3.4E-06	3.1E+04	1.1E-04
M-02	VOC	Benzene	71-43-2	T	A	36				1.60E-04	2.50E-02	5.0E-03				3.5E+01	1.1E+01
M-02	VOC	Bromodichloromethane	75-27-4	T	B2	36	2	4.80E-04	7.20E-04	1.70E-04	2.50E-02	1.0E-01	7.2E-03	3.7E+01	1.9E-05	1.4E+01	5.1E-05
M-02	VOC	Bromoform	75-25-2	T	B2	36				1.80E-04	2.50E-02	1.0E-01				3.1E+03	1.4E+02
M-02	VOC	Bromomethane	74-83-9	T	D	36				2.00E-04	2.50E-02	1.0E-02				9.0E+00	7.0E+01
M-02	VOC	2-Butanone	78-93-3	T	ID	36				4.10E-04	2.50E-01	1.3E+01				2.4E+05	2.4E+05
M-02	VOC	Carbon Disulfide	75-15-0	T		36				2.00E-04	2.50E-02	8.0E-01				5.5E+02	1.2E+03
M-02	VOC	Carbon Tetrachloride	56-23-5	T	B2	36				1.20E-04	2.50E-02	5.0E-03				2.4E+00	4.6E+00
M-02	VOC	Chlorobenzene	108-90-7	T	D	36				1.40E-04	2.50E-02	1.0E-01				4.7E+02	8.6E+01
M-02	VOC	Chloroethane	75-00-3	T		36	7	2.70E-03	5.80E-02	2.60E-04	1.80E-02	4.3E-01	1.3E-01	5.7E+03	1.0E-05	4.4E+02	1.3E-04
M-02	VOC	Chloroform	67-66-3	T	B2	36	11	2.00E-04	5.80E-03	1.40E-04	2.20E-02	1.0E-01	5.8E-02	1.8E+02	3.2E-05	1.5E+02	3.9E-05
M-02	VOC	Chloromethane	74-87-3	T	D	36	1	1.60E-04	1.60E-04	1.30E-04	3.10E-02	2.6E-01	6.2E-04	4.5E+01	3.6E-06	4.9E+02	3.3E-07
M-02	VOC	Cumene	98-82-8	T	D	36				1.20E-04	2.50E-02	8.0E-01				5.6E+01	
M-02	VOC	Cyclohexane	110-82-7	T	ID	36				1.30E-04	2.50E-02						
M-02	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	36				6.20E-04	5.10E-02	2.0E-04				1.2E+00	3.9E-01
M-02	VOC	Dibromochloromethane	124-48-1	T	C	36				2.60E-04	2.50E-02	1.0E-01				1.1E+02	1.8E+01
M-02	VOC	1,2-Dibromoethane	106-93-4	T	B2	36				2.20E-04	2.50E-02	1.0E-03				1.5E+01	2.5E-02
M-02	VOC	1,2-Dichlorobenzene	95-50-1	T	D	36				1.10E-04	2.50E-02	6.0E-01				1.6E+02	1.6E+02
M-02	VOC	1,3-Dichlorobenzene	541-73-1	T	D	36				1.50E-04	2.50E-02	6.6E-03				2.0E+00	
M-02	VOC	1,4-Dichlorobenzene	106-46-7	T	C	36				1.70E-04	2.50E-02	7.5E-02				7.4E+01	6.4E+00
M-02	VOC	Dichlorodifluoromethane	75-71-8	T		36				2.60E-04	5.00E-02	1.7E+00				3.0E+02	3.0E+02
M-02	VOC	1,1-Dichloroethane	75-34-3	T	C	36	34	4.80E-04	1.90E+00	3.20E-03	1.10E-02	8.8E-01	2.2E+00	2.3E+03	8.3E-04	2.4E+03	7.9E-04
M-02	VOC	1,2-Dichloroethane	107-06-2	T	B2	36	6	6.20E-04	1.00E-02	2.10E-04	2.50E-02	5.0E-03	2.0E+00	5.9E+01	1.7E-04	1.9E+01	5.3E-04
M-02	VOC	1,1-Dichloroethene	75-35-4	T	C	36	25	3.30E-04	9.10E-02	2.40E-04	1.60E-02	7.0E-03	1.3E+01	1.3E+00	7.0E-02	1.1E+01	8.3E-03
M-02	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	36	9	5.80E-04	7.15E-02	2.20E-04	2.20E-02	7.0E-02	1.0E+00	2.1E+02	3.4E-04	2.0E+02	3.6E-04
M-02	VOC	trans-1,2-Dichloroethene	156-60-5	T		36	3	5.45E-04	3.20E-03	1.50E-04	2.10E-02	1.0E-01	3.2E-02	2.0E+02	1.6E-05	2.2E+02	1.5E-05
M-02	VOC	1,2-Dichloropropane	78-87-5	T	B2	36				1.70E-04	2.60E-02	5.0E-03				3.6E+01	1.6E+01
M-02	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	36				2.70E-04	2.50E-02	8.5E-03				5.5E+00	
M-02	VOC	Ethyl Benzene	100-41-4	T	D	29				1.20E-04	2.50E-02	7.0E-01				1.7E+02	
M-02	VOC	2-Hexanone	591-78-6	T		36				4.60E-04	2.50E-01	1.0E+00				8.7E+03	5.2E+03
M-02	VOC	Methyl Acetate	79-20-9	T		36				4.10E-04	2.50E-01						
M-02	VOC	Methyl tert-butyl ether	1634-04-4	T		36				1.30E-04	1.20E-01	2.4E-01				6.1E+02	
M-02	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	36	3	1.00E-03	3.20E-02	2.30E-04	2.50E-01	1.8E+00	1.8E-02	2.0E+04	1.6E-06	1.3E+04	2.5E-06
M-02	VOC	Methylcyclohexane	108-87-2	T		36				1.50E-04	2.60E-02						
M-02	VOC	Methylene Chloride	75-09-2	T	B2	36	10	3.75E-04	2.40E-02	2.90E-04	2.50E-02	5.0E-03	4.8E+00	1.4E+03	1.7E-05	2.2E+02	1.1E-04
M-02	VOC	Styrene	100-42-5	T		36				1.50E-04	2.50E-02	1.0E-01				3.1E+02	9.7E+00
M-02	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	36				2.50E-04	2.50E-02	8.5E-03				7.7E+01	4.7E+00
M-02	VOC	Tetrachloroethene	127-18-4	T	C-B2	36	6	7.20E-04	7.50E-03	2.30E-04	2.60E-02	5.0E-03	1.5E+00	1.7E+02	4.4E-05	1.2E+01	6.3E-04
M-02	VOC	Toluene	108-88-3	T	D	36	1	2.00E-03	2.00E-03	1.80E-04	2.50E-02	1.0E+00	2.0E-03	5.3E+02	3.8E-06	5.3E+02	3.8E-06
M-02	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	36				1.70E-04	2.50E-02	7.0E-02				3.0E+02	1.9E+01
M-02	VOC	1,1,1-Trichloroethane	71-55-6	T	D	36	27	4.50E-04	6.00E-01	1.50E-04	1.00E-02	2.0E-01	3.0E+00	1.3E+03	4.6E-04	1.3E+03	4.6E-04
M-02	VOC	1,1,2-Trichloroethane	79-00-5	T	C	36	3	1.00E-02	2.00E-02	3.00E-04	2.20E-02	5.0E-03	4.0E+00	1.1E+02	1.8E-04	2.1E+01	9.5E-04
M-02	VOC	Trichloroethene	79-01-6	T	C-B2	36	10	1.40E-03	5.60E-02	1.40E-04	2.60E-02	5.0E-03	1.1E+01	9.7E+01	5.8E-04	2.2E+01	2.5E-03
M-02	VOC	Trichlorofluoromethane	75-69-4	T		36				2.80E-04	3.40E-02	2.6E+00				1.1E+03	1.1E+03
M-02	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		36	1	6.30E-04	6.30E-04	3.20E-04	2.50E-02	1.7E+02	3.7E-06		3.7E-06	1.7E+02	3.7E-06
M-02	VOC	Vinyl Chloride	75-01-4	T	A	36	8	3.80E-04	2.10E-02	1.50E-04	2.50E-02	2.0E-03	1.1E+01	1.3E+01	1.6E-03	1.0E+00	2.1E-02
M-02	VOC	Xylenes (total)	1330-20-7	T	ID	36				3.30E-04	2.80E-02	1.0E+01				1.9E+02	1.9E+02
M-02	SVOC	Acenaphthene	83-32-9	T		32	1	8.40E-04	8.40E-04	6.90E-04	5.00E-03	1.3E+00	6.5E-04	4.2E+00	2.0E-04	4.2E+00	2.0E-04
M-02	SVOC	Acenaphthylene	208-96-8	T	D	32				4.10E-04	5.00E-03	5.2E-02				3.9E+00	3.9E+00
M-02	SVOC	Acetophenone	98-86-2	T	D	32				6.50E-04	1.00E-02	1.5E+00				6.1E+03	6.1E+03
M-02	SVOC	Anthracene	120-12-7	T	D	32	1	7.80E-04	7.80E-04	5.90E-04	5.00E-03	4.3E-02	1.8E-02	4.3E-02	1.8E-02	4.3E-02	1.8E-02
M-02	SVOC	Atrazine	1912-24-9	T		32				3.50E-04	5.00E-03	3.0E-03				5.4E+00	
M-02	SVOC	Benzaldehyde	100-52-7	T		32				5.90E-04	1.00E-02						

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

General Motors - Pontiac North Campus, Pontiac, Michigan																	
Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria	
M-02	SVOC	Benzo(a)anthracene	56-55-3	T	B2	32			6.80E-04	5.00E-03	2.1E-03				9.4E-03		
M-02	SVOC	Benzo(a)pyrene	50-32-8	T	B2	32			5.30E-04	5.00E-03	5.0E-03				2.0E-03		
M-02	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	32			7.10E-04	5.00E-03	2.0E-03				2.0E-03		
M-02	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	32			7.00E-04	5.00E-03	5.0E-03				5.0E-03		
M-02	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	32			6.40E-04	5.00E-03	5.0E-03				5.0E-03		
M-02	SVOC	Biphenyl	92-52-4	T	D	32			6.50E-04	1.00E-02							
M-02	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	32			8.70E-04	5.00E-03							
M-02	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	32			9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00		
M-02	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	32	5	1.10E-03	2.40E-02	2.00E-04	5.00E-03	6.0E-03	4.0E+00		3.2E-01	7.5E-02	
M-02	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	32			7.80E-04	5.00E-03							
M-02	SVOC	Butylbenzylphthalate	85-68-7	T	C	32			2.30E-04	5.00E-03	1.2E+00				2.7E+00		
M-02	SVOC	Caprolactam	105-60-2	T		32	1	4.90E-04	4.90E-04	4.50E-04	1.00E-02	5.8E+00	8.4E-05		3.9E+05	1.3E-09	
M-02	SVOC	Carbazole	86-74-8	T	B2	32			6.10E-04	1.00E-02	8.5E-02				7.4E+00		
M-02	SVOC	4-Chloro-3-methylphenol	59-50-7	T		32			5.50E-04	5.00E-03	1.5E-01				7.9E+01		
M-02	SVOC	4-Chloroaniline	106-47-8	T		30			6.10E-04	1.00E-02							
M-02	SVOC	2-Chloronaphthalene	91-58-7	T		32			7.30E-04	5.00E-03	1.8E+00				6.7E+00		
M-02	SVOC	2-Chlorophenol	95-57-8	T		32			1.00E-03	5.00E-03	4.5E-02				9.4E+01		
M-02	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		32			6.60E-04	5.00E-03							
M-02	SVOC	Chrysene	218-01-9	T	B2	32			6.70E-04	5.00E-03	5.0E-03				5.0E-03		
M-02	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	32			6.80E-04	5.00E-03	2.0E-03				2.0E-03		
M-02	SVOC	Dibenzofuran	132-64-9	T	D	32			6.60E-04	5.00E-03							
M-02	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	29			4.70E-04	2.00E-02	1.1E-03				1.8E-01		
M-02	SVOC	2,4-Dichlorophenol	120-83-2	T		32			7.00E-04	1.00E-02	7.3E-02				4.8E+01		
M-02	SVOC	Diethylphthalate	84-66-2	T	D	32	3	5.50E-04	2.40E-03	2.50E-04	5.00E-03	5.5E+00	4.4E-04		1.1E+03	2.2E-06	
M-02	SVOC	2,4-Dimethylphenol	105-67-9	T		32	3	1.00E-03	1.30E-03	8.50E-04	5.00E-03	3.7E-01	3.5E-03		5.2E+02	2.5E-06	
M-02	SVOC	Dimethylphthalate	131-11-3	T	D	32			2.00E-04	5.00E-03	7.3E+01				4.2E+03		
M-02	SVOC	Di-n-butylphthalate	84-74-2	T	D	32	5	4.40E-04	1.10E-03	3.70E-04	5.00E-03	8.8E-01	1.3E-03		1.1E+01	1.0E-04	
M-02	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		32			1.30E-03	2.00E-02	2.0E-02				9.5E+00		
M-02	SVOC	2,4-Dinitrophenol	51-28-5	T		32			3.00E-03	2.00E-02							
M-02	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	32			4.60E-04	5.00E-03	7.7E-03				8.6E+00		
M-02	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	32			5.70E-04	5.00E-03							
M-02	SVOC	Di-n-octylphthalate	117-84-0	T		32			6.90E-04	5.00E-03	1.3E-01				4.0E-01		
M-02	SVOC	Fluoranthene	206-44-0	T	D	32			7.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01		
M-02	SVOC	Fluorene	86-73-7	T	D	32	6	1.20E-03	4.40E-03	7.50E-04	5.00E-03	8.8E-01	5.0E-03	2.0E+00	2.2E-03	2.0E+00	2.2E-03
M-02	SVOC	Hexachlorobenzene	118-74-1	T	B2	32			7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03		
M-02	SVOC	Hexachlorobutadiene	87-68-3	T	C	32			7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01		
M-02	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	32			1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00		
M-02	SVOC	Hexachloroethane	67-72-1	T	C	32			7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00		
M-02	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	32			6.30E-04	5.00E-03	2.0E-03				2.0E-03		
M-02	SVOC	Isophorone	78-59-1	T	C	32			6.30E-04	5.00E-03	7.7E-01				9.9E+02		
M-02	SVOC	2-Methylnaphthalene	91-57-6	T	ID	32	4	1.10E-03	2.10E-03	6.40E-04	5.00E-03	2.6E-01	8.1E-03		2.5E+01	8.4E-05	
M-02	SVOC	Methylphenol (total)	1319-77-3	T		32			9.00E-04	5.00E-03	3.7E-01				8.1E+02		
M-02	SVOC	Naphthalene	91-20-3	T	C	32	4	1.30E-03	1.60E-03	7.50E-04	5.00E-03	5.2E-01	3.1E-03	3.1E+01	5.2E-05	3.1E+01	5.2E-05
M-02	SVOC	2-Nitroaniline	88-74-4	T		32			4.90E-04	2.00E-02							
M-02	SVOC	3-Nitroaniline	99-09-2	T	C	29			4.80E-04	2.00E-02							
M-02	SVOC	4-Nitroaniline	100-01-6	T	C	31			5.90E-04	2.00E-02							
M-02	SVOC	Nitrobenzene	98-95-3	T	D	32			8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01		
M-02	SVOC	2-Nitrophenol	88-75-5	T		32			9.50E-04	5.00E-03	2.0E-02				7.9E+01		
M-02	SVOC	4-Nitrophenol	100-02-7	T		32			1.90E-03	2.00E-02							
M-02	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	32			6.40E-04	5.00E-03	2.7E-01				3.5E+01		
M-02	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	32			6.70E-04	5.00E-03	5.0E-03				3.6E-01		
M-02	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	32			7.80E-04	5.00E-03							
M-02	SVOC	Pentachlorophenol	87-86-5	T	B2	32			2.40E-03	5.00E-03	1.0E-03				2.0E-01		
M-02	SVOC	Phenanthrene	85-01-8	T	D	32	7	9.10E-04	7.50E-03	6.80E-04	5.00E-03	5.2E-02	1.4E-01	1.0E+00	7.5E-03	1.0E+00	7.5E-03
M-02	SVOC	Phenol	108-95-2	T	ID	32			1.30E-03	5.00E-03	4.4E+00				2.9E+04		
M-02	SVOC	Pyrene	129-00-0	T	D	32			6.30E-04	5.00E-03	1.4E-01		1.4E-01		1.4E-01		
M-02	SVOC	2,4,5-Trichlorophenol	95-95-4	T		32			8.60E-04	5.00E-03	7.3E-01				1.7E+02		
M-02	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	32			7.10E-04	5.00E-03	1.2E-01				1.0E+01		
M-02	P/PCB	PCBs (total)	1336-36-3	D	B2	5			8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03		
M-02	P/PCB	PCBs (total)	1336-36-3	T	B2	32	1	4.12E-04	4.12E-04	8.20E-05	4.00E-04	5.0E-04	8.2E-01	4.5E-02	9.1E-03	3.3E-03	1.2E-01
M-02	INORG	Antimony	7440-36-0	D		10	2	3.40E-03	3.90E-03	2.20E-03	2.20E-03	6.0E-03	6.5E-01		6.8E+01	5.7E-05	
M-02	INORG	Antimony	7440-36-0	T		32	2	2.30E-03	2.50E-03	2.20E-03	3.40E-03	6.0E-03	4.2E-01		6.8E+01	3.7E-05	
M-02	INORG	Arsenic	7440-38-2	D	A	10	2	1.27E-02	3.07E-02	3.90E-03	3.90E-03	5.0E-02	6.1E-01		4.3E+00	7.1E-03	
M-02	INORG	Arsenic	7440-38-2	T	A	32	17	1.83E-03	3.81E-02	2.10E-03	3.90E-03	5.0E-02	7.6E-01		4.3E+00	8.9E-03	
M-02	INORG	Barium	7440-39-3	D	D	10	10	2.05E-02	2.09E-01			2.0E+00	1.0E-01		1.4E+04	1.5E-05	
M-02	INORG	Barium	7440-39-3	T	D	32	32	1.62E-02	2.58E-01			2.0E+00	1.3E-01		1.4E+04	1.8E-05	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-02	INORG	Beryllium	7440-41-7	D	B1	10				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-02	INORG	Beryllium	7440-41-7	T	B1	32				5.40E-04	6.00E-04	4.0E-03				2.9E+02	
M-02	INORG	Cadmium	7440-43-9	D	B1	10	2	2.20E-04	3.30E-04	2.80E-04	2.80E-04	5.0E-03	6.6E-02			1.9E+02	1.7E-06
M-02	INORG	Cadmium	7440-43-9	T	B1	32	8	2.80E-04	3.80E-04	2.80E-04	2.80E-04	5.0E-03	7.6E-02			1.9E+02	2.0E-06
M-02	INORG	Chromium (total)	7440-47-3	D		6				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
M-02	INORG	Chromium (total)	7440-47-3	T		24	6	1.28E-03	3.20E-03	1.50E-03	1.50E-03	1.0E-01	3.2E-02			4.6E+02	7.0E-06
M-02	INORG	Chromium III	16065-83-1	D	D	4	1	3.45E-03	3.45E-03	1.40E-03	1.40E-03	3.8E+01	9.1E-05			2.9E+05	1.2E-08
M-02	INORG	Chromium III	16065-83-1	T	D	8				1.40E-03	1.40E-03	3.8E+01				2.9E+05	
M-02	INORG	Chromium VI	18540-29-9	D	A	4	1	7.90E-03	7.90E-03	6.90E-03	6.90E-03	1.0E-01	7.9E-02			4.6E+02	1.7E-05
M-02	INORG	Chromium VI	18540-29-9	T	A	8				6.90E-03	6.90E-03	1.0E-01				4.6E+02	
M-02	INORG	Cobalt	7440-48-4	D	B1	10	7	1.50E-03	1.87E-02	1.30E-03	1.30E-03	4.0E-02	4.7E-01			2.4E+03	7.8E-06
M-02	INORG	Cobalt	7440-48-4	T	B1	32	27	8.00E-04	3.05E-02	7.40E-04	1.30E-03	4.0E-02	7.6E-01			2.4E+03	1.3E-05
M-02	INORG	Copper	7440-50-8	D	D	10	5	4.80E-03	1.68E-02	4.20E-03	4.20E-03	1.4E+00	1.2E-02			7.4E+03	2.3E-06
M-02	INORG	Copper	7440-50-8	T	D	32	5	4.60E-03	2.51E-01	1.70E-03	4.20E-03	1.4E+00	1.8E-01			7.4E+03	3.4E-05
M-02	INORG	Cyanide (total)	57-12-5	T	D	11	7	3.18E-03	5.50E-01	1.70E-03	1.70E-03	2.0E-01	2.8E+00			5.7E+01	9.6E-03
M-02	INORG	Lead	7439-92-1	D	B2	10				2.50E-03	2.50E-03	4.0E-03					
M-02	INORG	Lead	7439-92-1	T	B2	32	1	2.20E-02	2.20E-02	1.60E-03	2.50E-03	4.0E-03	5.5E+00				
M-02	INORG	Manganese	7439-96-5	D	D	10	10	3.70E-03	1.17E+00	8.6E-01	1.4E+00	8.6E-01	1.4E+00			9.1E+03	1.3E-04
M-02	INORG	Manganese	7439-96-5	T	D	32	31	3.60E-03	1.21E+00	6.80E-04	6.80E-04	8.6E-01	1.4E+00			9.1E+03	1.3E-04
M-02	INORG	Mercury	7439-97-6	D	D	10	1	7.70E-05	7.70E-05	6.90E-05	2.00E-04	2.0E-03	3.9E-02	5.6E-02	1.4E-03	5.6E-02	1.4E-03
M-02	INORG	Mercury	7439-97-6	T	D	32	2	7.70E-05	1.00E-04	6.90E-05	2.00E-04	2.0E-03	5.0E-02	5.6E-02	1.8E-03	5.6E-02	1.8E-03
M-02	INORG	Nickel	7440-02-0	D	A	10	10	2.70E-03	1.68E-01	1.0E-01	1.0E-01	1.0E-01	1.7E+00			7.4E+04	2.3E-06
M-02	INORG	Nickel	7440-02-0	T	A	32	31	3.20E-03	1.06E+01	2.90E-03	2.90E-03	1.0E-01	1.1E+02			7.4E+04	1.4E-04
M-02	INORG	Selenium	7782-49-2	D	D	10	1	5.70E-03	5.70E-03	4.50E-03	4.50E-03	5.0E-02	1.1E-01			9.7E+02	5.9E-06
M-02	INORG	Selenium	7782-49-2	T	D	32	2	5.00E-03	5.40E-03	4.50E-03	4.70E-03	5.0E-02	1.1E-01			9.7E+02	5.6E-06
M-02	INORG	Silver	7440-22-4	D	D	10				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
M-02	INORG	Silver	7440-22-4	T	D	32	2	7.95E-04	1.00E-03	9.80E-04	1.50E-03	3.4E-02	2.9E-02			1.5E+03	6.7E-07
M-02	INORG	Thallium	7440-28-0	D	D	10	4	4.80E-05	5.60E-03	1.80E-05	5.00E-03	2.0E-03	2.8E+00			1.3E+01	4.3E-04
M-02	INORG	Thallium	7440-28-0	T		32	4	2.00E-05	5.50E-03	1.80E-05	5.00E-03	2.0E-03	2.8E+00			1.3E+01	4.2E-04
M-02	INORG	Vanadium	7440-62-2	D		10	4	1.90E-03	5.80E-03	8.20E-04	8.20E-04	4.5E-03	1.3E+00			9.7E+02	6.0E-06
M-02	INORG	Vanadium	7440-62-2	T		32	9	1.00E-03	1.16E-02	6.70E-04	8.20E-04	4.5E-03	2.6E+00			9.7E+02	1.2E-05
M-02	INORG	Zinc	7440-66-6	D	D	10	3	1.51E-02	8.48E-02	1.20E-02	1.20E-02	2.4E+00	3.5E-02			1.1E+05	7.7E-07
M-02	INORG	Zinc	7440-66-6	T	D	32	4	1.52E-02	5.54E-01	1.20E-02	1.40E-02	2.4E+00	2.3E-01			1.1E+05	5.0E-06
M-04	VOC	Acetone	67-64-1	T	ID	13	3	2.10E-03	1.70E-01	5.10E-04	3.70E-02	7.3E-01	2.3E-01	1.0E+06	1.7E-07	3.1E+04	5.5E-06
M-04	VOC	Benzene	71-43-2	T	A	19	6	3.30E-04	9.80E-01	1.60E-04	4.00E-04	5.0E-03	2.0E+02	3.5E+01	2.8E-02	1.1E+01	8.9E-02
M-04	VOC	Bromodichloromethane	75-27-4	T	B2	13	1	3.00E-04	3.00E-04	1.70E-04	1.10E-02	1.0E-01	3.0E-03	3.7E+01	8.1E-06	1.4E+01	2.1E-05
M-04	VOC	Bromoform	75-25-2	T	B2	13				1.80E-04	1.20E-02	1.0E-01				1.4E+02	
M-04	VOC	Bromomethane	74-83-9	T	D	13				2.00E-04	1.00E-02	1.0E-02				7.0E+01	
M-04	VOC	2-Butanone	78-93-3	T	ID	13				4.10E-04	2.00E-02	1.3E+01				2.4E+05	
M-04	VOC	Carbon Disulfide	75-15-0	T		13	1	2.10E-03	2.10E-03	2.00E-04	8.00E-03	8.0E-01	2.6E-03	5.5E+02	3.8E-06	1.2E+03	1.8E-06
M-04	VOC	Carbon Tetrachloride	56-23-5	T	B2	13				1.20E-04	1.20E-02	5.0E-03				4.6E+00	
M-04	VOC	Chlorobenzene	108-90-7	T	D	13				1.40E-04	1.30E-02	1.0E-01				8.6E+01	
M-04	VOC	Chloroethane	75-00-3	T		13				2.60E-04	9.70E-03	4.3E-01				4.4E+02	
M-04	VOC	Chloroform	67-66-3	T	B2	13	3	8.90E-04	1.30E-03	1.40E-04	1.20E-02	1.0E-01	1.3E-02	1.8E+02	7.2E-06	1.5E+02	8.7E-06
M-04	VOC	Chloromethane	74-87-3	T	D	13				1.30E-04	1.60E-02	2.6E-01				4.9E+02	
M-04	VOC	Cumene	98-82-8	T	D	13	4	2.70E-04	1.90E-02	1.20E-04	1.30E-02	8.0E-01	2.4E-02	5.6E+01	3.4E-04	5.6E+01	3.4E-04
M-04	VOC	Cyclohexane	110-82-7	T	ID	13	3	1.30E-01	3.00E-01	1.30E-04	3.30E-04						
M-04	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	13				6.20E-04	2.70E-02	2.0E-04				3.9E-01	
M-04	VOC	Dibromochloromethane	124-48-1	T	C	13				2.60E-04	1.20E-02	1.0E-01				1.8E+01	
M-04	VOC	1,2-Dibromoethane	106-93-4	T	B2	13				2.20E-04	1.10E-02	1.0E-03				2.5E-02	
M-04	VOC	1,2-Dichlorobenzene	95-50-1	T	D	13	1	2.10E-04	2.10E-04	1.10E-04	1.30E-02	6.0E-01	3.5E-04	1.6E+02	1.3E-06	1.6E+02	1.3E-06
M-04	VOC	1,3-Dichlorobenzene	541-73-1	T	D	13				1.50E-04	1.30E-02	6.6E-03				2.0E+00	
M-04	VOC	1,4-Dichlorobenzene	106-46-7	T	C	13	1	1.90E-04	1.90E-04	1.70E-04	1.30E-02	7.5E-02	2.5E-03	7.4E+01	2.6E-06	6.4E+00	3.0E-05
M-04	VOC	Dichlorodifluoromethane	75-71-8	T		13				2.60E-04	1.60E-02	1.7E+00				3.0E+02	
M-04	VOC	1,1-Dichloroethane	75-34-3	T	C	13				1.60E-04	1.00E-02	8.8E-01				2.4E+03	
M-04	VOC	1,2-Dichloroethane	107-06-2	T	B2	13				2.10E-04	9.30E-03	5.0E-03				1.9E+01	
M-04	VOC	1,1-Dichloroethene	75-35-4	T	C	13				2.40E-04	1.00E-02	7.0E-03				1.1E+01	
M-04	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	13				2.20E-04	1.20E-02	7.0E-02				2.0E+02	
M-04	VOC	trans-1,2-Dichloroethene	156-60-5	T		13				1.50E-04	1.10E-02	1.0E-01				2.2E+02	
M-04	VOC	1,2-Dichloropropane	78-87-5	T	B2	13				1.70E-04	1.40E-02	5.0E-03				1.6E+01	
M-04	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	13				2.70E-04	1.20E-02	8.5E-03				5.5E+00	
M-04	VOC	Ethyl Benzene	100-41-4	T	D	19	7	2.70E-04	1.50E+00	1.20E-04	4.10E-04	7.0E-01	2.1E+00	1.7E+02	8.8E-03	1.7E+02	8.8E-03
M-04	VOC	2-Hexanone	591-78-6	T		13				4.60E-04	1.90E-02	1.0E+00				5.2E+03	
M-04	VOC	Methyl Acetate	79-20-9	T		13				4.10E-04	1.80E-02						
M-04	VOC	Methyl tert-butyl ether	1634-04-4	T		13	1	1.20E-03	1.20E-03	1.30E-04	9.00E-03	2.4E-01	5.0E-03	4.7E+04	2.6E-08	6.1E+02	2.0E-06
M-04	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	13				2.30E-04	8.70E-03	1.8E+00				1.3E+04	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-04	VOC	Methylcyclohexane	108-87-2	T		13 3	1.80E-02	6.30E-02	1.50E-04	4.20E-04						
M-04	VOC	Methylene Chloride	75-09-2	T	B2	8 2	3.50E-04	1.40E-03	3.40E-04	1.10E-02	5.0E-03	2.8E-01	1.4E+03	1.0E-06	2.2E+02	6.4E-06
M-04	VOC	Styrene	100-42-5	T		13			1.50E-04	1.20E-02	1.0E-01		3.1E+02		9.7E+00	
M-04	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	13			2.50E-04	1.20E-02	8.5E-03		7.7E+01		4.7E+00	
M-04	VOC	Tetrachloroethene	127-18-4	T	C-B2	13			2.30E-04	1.40E-02	5.0E-03		1.7E+02		1.2E+01	
M-04	VOC	Toluene	108-88-3	T	D	19 6	3.10E-04	5.70E-02	1.70E-04	4.50E-04	1.0E+00	5.7E-02	5.3E+02	1.1E-04	5.3E+02	1.1E-04
M-04	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	13 1	2.40E-04	2.40E-04	1.70E-04	1.30E-02	7.0E-02	3.4E-03	3.0E+02	8.0E-07	1.9E+01	1.3E-05
M-04	VOC	1,1,1-Trichloroethane	71-55-6	T	D	13			1.50E-04	1.30E-02	2.0E-01		1.3E+03		1.3E+03	
M-04	VOC	1,1,2-Trichloroethane	79-00-5	T	C	13			3.00E-04	1.20E-02	5.0E-03		1.1E+02		2.1E+01	
M-04	VOC	Trichloroethene	79-01-6	T	C-B2	13			1.40E-04	1.40E-02	5.0E-03		9.7E+01		2.2E+01	
M-04	VOC	Trichlorofluoromethane	75-69-4	T		13			2.80E-04	1.80E-02	2.6E+00		1.1E+03		1.1E+03	
M-04	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		13			3.20E-04	1.10E-02	1.7E+02		1.7E+02		1.7E+02	
M-04	VOC	Vinyl Chloride	75-01-4	T	A	13			1.50E-04	1.20E-02	2.0E-03		1.3E+01		1.0E+00	
M-04	VOC	Xylenes (total)	1330-20-7	T	ID	19 4	3.00E-01	1.40E+00	3.30E-04	8.20E-04	1.0E+01	1.4E-01	1.9E+02	7.4E-03	1.9E+02	7.4E-03
M-04	INORG	Lead	7439-92-1	D	B2	8			2.50E-03	2.50E-03	4.0E-03					
M-04	INORG	Lead	7439-92-1	T	B2	10			1.60E-03	2.50E-03	4.0E-03					
M-05	P/PCB	PCBs (total)	1336-36-3	D	B2	2			8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
M-05	P/PCB	PCBs (total)	1336-36-3	T	B2	9 4	4.19E-04	1.64E-03	8.20E-05	8.20E-05	5.0E-04	3.3E+00	4.5E-02	3.6E-02	3.3E-03	5.0E-01
M-05	INORG	Antimony	7440-36-0	D		4 1	4.30E-03	4.30E-03	2.20E-03	2.20E-03	6.0E-03	7.2E-01			6.8E+01	6.3E-05
M-05	INORG	Antimony	7440-36-0	T		4 1	3.50E-03	3.50E-03	2.20E-03	2.20E-03	6.0E-03	5.8E-01			6.8E+01	5.1E-05
M-05	INORG	Arsenic	7440-38-2	D	A	4 2	2.49E-02	2.67E-02	3.90E-03	3.90E-03	5.0E-02	5.3E-01			4.3E+00	6.2E-03
M-05	INORG	Arsenic	7440-38-2	T	A	4 3	4.10E-03	2.73E-02	3.90E-03	3.90E-03	5.0E-02	5.5E-01			4.3E+00	6.3E-03
M-05	INORG	Barium	7440-39-3	D	D	4 4	1.28E+00	4.72E+00			2.0E+00	2.4E+00			1.4E+04	3.4E-04
M-05	INORG	Barium	7440-39-3	T	D	9 9	2.05E-01	4.80E+00			2.0E+00	2.4E+00			1.4E+04	3.4E-04
M-05	INORG	Beryllium	7440-41-7	D	B1	4			5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-05	INORG	Beryllium	7440-41-7	T	B1	4			5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-05	INORG	Cadmium	7440-43-9	D	B1	4 3	3.00E-04	6.60E-04	2.80E-04	2.80E-04	5.0E-03	1.3E-01			1.9E+02	3.5E-06
M-05	INORG	Cadmium	7440-43-9	T	B1	4 3	3.60E-04	7.10E-04	2.80E-04	2.80E-04	5.0E-03	1.4E-01			1.9E+02	3.7E-06
M-05	INORG	Chromium (total)	7440-47-3	D		4 3	1.80E-03	2.20E-03	1.40E-03	1.40E-03	1.0E-01	2.2E-02			4.6E+02	4.8E-06
M-05	INORG	Chromium (total)	7440-47-3	T		4 3	2.50E-03	2.05E-02	1.40E-03	1.40E-03	1.0E-01	2.1E-01			4.6E+02	4.5E-05
M-05	INORG	Cobalt	7440-48-4	D	B1	4 1	8.00E-03	8.00E-03	1.30E-03	1.30E-03	4.0E-02	2.0E-01			2.4E+03	3.3E-06
M-05	INORG	Cobalt	7440-48-4	T	B1	4 1	7.90E-03	7.90E-03	1.30E-03	1.30E-03	4.0E-02	2.0E-01			2.4E+03	3.3E-06
M-05	INORG	Copper	7440-50-8	D	D	4 4			4.20E-03	4.20E-03	1.4E+00				7.4E+03	
M-05	INORG	Copper	7440-50-8	T	D	4 1	5.20E-03	5.20E-03	4.20E-03	4.20E-03	1.4E+00	3.7E-03			7.4E+03	7.0E-07
M-05	INORG	Lead	7439-92-1	D	B2	4			2.50E-03	2.50E-03	4.0E-03					
M-05	INORG	Lead	7439-92-1	T	B2	4			2.50E-03	2.50E-03	4.0E-03					
M-05	INORG	Manganese	7439-96-5	D	D	4 4	9.53E-01	3.57E+00			8.6E-01	4.2E+00			9.1E+03	3.9E-04
M-05	INORG	Manganese	7439-96-5	T	D	9 9	1.25E-01	3.63E+00			8.6E-01	4.2E+00			9.1E+03	4.0E-04
M-05	INORG	Mercury	7439-97-6	D	D	4			6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
M-05	INORG	Mercury	7439-97-6	T	D	4			6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
M-05	INORG	Nickel	7440-02-0	D	A	4 2	1.06E-02	1.60E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.2E-07
M-05	INORG	Nickel	7440-02-0	T	A	4 2	1.69E-02	1.75E-02	2.20E-03	2.20E-03	1.0E-01	1.8E-01			7.4E+04	2.4E-07
M-05	INORG	Selenium	7782-49-2	D	D	4			4.50E-03	4.50E-03	5.0E-02				9.7E+02	
M-05	INORG	Selenium	7782-49-2	T	D	4			4.50E-03	4.50E-03	5.0E-02				9.7E+02	
M-05	INORG	Silver	7440-22-4	D	D	4			1.50E-03	1.50E-03	3.4E-02				1.5E+03	
M-05	INORG	Silver	7440-22-4	T	D	4			1.50E-03	1.50E-03	3.4E-02				1.5E+03	
M-05	INORG	Thallium	7440-28-0	D		4 2	5.00E-03	5.90E-03	1.80E-05	1.80E-05	2.0E-03	3.0E+00			1.3E+01	4.5E-04
M-05	INORG	Thallium	7440-28-0	T		4 1	3.00E-05	3.00E-05	1.80E-05	5.00E-03	2.0E-03	1.5E-02			1.3E+01	2.3E-06
M-05	INORG	Vanadium	7440-62-2	D		4 2	8.00E-03	1.00E-02	8.20E-04	8.20E-04	4.5E-03	2.2E+00			9.7E+02	1.0E-05
M-05	INORG	Vanadium	7440-62-2	T		4 2	7.80E-03	1.04E-02	8.20E-04	8.20E-04	4.5E-03	2.3E+00			9.7E+02	1.1E-05
M-05	INORG	Zinc	7440-66-6	D	D	4 1	1.33E-02	1.33E-02	1.20E-02	1.20E-02	2.4E+00	5.5E-03			1.1E+05	1.2E-07
M-05	INORG	Zinc	7440-66-6	T	D	4			1.20E-02	1.20E-02	2.4E+00				1.1E+05	
M-05	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	D	B2	2			5.02E-09	6.62E-09	3.0E-08				1.0E-08	
M-05	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	2			5.85E-09	9.14E-09	3.0E-08				1.0E-08	
M-07	VOC	Acetone	67-64-1	T	ID	8 4	3.50E-03	4.20E+01	5.10E-04	5.10E-03	7.3E-01	5.8E+01	1.0E+06	4.2E-05	3.1E+04	1.4E-03
M-07	VOC	Benzene	71-43-2	T	A	8 2	2.40E-04	4.10E-04	1.60E-04	1.30E-01	5.0E-03	8.2E-02	3.5E+01	1.2E-05	1.1E+01	3.7E-05
M-07	VOC	Bromodichloromethane	75-27-4	T	B2	8			1.70E-04	1.40E-01	1.0E-01		3.7E+01		1.4E+01	
M-07	VOC	Bromofom	75-25-2	T	B2	8			1.80E-04	1.50E-01	1.0E-01		3.1E+03		1.4E+02	
M-07	VOC	Bromomethane	74-83-9	T	D	8			2.00E-04	1.70E-01	1.0E-02		9.0E+00		7.0E+01	
M-07	VOC	2-Butanone	78-93-3	T	ID	8 1	4.70E-03	4.70E-03	4.10E-04	3.40E-01	1.3E+01	3.6E-04	2.4E+05	2.0E-08	2.4E+05	2.0E-08
M-07	VOC	Carbon Disulfide	75-15-0	T		8			2.00E-04	1.70E-01	8.0E-01		5.5E+02		1.2E+03	
M-07	VOC	Carbon Tetrachloride	56-23-5	T	B2	8			1.20E-04	1.00E-01	5.0E-03		2.4E+00		4.6E+00	
M-07	VOC	Chlorobenzene	108-90-7	T	D	8			1.40E-04	1.20E-01	1.0E-01		4.7E+02		8.6E+01	
M-07	VOC	Chloroethane	75-00-3	T		8			2.60E-04	2.20E-01	4.3E-01		5.7E+03		4.4E+02	
M-07	VOC	Chloroform	67-66-3	T	B2	8			1.40E-04	1.20E-01	1.0E-01		1.8E+02		1.5E+02	
M-07	VOC	Chloromethane	74-87-3	T	D	8 1	3.70E-04	3.70E-04	1.30E-04	1.10E-01	2.6E-01	1.4E-03	4.5E+01	8.2E-06	4.9E+02	7.6E-07

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-07	VOC	Cumene	98-82-8	T	D	8				1.20E-04	1.00E-01	8.0E-01		5.6E+01		5.6E+01	
M-07	VOC	Cyclohexane	110-82-7	T	ID	8	1	2.50E-04	2.50E-04	1.30E-04	1.10E-01						
M-07	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	5.20E-01	2.0E-04		1.2E+00		3.9E-01	
M-07	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	2.20E-01	1.0E-01		1.1E+02		1.8E+01	
M-07	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	1.80E-01	1.0E-03		1.5E+01		2.5E-02	
M-07	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	9.20E-02	6.0E-01		1.6E+02		1.6E+02	
M-07	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	1.20E-01	6.6E-03				2.0E+00	
M-07	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	1.40E-01	7.5E-02		7.4E+01		6.4E+00	
M-07	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	2.20E-01	1.7E+00		3.0E+02		3.0E+02	
M-07	VOC	1,1-Dichloroethane	75-34-3	T	C	8				1.60E-04	1.30E-01	8.8E-01		2.3E+03		2.4E+03	
M-07	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	1.70E-01	5.0E-03		5.9E+01		1.9E+01	
M-07	VOC	1,1-Dichloroethene	75-35-4	T	C	8				2.40E-04	2.00E-01	7.0E-03		1.3E+00		1.1E+01	
M-07	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8				2.20E-04	1.80E-01	7.0E-02		2.1E+02		2.0E+02	
M-07	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	1.20E-01	1.0E-01		2.0E+02		2.2E+02	
M-07	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	1.40E-01	5.0E-03		3.6E+01		1.6E+01	
M-07	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	2.20E-01	8.5E-03		2.6E+01		5.5E+00	
M-07	VOC	Ethyl Benzene	100-41-4	T	D	8	1	2.30E-04	2.30E-04	1.20E-04	1.00E-01	7.0E-01	3.3E-04	1.7E+02	1.4E-06	1.7E+02	1.4E-06
M-07	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	3.80E-01	1.0E+00		8.7E+03		5.2E+03	
M-07	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	3.40E-01						
M-07	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	1.10E-01	2.4E-01		4.7E+04		6.1E+02	
M-07	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8				2.30E-04	1.90E-01	1.8E+00		2.0E+04		1.3E+04	
M-07	VOC	Methylcyclohexane	108-87-2	T		8	1	4.60E-04	4.60E-04	1.50E-04	1.20E-01						
M-07	VOC	Methylene Chloride	75-09-2	T	B2	8				3.40E-04	2.80E-01	5.0E-03		1.4E+03		2.2E+02	
M-07	VOC	Styrene	100-42-5	T		8				1.50E-04	1.20E-01	1.0E-01		3.1E+02		9.7E+00	
M-07	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	2.10E-01	8.5E-03		7.7E+01		4.7E+00	
M-07	VOC	Tetrachloroethene	127-18-4	T	C-B2	8	1	3.60E-03	3.60E-03	2.30E-04	1.90E-01	5.0E-03	7.2E-01	1.7E+02	2.1E-05	1.2E+01	3.0E-04
M-07	VOC	Toluene	108-88-3	T	D	8	2	3.50E-04	1.80E-03	1.80E-04	1.50E-01	1.0E+00	1.8E-03	5.3E+02	3.4E-06	5.3E+02	3.4E-06
M-07	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	1.40E-01	7.0E-02		3.0E+02		1.9E+01	
M-07	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8				1.50E-04	1.20E-01	2.0E-01		1.3E+03		1.3E+03	
M-07	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	2.50E-01	5.0E-03		1.1E+02		2.1E+01	
M-07	VOC	Trichloroethene	79-01-6	T	C-B2	8				1.40E-04	1.20E-01	5.0E-03		9.7E+01		2.2E+01	
M-07	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	2.30E-01	2.6E+00		1.1E+03		1.1E+03	
M-07	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	2.70E-01	1.7E+02		1.7E+02		1.7E+02	
M-07	VOC	Vinyl Chloride	75-01-4	T	A	8				1.50E-04	1.20E-01	2.0E-03		1.3E+01		1.0E+00	
M-07	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	1.20E-03	1.20E-03	3.30E-04	2.70E-01	1.0E+01	1.2E-04	1.9E+02	6.3E-06	1.9E+02	6.3E-06
M-07	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
M-07	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
M-07	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
M-07	SVOC	Anthracene	120-12-7	T	D	8				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
M-07	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
M-07	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02						
M-07	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
M-07	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
M-07	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
M-07	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-07	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
M-07	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02						
M-07	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03						
M-07	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
M-07	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
M-07	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03						
M-07	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
M-07	SVOC	Caprolactam	105-60-2	T		8	1	1.20E-01	1.20E-01	2.50E-03	1.00E-02	5.8E+00	2.1E-02			3.9E+05	3.1E-07
M-07	SVOC	Carbazole	86-74-8	T	B2	8				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
M-07	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
M-07	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02						
M-07	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
M-07	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
M-07	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03						
M-07	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-07	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
M-07	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03						
M-07	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
M-07	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
M-07	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
M-07	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03	3.7E-01				5.2E+02	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-07	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
M-07	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
M-07	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
M-07	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02						
M-07	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
M-07	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03						
M-07	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
M-07	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
M-07	SVOC	Fluorene	86-73-7	T	D	8				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
M-07	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
M-07	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
M-07	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	8				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
M-07	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
M-07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
M-07	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
M-07	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
M-07	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
M-07	SVOC	Naphthalene	91-20-3	T	C	8				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
M-07	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02						
M-07	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02						
M-07	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02						
M-07	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
M-07	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
M-07	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02						
M-07	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
M-07	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
M-07	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03						
M-07	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
M-07	SVOC	Phenanthrene	85-01-8	T	D	8				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
M-07	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
M-07	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
M-07	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
M-07	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
M-07	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-07	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	8.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-07	INORG	Antimony	7440-36-0	D		8				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
M-07	INORG	Antimony	7440-36-0	T		8	1	2.70E-03	2.70E-03	2.20E-03	2.50E-02	6.0E-03	4.5E-01			6.8E+01	4.0E-05
M-07	INORG	Arsenic	7440-38-2	D	A	8	2	4.20E-03	6.10E-03	3.90E-03	1.00E-02	5.0E-02	1.2E-01			4.3E+00	1.4E-03
M-07	INORG	Arsenic	7440-38-2	T	A	8	4	4.00E-03	1.46E-02	3.90E-03	1.00E-02	5.0E-02	2.9E-01			4.3E+00	3.4E-03
M-07	INORG	Barium	7440-39-3	D	D	8	8	1.47E-01	3.15E-01			2.0E+00	1.6E-01			1.4E+04	2.3E-05
M-07	INORG	Barium	7440-39-3	T	D	8	8	1.47E-01	3.86E-01			2.0E+00	1.9E-01			1.4E+04	2.8E-05
M-07	INORG	Beryllium	7440-41-7	D	B1	8				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-07	INORG	Beryllium	7440-41-7	T	B1	8	1	7.20E-04	7.20E-04	5.40E-04	1.00E-03	4.0E-03	1.8E-01			2.9E+02	2.5E-06
M-07	INORG	Cadmium	7440-43-9	D	B1	8	5	4.00E-04	6.80E-04	2.80E-04	2.80E-04	5.0E-03	1.4E-01			1.9E+02	3.6E-06
M-07	INORG	Cadmium	7440-43-9	T	B1	8	7	3.50E-04	1.40E-03	2.80E-04	2.80E-04	5.0E-03	2.8E-01			1.9E+02	7.4E-06
M-07	INORG	Chromium (total)	7440-47-3	D		8	1	1.40E-03	1.40E-03	1.40E-03	1.00E-02	1.0E-01	1.4E-02			4.6E+02	3.0E-06
M-07	INORG	Chromium (total)	7440-47-3	T		8	3	8.50E-03	1.39E-01	1.40E-03	1.00E-02	1.0E-01	1.4E+00			4.6E+02	3.0E-04
M-07	INORG	Cobalt	7440-48-4	D	B1	8	4	3.70E-03	1.36E-02	1.30E-03	2.00E-02	4.0E-02	3.4E-01			2.4E+03	5.7E-06
M-07	INORG	Cobalt	7440-48-4	T	B1	8	5	1.40E-03	2.28E-02	1.30E-03	2.00E-02	4.0E-02	5.7E-01			2.4E+03	9.5E-06
M-07	INORG	Copper	7440-50-8	D	D	8	1	5.60E-03	5.60E-03	4.20E-03	5.00E-03	1.4E+00	4.0E-03			7.4E+03	7.6E-07
M-07	INORG	Copper	7440-50-8	T	D	8	3	1.20E-02	5.11E-02	4.20E-03	5.00E-03	1.4E+00	3.7E-02			7.4E+03	6.9E-06
M-07	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	3.00E-03	4.0E-03					
M-07	INORG	Lead	7439-92-1	T	B2	8	2	1.22E-02	2.38E-02	2.50E-03	3.00E-03	4.0E-03	6.0E+00				
M-07	INORG	Manganese	7439-96-5	D	D	8	8	8.62E-02	1.72E+00			8.6E-01	2.0E+00			9.1E+03	1.9E-04
M-07	INORG	Manganese	7439-96-5	T	D	8	8	8.47E-02	1.53E+00			8.6E-01	1.8E+00			9.1E+03	1.7E-04
M-07	INORG	Mercury	7439-97-6	D	D	8	1	9.40E-05	9.40E-05	6.90E-05	2.00E-04	2.0E-03	4.7E-02	5.6E-02	1.7E-03	5.6E-02	1.7E-03
M-07	INORG	Mercury	7439-97-6	T	D	8	2	6.90E-05	3.40E-04	6.90E-05	2.00E-04	2.0E-03	1.7E-01	5.6E-02	6.1E-03	5.6E-02	6.1E-03
M-07	INORG	Nickel	7440-02-0	D	A	8	7	4.00E-03	7.04E-02	2.20E-03	2.20E-03	1.0E-01	7.0E-01			7.4E+04	9.5E-07
M-07	INORG	Nickel	7440-02-0	T	A	8	7	3.40E-03	9.41E-02	2.20E-03	2.20E-03	1.0E-01	9.4E-01			7.4E+04	1.3E-06
M-07	INORG	Selenium	7782-49-2	D	D	8				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-07	INORG	Selenium	7782-49-2	T	D	8				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-07	INORG	Silver	7440-22-4	D	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-07	INORG	Silver	7440-22-4	T	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-07	INORG	Thallium	7440-28-0	D		8	8	2.10E-05	1.43E-02			2.0E-03	7.2E+00			1.3E+01	1.1E-03
M-07	INORG	Thallium	7440-28-0	T		8	6	6.40E-05	1.56E-02	1.80E-05	5.00E-03	2.0E-03	7.8E+00			1.3E+01	1.2E-03
M-07	INORG	Vanadium	7440-62-2	D		8				8.20E-04	1.00E-02	4.5E-03				9.7E+02	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-07	INORG	Vanadium	7440-62-2	T		8	3	1.17E-02	5.90E-02	8.20E-04	1.00E-02	4.5E-03	1.3E+01			9.7E+02	6.1E-05
M-07	INORG	Zinc	7440-66-6	D	D	8	5	1.57E-02	1.46E-01	1.20E-02	2.00E-02	2.4E+00	6.1E-02			1.1E+05	1.3E-06
M-07	INORG	Zinc	7440-66-6	T	D	8	4	3.46E-02	1.46E-01	1.20E-02	2.00E-02	2.4E+00	6.1E-02			1.1E+05	1.3E-06
M-09	VOC	Acetone	67-64-1	T	ID	2	1	2.00E-02	2.00E-02	1.10E-03	1.10E-03	7.3E-01	2.7E-02	1.0E+06	2.0E-08	3.1E+04	6.5E-07
M-09	VOC	Benzene	71-43-2	T	A	2				1.60E-04	3.70E-04	5.0E-03		3.5E+01		1.1E+01	
M-09	VOC	Bromodichloromethane	75-27-4	T	B2	2	1	3.90E-04	3.90E-04	3.20E-04	3.20E-04	1.0E-01	3.9E-03	3.7E+01	1.1E-05	1.4E+01	2.8E-05
M-09	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	3.70E-04	1.0E-01		3.1E+03		1.4E+02	
M-09	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	3.00E-04	1.0E-02		9.0E+00		7.0E+01	
M-09	VOC	2-Butanone	78-93-3	T	ID	2	1	1.90E-03	1.90E-03	5.90E-04	5.90E-04	1.3E+01	1.5E-04	2.4E+05	7.9E-09	2.4E+05	7.9E-09
M-09	VOC	Carbon Disulfide	75-15-0	T		2	2	2.50E-04	4.10E-04			8.0E-01	5.1E-04	5.5E+02	7.5E-07	1.2E+03	3.4E-07
M-09	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	3.70E-04	5.0E-03		2.4E+00		4.6E+00	
M-09	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	3.80E-04	1.0E-01		4.7E+02		8.6E+01	
M-09	VOC	Chloroethane	75-00-3	T		2				2.60E-04	2.90E-04	4.3E-01		5.7E+03		4.4E+02	
M-09	VOC	Chloroform	67-66-3	T	B2	2	1	2.40E-03	2.40E-03	3.50E-04	3.50E-04	1.0E-01	2.4E-02	1.8E+02	1.3E-05	1.5E+02	1.6E-05
M-09	VOC	Chloromethane	74-87-3	T	D	2				1.30E-04	4.90E-04	2.6E-01		4.5E+01		4.9E+02	
M-09	VOC	Cumene	98-82-8	T	D	2				1.20E-04	3.90E-04	8.0E-01		5.6E+01		5.6E+01	
M-09	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	3.30E-04						
M-09	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	8.20E-04	2.0E-04		1.2E+00		3.9E-01	
M-09	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	3.70E-04	1.0E-01		1.1E+02		1.8E+01	
M-09	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	3.40E-04	1.0E-03		1.5E+01		2.5E-02	
M-09	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	3.80E-04	6.0E-01		1.6E+02		1.6E+02	
M-09	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	3.80E-04	6.6E-03				2.0E+00	
M-09	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	3.80E-04	7.5E-02		7.4E+01		6.4E+00	
M-09	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	4.90E-04	1.7E+00				3.0E+02	
M-09	VOC	1,1-Dichloroethane	75-34-3	T	C	2				1.60E-04	3.00E-04	8.8E-01		2.3E+03		2.4E+03	
M-09	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	2.80E-04	5.0E-03		5.9E+01		1.9E+01	
M-09	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	3.10E-04	7.0E-03		1.3E+00		1.1E+01	
M-09	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	3.50E-04	7.0E-02		2.1E+02		2.0E+02	
M-09	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	3.30E-04	1.0E-01		2.0E+02		2.2E+02	
M-09	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	4.10E-04	5.0E-03		3.6E+01		1.6E+01	
M-09	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	1				3.50E-04	3.50E-04	8.5E-03		2.6E+01		5.5E+00	
M-09	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	4.10E-04	7.0E-01		1.7E+02		1.7E+02	
M-09	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	5.80E-04	1.0E+00		8.7E+03		5.2E+03	
M-09	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	5.40E-04						
M-09	VOC	Methyl tert-butyl ether	1634-04-4	T		2	1	8.10E-04	8.10E-04	2.70E-04	2.70E-04	2.4E-01	3.4E-03	4.7E+04	1.7E-08	6.1E+02	1.3E-06
M-09	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	1				2.60E-04	2.60E-04	1.8E+00		2.0E+04		1.3E+04	
M-09	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	4.20E-04						
M-09	VOC	Methylene Chloride	75-09-2	T	B2	1				3.40E-04	3.40E-04	5.0E-03		1.4E+03		2.2E+02	
M-09	VOC	Styrene	100-42-5	T		2				1.50E-04	3.50E-04	1.0E-01		3.1E+02		9.7E+00	
M-09	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	3.60E-04	8.5E-03		7.7E+01		4.7E+00	
M-09	VOC	Tetrachloroethene	127-18-4	T	C-B2	1				4.20E-04	4.20E-04	5.0E-03		1.7E+02		1.2E+01	
M-09	VOC	Toluene	108-88-3	T	D	2				1.80E-04	3.90E-04	1.0E+00		5.3E+02		5.3E+02	
M-09	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	4.00E-04	7.0E-02		3.0E+02		1.9E+01	
M-09	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				1.50E-04	3.90E-04	2.0E-01		1.3E+03		1.3E+03	
M-09	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	3.60E-04	5.0E-03		1.1E+02		2.1E+01	
M-09	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	4.20E-04	5.0E-03		9.7E+01		2.2E+01	
M-09	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	5.40E-04	2.6E+00		1.1E+03		1.1E+03	
M-09	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
M-09	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
M-09	VOC	Xylenes (total)	1330-20-7	T	ID	2				3.30E-04	4.40E-04	1.0E+01		1.9E+02		1.9E+02	
M-09	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	8.00E-04	1.3E+00		4.2E+00		4.2E+00	
M-09	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	7.10E-04	5.2E-02		3.9E+00		3.9E+00	
M-09	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	2.60E-03	1.5E+00		6.1E+03		6.1E+03	
M-09	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	
M-09	SVOC	Atrazine	1912-24-9	T		2				2.50E-03	2.50E-03	3.0E-03				5.4E+00	
M-09	SVOC	Benzaldehyde	100-52-7	T		2				2.80E-03	2.80E-03						
M-09	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				7.00E-04	7.00E-04	2.1E-03				9.4E-03	
M-09	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				7.30E-04	7.30E-04	5.0E-03				2.0E-03	
M-09	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				9.40E-04	9.40E-04	2.0E-03				2.0E-03	
M-09	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				8.50E-04	8.50E-04	5.0E-03				5.0E-03	
M-09	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				8.40E-04	8.40E-04	5.0E-03				5.0E-03	
M-09	SVOC	Biphenyl	92-52-4	T	D	2				2.60E-03	2.60E-03						
M-09	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				8.70E-04	8.70E-04						
M-09	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				9.70E-04	9.70E-04	2.0E-03		2.1E+02		5.7E+00	
M-09	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.70E-03	2.70E-03	6.0E-03				3.2E-01	
M-09	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				8.80E-04	8.80E-04						

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-09	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				8.80E-04	8.80E-04	1.2E+00				2.7E+00	
M-09	SVOC	Caprolactam	105-60-2	T		2				2.50E-03	2.50E-03	5.8E+00				3.9E+05	
M-09	SVOC	Carbazole	86-74-8	T	B2	2				8.20E-04	8.20E-04	8.5E-02				7.4E+00	
M-09	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				9.90E-04	9.90E-04	1.5E-01				7.9E+01	
M-09	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	6.10E-04						
M-09	SVOC	2-Chloronaphthalene	91-58-7	T		2				8.50E-04	8.50E-04	1.8E+00				6.7E+00	
M-09	SVOC	2-Chlorophenol	95-57-8	T		2				1.00E-03	1.00E-03	4.5E-02				9.4E+01	
M-09	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				7.90E-04	7.90E-04						
M-09	SVOC	Chrysene	218-01-9	T	B2	2				7.50E-04	7.50E-04	5.0E-03				5.0E-03	
M-09	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				7.90E-04	7.90E-04	2.0E-03				2.0E-03	
M-09	SVOC	Dibenzofuran	132-64-9	T	D	2				1.10E-03	1.10E-03						
M-09	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2				9.30E-04	9.30E-04	1.1E-03				1.8E-01	
M-09	SVOC	2,4-Dichlorophenol	120-83-2	T		2				8.50E-04	8.50E-04	7.3E-02				4.8E+01	
M-09	SVOC	Diethylphthalate	84-66-2	T	D	2				6.50E-04	6.50E-04	5.5E+00				1.1E+03	
M-09	SVOC	2,4-Dimethylphenol	105-67-9	T		2				8.50E-04	8.50E-04	3.7E-01				5.2E+02	
M-09	SVOC	Dimethylphthalate	131-11-3	T	D	2				7.60E-04	7.60E-04	7.3E+01				4.2E+03	
M-09	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				6.70E-04	6.70E-04	8.8E-01				1.1E+01	
M-09	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				1.30E-03	1.30E-03	2.0E-02				9.5E+00	
M-09	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.00E-03	3.00E-03						
M-09	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				7.90E-04	7.90E-04	7.7E-03				8.6E+00	
M-09	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				5.70E-04	5.70E-04						
M-09	SVOC	Di-n-octylphthalate	117-84-0	T		2				1.10E-03	1.10E-03	1.3E-01				4.0E-01	
M-09	SVOC	Fluoranthene	206-44-0	T	D	2				8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
M-09	SVOC	Fluorene	86-73-7	T	D	2				1.00E-03	1.00E-03	8.8E-01				2.0E+00	
M-09	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	7.40E-04	1.0E-03		3.0E+00		4.6E-03	
M-09	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	7.30E-04	1.5E-02		3.2E+00		4.0E-01	
M-09	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1				1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
M-09	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	7.40E-04	7.3E-03		5.0E+01		1.9E+00	
M-09	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	6.30E-04	2.0E-03				2.0E-03	
M-09	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	6.30E-04	7.7E-01				9.9E+02	
M-09	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	6.40E-04	2.6E-01				2.5E+01	
M-09	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	1.30E-03	3.7E-01				8.1E+02	
M-09	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	7.50E-04	5.2E-01		3.1E+01		3.1E+01	
M-09	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	7.00E-04						
M-09	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	7.10E-04						
M-09	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	1.30E-03						
M-09	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	8.10E-04	3.4E-03		5.5E+02		1.1E+01	
M-09	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	2.10E-03	2.0E-02				7.9E+01	
M-09	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	1.90E-03						
M-09	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	1.40E-03	2.7E-01				3.5E+01	
M-09	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	6.70E-04	5.0E-03				3.6E-01	
M-09	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	7.80E-04						
M-09	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	2.40E-03	1.0E-03				2.0E-01	
M-09	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	8.20E-04	5.2E-02		1.0E+00		1.0E+00	
M-09	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	2.60E-03	4.4E+00				2.9E+04	
M-09	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
M-09	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	1.20E-03	7.3E-01				1.7E+02	
M-09	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	1.70E-03	1.2E-01				1.0E+01	
M-09	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
M-09	INORG	Antimony	7440-36-0	D		1				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
M-09	INORG	Antimony	7440-36-0	T		2	1	3.30E-03	3.30E-03	3.40E-03	3.40E-03	6.0E-03	5.5E-01			6.8E+01	4.9E-05
M-09	INORG	Arsenic	7440-38-2	D	A	1	1	5.70E-03	5.70E-03			5.0E-02	1.1E-01			4.3E+00	1.3E-03
M-09	INORG	Arsenic	7440-38-2	T	A	2	1	4.20E-03	4.20E-03	2.10E-03	2.10E-03	5.0E-02	8.4E-02			4.3E+00	9.8E-04
M-09	INORG	Barium	7440-39-3	D	D	1	1	5.48E-01	5.48E-01			2.0E+00	2.7E-01			1.4E+04	3.9E-05
M-09	INORG	Barium	7440-39-3	T	D	2	2	5.04E-01	5.69E-01			2.0E+00	2.8E-01			1.4E+04	4.1E-05
M-09	INORG	Beryllium	7440-41-7	D	B1	1				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-09	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	6.00E-04	4.0E-03				2.9E+02	
M-09	INORG	Cadmium	7440-43-9	D	B1	1				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
M-09	INORG	Cadmium	7440-43-9	T	B1	2	1	2.90E-04	2.90E-04	2.80E-04	2.80E-04	5.0E-03	5.8E-02			1.9E+02	1.5E-06
M-09	INORG	Chromium (total)	7440-47-3	D		1	1	2.80E-03	2.80E-03			1.0E-01	2.8E-02			4.6E+02	6.1E-06
M-09	INORG	Chromium (total)	7440-47-3	T		2	1	3.00E-03	3.00E-03	1.50E-03	1.50E-03	1.0E-01	3.0E-02			4.6E+02	6.5E-06
M-09	INORG	Cobalt	7440-48-4	D	B1	1	1	2.20E-03	2.20E-03			4.0E-02	5.5E-02			2.4E+03	9.2E-07
M-09	INORG	Cobalt	7440-48-4	T	B1	2	2	2.20E-03	2.40E-03			4.0E-02	6.0E-02			2.4E+03	1.0E-06
M-09	INORG	Copper	7440-50-8	D	D	1				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
M-09	INORG	Copper	7440-50-8	T	D	2				1.70E-03	4.20E-03	1.4E+00				7.4E+03	
M-09	INORG	Lead	7439-92-1	D	B2	1				2.50E-03	2.50E-03	4.0E-03					

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria	
M-09	INORG	Lead	7439-92-1	T	B2	2			1.60E-03	2.50E-03	4.0E-03						
M-09	INORG	Manganese	7439-96-5	D	D	1			9.00E-04	9.00E-04	8.6E-01				9.1E+03		
M-09	INORG	Manganese	7439-96-5	T	D	2	1	4.30E-03	4.30E-03	9.00E-04	9.00E-04	8.6E-01	5.0E-03		9.1E+03	4.7E-07	
M-09	INORG	Mercury	7439-97-6	D	D	1			6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02		
M-09	INORG	Mercury	7439-97-6	T	D	2			6.90E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02		
M-09	INORG	Nickel	7440-02-0	D	A	1	1	4.10E-03	4.10E-03		1.0E-01	4.1E-02			7.4E+04	5.5E-08	
M-09	INORG	Nickel	7440-02-0	T	A	2	2	3.50E-03	7.30E-03		1.0E-01	7.3E-02			7.4E+04	9.9E-08	
M-09	INORG	Selenium	7782-49-2	D	D	1			4.50E-03	4.50E-03	5.0E-02				9.7E+02		
M-09	INORG	Selenium	7782-49-2	T	D	2			4.50E-03	4.70E-03	5.0E-02				9.7E+02		
M-09	INORG	Silver	7440-22-4	D	D	1			1.50E-03	1.50E-03	3.4E-02				1.5E+03		
M-09	INORG	Silver	7440-22-4	T	D	2			9.80E-04	1.50E-03	3.4E-02				1.5E+03		
M-09	INORG	Thallium	7440-28-0	D		1	1	5.10E-05	5.10E-05		2.0E-03	2.6E-02			1.3E+01	3.9E-06	
M-09	INORG	Thallium	7440-28-0	T		2	1	7.20E-05	7.20E-05	3.30E-05	3.30E-05	2.0E-03	3.6E-02		1.3E+01	5.5E-06	
M-09	INORG	Vanadium	7440-62-2	D		1	1	3.70E-03	3.70E-03		4.5E-03	8.2E-01			9.7E+02	3.8E-06	
M-09	INORG	Vanadium	7440-62-2	T		2	2	1.00E-03	4.10E-03		4.5E-03	9.1E-01			9.7E+02	4.2E-06	
M-09	INORG	Zinc	7440-66-6	D	D	1	1	1.39E-02	1.39E-02		2.4E+00	5.8E-03			1.1E+05	1.3E-07	
M-09	INORG	Zinc	7440-66-6	T	D	2	1	8.23E-02	8.23E-02	1.20E-02	1.20E-02	3.4E-02			1.1E+05	7.5E-07	
M-16	VOC	Acetone	67-64-1	T	ID	4	1	6.95E-03	6.95E-03	5.10E-04	1.00E-02	7.3E-01	1.0E+06	7.0E-09	3.1E+04	2.2E-07	
M-16	VOC	Benzene	71-43-2	T	A	4			1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01		
M-16	VOC	Bromodichloromethane	75-27-4	T	B2	4	1	2.15E-04	2.15E-04	1.70E-04	1.00E-03	1.0E-01	2.2E-03	3.7E+01	1.4E+01	1.5E-05	
M-16	VOC	Bromoform	75-25-2	T	B2	4			1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02		
M-16	VOC	Bromomethane	74-83-9	T	D	3			2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01		
M-16	VOC	2-Butanone	78-93-3	T	ID	4			4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05		
M-16	VOC	Carbon Disulfide	75-15-0	T		4			2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03		
M-16	VOC	Carbon Tetrachloride	56-23-5	T	B2	4			1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00		
M-16	VOC	Chlorobenzene	108-90-7	T	D	4			1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01		
M-16	VOC	Chloroethane	75-00-3	T		4			2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02		
M-16	VOC	Chloroform	67-66-3	T	B2	4	2	2.00E-04	6.55E-04	1.40E-04	3.50E-04	1.0E-01	6.6E-03	1.8E+02	1.5E+02	4.4E-06	
M-16	VOC	Chloromethane	74-87-3	T	D	4			1.30E-04	1.00E-03	2.6E-01		4.5E+01		4.9E+02		
M-16	VOC	Cumene	98-82-8	T	D	4			1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01		
M-16	VOC	Cyclohexane	110-82-7	T	ID	4			1.30E-04	1.00E-03							
M-16	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4			6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01		
M-16	VOC	Dibromochloromethane	124-48-1	T	C	4			2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01		
M-16	VOC	1,2-Dibromoethane	106-93-4	T	B2	4			2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02		
M-16	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4			1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02		
M-16	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4			1.50E-04	1.00E-03	6.6E-03				2.0E+00		
M-16	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4			1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00		
M-16	VOC	Dichlorodifluoromethane	75-71-8	T		4			2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02		
M-16	VOC	1,1-Dichloroethane	75-34-3	T	C	4			1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03		
M-16	VOC	1,2-Dichloroethane	107-06-2	T	B2	4			2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01		
M-16	VOC	1,1-Dichloroethene	75-35-4	T	C	4			2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01		
M-16	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4			2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02		
M-16	VOC	trans-1,2-Dichloroethene	156-60-5	T		4			1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02		
M-16	VOC	1,2-Dichloropropane	78-87-5	T	B2	4			1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01		
M-16	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4			2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00		
M-16	VOC	Ethyl Benzene	100-41-4	T	D	4			1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02		
M-16	VOC	2-Hexanone	591-78-6	T		4			4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03		
M-16	VOC	Methyl Acetate	79-20-9	T		4			4.10E-04	1.00E-02							
M-16	VOC	Methyl tert-butyl ether	1634-04-4	T		4	1	7.15E-03	7.15E-03	1.30E-04	5.00E-03	2.4E-01	3.0E-02	4.7E+04	1.5E-07	6.1E+02	1.2E-05
M-16	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	3			2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04		
M-16	VOC	Methylcyclohexane	108-87-2	T		4			1.50E-04	1.00E-03							
M-16	VOC	Methylene Chloride	75-09-2	T	B2	4			2.90E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02		
M-16	VOC	Styrene	100-42-5	T		4			1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00		
M-16	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4			2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00		
M-16	VOC	Tetrachloroethene	127-18-4	T	C-B2	4			2.30E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01		
M-16	VOC	Toluene	108-88-3	T	D	4	1	1.90E-04	1.90E-04	1.80E-04	1.00E-03	1.0E+00	1.9E-04	5.3E+02	3.6E-07	5.3E+02	3.6E-07
M-16	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4			1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01		
M-16	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4	2	2.90E-03	3.00E-03	1.50E-04	1.00E-03	2.0E-01	1.5E-02	2.3E-06	1.3E+03	2.3E-06	
M-16	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4			3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01		
M-16	VOC	Trichloroethene	79-01-6	T	C-B2	4			1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01		
M-16	VOC	Trichlorofluoromethane	75-69-4	T		4			2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03		
M-16	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4			3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02		
M-16	VOC	Vinyl Chloride	75-01-4	T	A	5	3	1.40E-02	2.30E-02	1.50E-04	3.60E-04	2.0E-03	1.2E+01	1.3E+01	1.8E-03	1.0E+00	2.3E-02
M-16	VOC	Xylenes (total)	1330-20-7	T	ID	4			3.30E-04	1.00E-03	1.0E+01		1.9E+02		1.9E+02		
M-16	SVOC	Acenaphthene	83-32-9	T		4			8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00		
M-16	SVOC	Acenaphthylene	208-96-8	T	D	4			7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00		

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-16	SVOC	Acetophenone	98-86-2	T	D	4			2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
M-16	SVOC	Anthracene	120-12-7	T	D	4			6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
M-16	SVOC	Atrazine	1912-24-9	T		4			2.50E-03	5.00E-03	3.0E-03				5.4E+00	
M-16	SVOC	Benzaldehyde	100-52-7	T		4			2.80E-03	1.00E-02						
M-16	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4			7.00E-04	5.00E-03	2.1E-03				9.4E-03	
M-16	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4			7.30E-04	5.00E-03	5.0E-03				2.0E-03	
M-16	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4			9.40E-04	5.00E-03	2.0E-03				2.0E-03	
M-16	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4			8.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-16	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4			8.40E-04	5.00E-03	5.0E-03				5.0E-03	
M-16	SVOC	Biphenyl	92-52-4	T	D	4			2.60E-03	1.00E-02						
M-16	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4			8.70E-04	5.00E-03						
M-16	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4			9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
M-16	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4	3	2.03E-03	5.50E-03	2.70E-03	2.70E-03	6.0E-03	9.2E-01		3.2E-01	1.7E-02
M-16	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4			8.80E-04	5.00E-03						
M-16	SVOC	Butylbenzylphthalate	85-68-7	T	C	4			8.80E-04	5.00E-03	1.2E+00				2.7E+00	
M-16	SVOC	Caprolactam	105-60-2	T		4			2.50E-03	1.00E-02	5.8E+00				3.9E+05	
M-16	SVOC	Carbazole	86-74-8	T	B2	4			8.20E-04	1.00E-02	8.5E-02				7.4E+00	
M-16	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4			9.90E-04	5.00E-03	1.5E-01				7.9E+01	
M-16	SVOC	4-Chloroaniline	106-47-8	T		4			6.10E-04	1.00E-02						
M-16	SVOC	2-Chloronaphthalene	91-58-7	T		4			8.50E-04	5.00E-03	1.8E+00				6.7E+00	
M-16	SVOC	2-Chlorophenol	95-57-8	T		4			1.00E-03	5.00E-03	4.5E-02				9.4E+01	
M-16	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4			7.90E-04	5.00E-03						
M-16	SVOC	Chrysene	218-01-9	T	B2	4			7.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-16	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4			7.90E-04	5.00E-03	2.0E-03				2.0E-03	
M-16	SVOC	Dibenzofuran	132-64-9	T	D	4			1.10E-03	5.00E-03						
M-16	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4			9.30E-04	2.00E-02	1.1E-03				1.8E-01	
M-16	SVOC	2,4-Dichlorophenol	120-83-2	T		4			8.50E-04	1.00E-02	7.3E-02				4.8E+01	
M-16	SVOC	Diethylphthalate	84-66-2	T	D	4			6.50E-04	5.00E-03	5.5E+00				1.1E+03	
M-16	SVOC	2,4-Dimethylphenol	105-67-9	T		4			8.50E-04	5.00E-03	3.7E-01				5.2E+02	
M-16	SVOC	Dimethylphthalate	131-11-3	T	D	4			7.60E-04	5.00E-03	7.3E+01				4.2E+03	
M-16	SVOC	Di-n-butylphthalate	84-74-2	T	D	4			6.70E-04	5.00E-03	8.8E-01				1.1E+01	
M-16	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4			1.30E-03	2.00E-02	2.0E-02				9.5E+00	
M-16	SVOC	2,4-Dinitrophenol	51-28-5	T		4			3.00E-03	2.00E-02						
M-16	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4			7.90E-04	5.00E-03	7.7E-03				8.6E+00	
M-16	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4			5.70E-04	5.00E-03						
M-16	SVOC	Di-n-octylphthalate	117-84-0	T		4			1.10E-03	5.00E-03	1.3E-01				4.0E-01	
M-16	SVOC	Fluoranthene	206-44-0	T	D	4			8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
M-16	SVOC	Fluorene	86-73-7	T	D	4			1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
M-16	SVOC	Hexachlorobenzene	118-74-1	T	B2	4			7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
M-16	SVOC	Hexachlorobutadiene	87-68-3	T	C	4			7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
M-16	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4			1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
M-16	SVOC	Hexachloroethane	67-72-1	T	C	4			7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
M-16	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4			6.30E-04	5.00E-03	2.0E-03				2.0E-03	
M-16	SVOC	Isophorone	78-59-1	T	C	4			6.30E-04	5.00E-03	7.7E-01				9.9E+02	
M-16	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4			6.40E-04	5.00E-03	2.6E-01				2.5E+01	
M-16	SVOC	Methylphenol (total)	1319-77-3	T		4			1.30E-03	5.00E-03	3.7E-01				8.1E+02	
M-16	SVOC	Naphthalene	91-20-3	T	C	4			7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
M-16	SVOC	2-Nitroaniline	88-74-4	T		4			7.00E-04	2.00E-02						
M-16	SVOC	3-Nitroaniline	99-09-2	T	C	4			7.10E-04	2.00E-02						
M-16	SVOC	4-Nitroaniline	100-01-6	T	C	4			1.30E-03	2.00E-02						
M-16	SVOC	Nitrobenzene	98-95-3	T	D	4			8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
M-16	SVOC	2-Nitrophenol	88-75-5	T		4			2.10E-03	5.00E-03	2.0E-02				7.9E+01	
M-16	SVOC	4-Nitrophenol	100-02-7	T		4			1.90E-03	2.00E-02						
M-16	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4			1.40E-03	5.00E-03	2.7E-01				3.5E+01	
M-16	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4			6.70E-04	5.00E-03	5.0E-03				3.6E-01	
M-16	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4			7.80E-04	5.00E-03						
M-16	SVOC	Pentachlorophenol	87-86-5	T	B2	4			2.40E-03	5.00E-03	1.0E-03				2.0E-01	
M-16	SVOC	Phenanthrene	85-01-8	T	D	4			8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
M-16	SVOC	Phenol	108-95-2	T	ID	4			2.60E-03	5.00E-03	4.4E+00				2.9E+04	
M-16	SVOC	Pyrene	129-00-0	T	D	4			1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
M-16	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4			1.20E-03	5.00E-03	7.3E-01				1.7E+02	
M-16	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4			1.70E-03	5.00E-03	1.2E-01				1.0E+01	
M-16	P/PCB	PCBs (total)	1336-36-3	D	B2	1			4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-16	P/PCB	PCBs (total)	1336-36-3	T	B2	4			8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-16	INORG	Antimony	7440-36-0	D		3			2.20E-03	2.50E-02	6.0E-03				6.8E+01	
M-16	INORG	Antimony	7440-36-0	T		4			2.20E-03	2.50E-02	6.0E-03				6.8E+01	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-16	INORG	Arsenic	7440-38-2	D	A	3	8.30E-03	8.30E-03	3.90E-03	1.00E-02	5.0E-02	1.7E-01			4.3E+00	1.9E-03
M-16	INORG	Arsenic	7440-38-2	T	A	4	8.80E-03	8.80E-03	2.10E-03	1.00E-02	5.0E-02	1.8E-01			4.3E+00	2.0E-03
M-16	INORG	Barium	7440-39-3	D	D	3	4.58E-02	2.12E-01			2.0E+00	1.1E-01			1.4E+04	1.5E-05
M-16	INORG	Barium	7440-39-3	T	D	4	3.60E-02	2.15E-01			2.0E+00	1.1E-01			1.4E+04	1.5E-05
M-16	INORG	Beryllium	7440-41-7	D	B1	3			5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-16	INORG	Beryllium	7440-41-7	T	B1	4			5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-16	INORG	Cadmium	7440-43-9	D	B1	3			2.80E-04	5.00E-03	5.0E-03				1.9E+02	
M-16	INORG	Cadmium	7440-43-9	T	B1	4			2.80E-04	5.00E-03	5.0E-03				1.9E+02	
M-16	INORG	Chromium (total)	7440-47-3	D		3			1.40E-03	1.00E-02	1.0E-01				4.6E+02	
M-16	INORG	Chromium (total)	7440-47-3	T		4	1.40E-03	1.60E-03	1.40E-03	1.00E-02	1.0E-01	1.6E-02			4.6E+02	3.5E-06
M-16	INORG	Cobalt	7440-48-4	D	B1	3	2.60E-03	2.60E-03	1.30E-03	2.00E-02	4.0E-02	6.5E-02			2.4E+03	1.1E-06
M-16	INORG	Cobalt	7440-48-4	T	B1	4	9.75E-04	2.65E-03	7.40E-04	2.00E-02	4.0E-02	6.6E-02			2.4E+03	1.1E-06
M-16	INORG	Copper	7440-50-8	D	D	3			4.20E-03	5.00E-03	1.4E+00				7.4E+03	
M-16	INORG	Copper	7440-50-8	T	D	4			1.70E-03	5.00E-03	1.4E+00				7.4E+03	
M-16	INORG	Lead	7439-92-1	D	B2	3			2.50E-03	3.00E-03	4.0E-03					
M-16	INORG	Lead	7439-92-1	T	B2	4			1.60E-03	3.00E-03	4.0E-03					
M-16	INORG	Manganese	7439-96-5	D	D	3	9.66E-02	1.05E+00			8.6E-01	1.2E+00			9.1E+03	1.2E-04
M-16	INORG	Manganese	7439-96-5	T	D	4	9.65E-02	1.09E+00	6.80E-04	6.80E-04	8.6E-01	1.3E+00			9.1E+03	1.2E-04
M-16	INORG	Mercury	7439-97-6	D	D	3			6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
M-16	INORG	Mercury	7439-97-6	T	D	4			6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
M-16	INORG	Nickel	7440-02-0	D	A	3	3.10E-03	3.10E-03	2.20E-03	2.00E-02	1.0E-01	3.1E-02			7.4E+04	4.2E-08
M-16	INORG	Nickel	7440-02-0	T	A	4	4.70E-03	4.70E-03	2.20E-03	2.00E-02	1.0E-01	4.7E-02			7.4E+04	6.4E-08
M-16	INORG	Selenium	7782-49-2	D	D	3			4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-16	INORG	Selenium	7782-49-2	T	D	4			4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-16	INORG	Silver	7440-22-4	D	D	3			1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-16	INORG	Silver	7440-22-4	T	D	4			9.80E-04	5.00E-03	3.4E-02				1.5E+03	
M-16	INORG	Thallium	7440-28-0	D		3			1.80E-05	1.00E-02	2.0E-03				1.3E+01	
M-16	INORG	Thallium	7440-28-0	T		4			1.80E-05	1.00E-02	2.0E-03				1.3E+01	
M-16	INORG	Vanadium	7440-62-2	D		3			8.20E-04	1.00E-02	4.5E-03				9.7E+02	
M-16	INORG	Vanadium	7440-62-2	T		4			6.70E-04	1.00E-02	4.5E-03				9.7E+02	
M-16	INORG	Zinc	7440-66-6	D	D	3	1.04E-02	1.56E-02	2.00E-02	2.00E-02	2.4E+00	6.5E-03			1.1E+05	1.4E-07
M-16	INORG	Zinc	7440-66-6	T	D	4	1.35E-02	1.35E-02	1.20E-02	2.00E-02	2.4E+00	5.6E-03			1.1E+05	1.2E-07
M-25	VOC	Acetone	67-64-1	T	ID	1			6.60E-04	6.60E-04	7.3E-01		1.0E+06		3.1E+04	
M-25	VOC	Benzene	71-43-2	T	A	1			2.00E-04	2.00E-04	5.0E-03		3.5E+01		1.1E+01	
M-25	VOC	Bromodichloromethane	75-27-4	T	B2	1			2.00E-04	2.00E-04	1.0E-01		3.7E+01		1.4E+01	
M-25	VOC	Bromoform	75-25-2	T	B2	1			3.20E-04	3.20E-04	1.0E-01		3.1E+03		1.4E+02	
M-25	VOC	Bromomethane	74-83-9	T	D	1			1.60E-04	1.60E-04	1.0E-02		9.0E+00		7.0E+01	
M-25	VOC	2-Butanone	78-93-3	T	ID	1			3.60E-04	3.60E-04	1.3E+01		2.4E+05		2.4E+05	
M-25	VOC	Carbon Disulfide	75-15-0	T		1	2.03E-04	2.03E-04			8.0E-01	2.5E-04	5.5E+02	3.7E-07	1.2E+03	1.7E-07
M-25	VOC	Carbon Tetrachloride	56-23-5	T	B2	1			1.80E-04	1.80E-04	5.0E-03		2.4E+00		4.6E+00	
M-25	VOC	Chlorobenzene	108-90-7	T	D	1			1.60E-04	1.60E-04	1.0E-01		4.7E+02		8.6E+01	
M-25	VOC	Chloroethane	75-00-3	T		1			2.20E-04	2.20E-04	4.3E-01		5.7E+03		4.4E+02	
M-25	VOC	Chloroform	67-66-3	T	B2	1			2.10E-04	2.10E-04	1.0E-01		1.8E+02		1.5E+02	
M-25	VOC	Chloromethane	74-87-3	T	D	1			2.60E-04	2.60E-04	2.6E-01		4.5E+01		4.9E+02	
M-25	VOC	Cumene	98-82-8	T	D	1			1.50E-04	1.50E-04	8.0E-01		5.6E+01		5.6E+01	
M-25	VOC	Cyclohexane	110-82-7	T	ID	1			3.40E-04	3.40E-04						
M-25	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	1			5.30E-04	5.30E-04	2.0E-04		1.2E+00		3.9E-01	
M-25	VOC	Dibromochloromethane	124-48-1	T	C	1			2.50E-04	2.50E-04	1.0E-01		1.1E+02		1.8E+01	
M-25	VOC	1,2-Dibromoethane	106-93-4	T	B2	1			2.20E-04	2.20E-04	1.0E-03		1.5E+01		2.5E-02	
M-25	VOC	1,2-Dichlorobenzene	95-50-1	T	D	1			1.50E-04	1.50E-04	6.0E-01		1.6E+02		1.6E+02	
M-25	VOC	1,3-Dichlorobenzene	541-73-1	T	D	1			2.00E-04	2.00E-04	6.6E-03				2.0E+00	
M-25	VOC	1,4-Dichlorobenzene	106-46-7	T	C	1			1.60E-04	1.60E-04	7.5E-02		7.4E+01		6.4E+00	
M-25	VOC	Dichlorodifluoromethane	75-71-8	T		1			2.30E-04	2.30E-04	1.7E+00		3.0E+02		3.0E+02	
M-25	VOC	1,1-Dichloroethane	75-34-3	T	C	1			2.60E-04	2.60E-04	8.8E-01		2.3E+03		2.4E+03	
M-25	VOC	1,2-Dichloroethane	107-06-2	T	B2	1			2.20E-04	2.20E-04	5.0E-03		5.9E+01		1.9E+01	
M-25	VOC	1,1-Dichloroethene	75-35-4	T	C	1			2.20E-04	2.20E-04	7.0E-03		1.3E+00		1.1E+01	
M-25	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1			2.50E-04	2.50E-04	7.0E-02		2.1E+02		2.0E+02	
M-25	VOC	trans-1,2-Dichloroethene	156-60-5	T		1			2.40E-04	2.40E-04	1.0E-01		2.2E+02		2.2E+02	
M-25	VOC	1,2-Dichloropropane	78-87-5	T	B2	1			1.80E-04	1.80E-04	5.0E-03		3.6E+01		1.6E+01	
M-25	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	1			1.70E-04	1.70E-04	8.5E-03		2.6E+01		5.5E+00	
M-25	VOC	Methyl Acetate	79-20-9	T		1			6.80E-04	6.80E-04						
M-25	VOC	Methyl tert-butyl ether	1634-04-4	T		1			2.10E-04	2.10E-04	2.4E-01		4.7E+04		6.1E+02	
M-25	VOC	Methylcyclohexane	108-87-2	T		1			2.40E-04	2.40E-04						
M-25	VOC	Methylene Chloride	75-09-2	T	B2	1			2.80E-04	2.80E-04	5.0E-03		1.4E+03		2.2E+02	
M-25	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	1			2.30E-04	2.30E-04	8.5E-03		7.7E+01		4.7E+00	
M-25	VOC	Tetrachloroethene	127-18-4	T	C-B2	1			1.20E-04	1.20E-04	5.0E-03		1.7E+02		1.2E+01	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-25	VOC	Toluene	108-88-3	T	D	1			1.70E-04	1.70E-04	1.0E+00		5.3E+02		5.3E+02	
M-25	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	1			1.50E-04	1.50E-04	7.0E-02		3.0E+02		1.9E+01	
M-25	VOC	1,1,1-Trichloroethane	71-55-6	T	D	1			1.80E-04	1.80E-04	2.0E-01		1.3E+03		1.3E+03	
M-25	VOC	1,1,2-Trichloroethane	79-00-5	T	C	1			2.10E-04	2.10E-04	5.0E-03		1.1E+02		2.1E+01	
M-25	VOC	Trichloroethene	79-01-6	T	C-B2	1			2.20E-04	2.20E-04	5.0E-03		9.7E+01		2.2E+01	
M-25	VOC	Trichlorofluoromethane	75-69-4	T		1			2.50E-04	2.50E-04	2.6E+00		1.1E+03		1.1E+03	
M-25	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		1			2.30E-04	2.30E-04	1.7E+02		1.7E+02		1.7E+02	
M-25	SVOC	Acenaphthene	83-32-9	T		1			6.90E-04	6.90E-04	1.3E+00		4.2E+00		4.2E+00	
M-25	SVOC	Acenaphthylene	208-96-8	T	D	1			4.10E-04	4.10E-04	5.2E-02		3.9E+00		3.9E+00	
M-25	SVOC	Acetophenone	98-86-2	T	D	1			6.50E-04	6.50E-04	1.5E+00		6.1E+03		6.1E+03	
M-25	SVOC	Anthracene	120-12-7	T	D	1			5.90E-04	5.90E-04	4.3E-02		4.3E-02		4.3E-02	
M-25	SVOC	Atrazine	1912-24-9	T		1			3.50E-04	3.50E-04	3.0E-03				5.4E+00	
M-25	SVOC	Benzaldehyde	100-52-7	T		1			5.90E-04	5.90E-04						
M-25	SVOC	Benzo(a)anthracene	56-55-3	T	B2	1			6.80E-04	6.80E-04	2.1E-03				9.4E-03	
M-25	SVOC	Benzo(a)pyrene	50-32-8	T	B2	1			5.30E-04	5.30E-04	5.0E-03				2.0E-03	
M-25	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	1			7.10E-04	7.10E-04	2.0E-03				2.0E-03	
M-25	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	1			7.00E-04	7.00E-04	5.0E-03				5.0E-03	
M-25	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	1			6.40E-04	6.40E-04	5.0E-03				5.0E-03	
M-25	SVOC	Biphenyl	92-52-4	T	D	1			6.50E-04	6.50E-04						
M-25	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	1			1.00E-03	1.00E-03						
M-25	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	1			1.70E-03	1.70E-03	2.0E-03		2.1E+02		5.7E+00	
M-25	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	1			2.00E-04	2.00E-04	6.0E-03				3.2E-01	
M-25	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	1			7.80E-04	7.80E-04						
M-25	SVOC	Butylbenzylphthalate	85-68-7	T	C	1			2.30E-04	2.30E-04	1.2E+00				2.7E+00	
M-25	SVOC	Caprolactam	105-60-2	T		1	8.13E-04	8.13E-04			5.8E+00	1.4E-04			3.9E+05	2.1E-09
M-25	SVOC	Carbazole	86-74-8	T	B2	1			6.10E-04	6.10E-04	8.5E-02				7.4E+00	
M-25	SVOC	4-Chloro-3-methylphenol	59-50-7	T		1			5.50E-04	5.50E-04	1.5E-01				7.9E+01	
M-25	SVOC	4-Chloroaniline	106-47-8	T		1			9.00E-04	9.00E-04						
M-25	SVOC	2-Chloronaphthalene	91-58-7	T		1			7.30E-04	7.30E-04	1.8E+00				6.7E+00	
M-25	SVOC	2-Chlorophenol	95-57-8	T		1			1.30E-03	1.30E-03	4.5E-02				9.4E+01	
M-25	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		1			6.60E-04	6.60E-04						
M-25	SVOC	Chrysene	218-01-9	T	B2	1			6.70E-04	6.70E-04	5.0E-03				5.0E-03	
M-25	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	1			6.80E-04	6.80E-04	2.0E-03				2.0E-03	
M-25	SVOC	Dibenzofuran	132-64-9	T	D	1			6.60E-04	6.60E-04						
M-25	SVOC	2,4-Dichlorophenol	120-83-2	T		1			7.00E-04	7.00E-04	7.3E-02				4.8E+01	
M-25	SVOC	Diethylphthalate	84-66-2	T	D	1			2.50E-04	2.50E-04	5.5E+00				1.1E+03	
M-25	SVOC	2,4-Dimethylphenol	105-67-9	T		1			1.00E-03	1.00E-03	3.7E-01				5.2E+02	
M-25	SVOC	Dimethylphthalate	131-11-3	T	D	1			2.00E-04	2.00E-04	7.3E+01				4.2E+03	
M-25	SVOC	Di-n-butylphthalate	84-74-2	T	D	1			3.70E-04	3.70E-04	8.8E-01				1.1E+01	
M-25	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		1			2.10E-03	2.10E-03	2.0E-02				9.5E+00	
M-25	SVOC	2,4-Dinitrophenol	51-28-5	T		1			3.30E-03	3.30E-03						
M-25	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	1			4.60E-04	4.60E-04	7.7E-03				8.6E+00	
M-25	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	1			7.10E-04	7.10E-04						
M-25	SVOC	Di-n-octylphthalate	117-84-0	T		1			6.90E-04	6.90E-04	1.3E-01				4.0E-01	
M-25	SVOC	Fluoranthene	206-44-0	T	D	1			7.10E-04	7.10E-04	2.1E-01		2.1E-01		2.1E-01	
M-25	SVOC	Fluorene	86-73-7	T	D	1			7.50E-04	7.50E-04	8.8E-01		2.0E+00		2.0E+00	
M-25	SVOC	Hexachlorobenzene	118-74-1	T	B2	1			7.70E-04	7.70E-04	1.0E-03		3.0E+00		4.6E-03	
M-25	SVOC	Hexachlorobutadiene	87-68-3	T	C	1			1.50E-03	1.50E-03	1.5E-02		3.2E+00		4.0E-01	
M-25	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1			1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
M-25	SVOC	Hexachloroethane	67-72-1	T	C	1			1.60E-03	1.60E-03	7.3E-03		5.0E+01		1.9E+00	
M-25	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	1			6.90E-04	6.90E-04	2.0E-03				2.0E-03	
M-25	SVOC	Isophorone	78-59-1	T	C	1			8.60E-04	8.60E-04	7.7E-01				9.9E+02	
M-25	SVOC	2-Methylnaphthalene	91-57-6	T	ID	1			9.30E-04	9.30E-04	2.6E-01				2.5E+01	
M-25	SVOC	Methylphenol (total)	1319-77-3	T		1			9.00E-04	9.00E-04	3.7E-01				8.1E+02	
M-25	SVOC	Naphthalene	91-20-3	T	C	1			1.30E-03	1.30E-03	5.2E-01		3.1E+01		3.1E+01	
M-25	SVOC	2-Nitroaniline	88-74-4	T		1			4.90E-04	4.90E-04						
M-25	SVOC	3-Nitroaniline	99-09-2	T	C	1			4.80E-04	4.80E-04						
M-25	SVOC	4-Nitroaniline	100-01-6	T	C	1			5.90E-04	5.90E-04						
M-25	SVOC	Nitrobenzene	98-95-3	T	D	1			1.30E-03	1.30E-03	3.4E-03		5.5E+02		1.1E+01	
M-25	SVOC	2-Nitrophenol	88-75-5	T		1			9.50E-04	9.50E-04	2.0E-02				7.9E+01	
M-25	SVOC	4-Nitrophenol	100-02-7	T		1			3.50E-03	3.50E-03						
M-25	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	1			6.40E-04	6.40E-04	2.7E-01				3.5E+01	
M-25	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	1			1.10E-03	1.10E-03	5.0E-03				3.6E-01	
M-25	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	1			1.80E-03	1.80E-03						
M-25	SVOC	Pentachlorophenol	87-86-5	T	B2	1			2.60E-03	2.60E-03	1.0E-03				2.0E-01	
M-25	SVOC	Phenanthrene	85-01-8	T	D	1			6.80E-04	6.80E-04	5.2E-02		1.0E+00		1.0E+00	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-25	SVOC	Phenol	108-95-2	T	ID	1				1.30E-03	1.30E-03	4.4E+00				2.9E+04	
M-25	SVOC	Pyrene	129-00-0	T	D	1				6.30E-04	6.30E-04	1.4E-01		1.4E-01		1.4E-01	
M-25	SVOC	2,4,5-Trichlorophenol	95-95-4	T		1				8.60E-04	8.60E-04	7.3E-01				1.7E+02	
M-25	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	1				7.10E-04	7.10E-04	1.2E-01				1.0E+01	
M-25	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
M-25	INORG	Antimony	7440-36-0	T		1				3.10E-03	3.10E-03	6.0E-03				6.8E+01	
M-25	INORG	Arsenic	7440-38-2	T	A	1	1	4.80E-03	4.80E-03			5.0E-02	9.6E-02			4.3E+00	1.1E-03
M-25	INORG	Barium	7440-39-3	T	D	1	1	8.95E-02	8.95E-02			2.0E+00	4.5E-02			1.4E+04	6.4E-06
M-25	INORG	Beryllium	7440-41-7	T	B1	1				4.70E-04	4.70E-04	4.0E-03				2.9E+02	
M-25	INORG	Cadmium	7440-43-9	T	B1	1				3.60E-04	3.60E-04	5.0E-03				1.9E+02	
M-25	INORG	Chromium (total)	7440-47-3	T		1	1	1.05E-03	1.05E-03			1.0E-01	1.1E-02			4.6E+02	2.3E-06
M-25	INORG	Cobalt	7440-48-4	T	B1	1	1	3.20E-03	3.20E-03			4.0E-02	8.0E-02			2.4E+03	1.3E-06
M-25	INORG	Copper	7440-50-8	T	D	1				1.80E-03	1.80E-03	1.4E+00				7.4E+03	
M-25	INORG	Lead	7439-92-1	T	B2	1				2.30E-03	2.30E-03	4.0E-03					
M-25	INORG	Manganese	7439-96-5	T	D	1	1	5.54E-01	5.54E-01			8.6E-01	6.4E-01			9.1E+03	6.1E-05
M-25	INORG	Mercury	7439-97-6	T	D	1				6.70E-05	6.70E-05	2.0E-03		5.6E-02		5.6E-02	
M-25	INORG	Nickel	7440-02-0	T	A	1	1	7.50E-03	7.50E-03			1.0E-01	7.5E-02			7.4E+04	1.0E-07
M-25	INORG	Selenium	7782-49-2	T	D	1				3.90E-03	3.90E-03	5.0E-02				9.7E+02	
M-25	INORG	Silver	7440-22-4	T	D	1				1.10E-03	1.10E-03	3.4E-02				1.5E+03	
M-25	INORG	Thallium	7440-28-0	T		1	1	1.01E-04	1.01E-04			2.0E-03	5.1E-02			1.3E+01	7.8E-06
M-25	INORG	Vanadium	7440-62-2	T		1				9.60E-04	9.60E-04	4.5E-03				9.7E+02	
M-25	INORG	Zinc	7440-66-6	T	D	1				1.30E-02	1.30E-02	2.4E+00				1.1E+05	
P-06	VOC	Acetone	67-64-1	T	ID	14	2	1.20E-02	2.10E-02	5.10E-04	8.50E-02	7.3E-01	2.9E-02	1.0E+06	2.1E-08	3.1E+04	6.8E-07
P-06	VOC	Benzene	71-43-2	T	A	19	14	3.10E-04	1.20E+00	1.60E-04	3.70E-04	5.0E-03	2.4E+02	3.5E+01	3.4E-02	1.1E+01	1.1E-01
P-06	VOC	Bromodichloromethane	75-27-4	T	B2	14	1	3.40E-04	3.40E-04	1.70E-04	2.80E-02	1.0E-01	3.4E-03	3.7E+01	9.2E-06	1.4E+01	2.4E-05
P-06	VOC	Bromoform	75-25-2	T	B2	14				1.80E-04	3.00E-02	1.0E-01		3.1E+03		1.4E+02	
P-06	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	3.30E-02	1.0E-02		9.0E+00		7.0E+01	
P-06	VOC	2-Butanone	78-93-3	T	ID	14	2	5.90E-04	2.00E-03	4.10E-04	6.80E-02	1.3E+01	1.5E-04	2.4E+05	8.3E-09	2.4E+05	8.3E-09
P-06	VOC	Carbon Disulfide	75-15-0	T		14				2.00E-04	3.30E-02	8.0E-01		5.5E+02		1.2E+03	
P-06	VOC	Carbon Tetrachloride	56-23-5	T	B2	14				1.20E-04	2.30E-02	5.0E-03		2.4E+00		4.6E+00	
P-06	VOC	Chlorobenzene	108-90-7	T	D	14				1.40E-04	2.40E-02	1.0E-01		4.7E+02		8.6E+01	
P-06	VOC	Chloroethane	75-00-3	T		14				2.60E-04	4.30E-02	4.3E-01		5.7E+03		4.4E+02	
P-06	VOC	Chloroform	67-66-3	T	B2	14	4	6.50E-04	1.50E-03	1.40E-04	2.30E-02	1.0E-01	1.5E-02	1.8E+02	8.3E-06	1.5E+02	1.0E-05
P-06	VOC	Chloromethane	74-87-3	T	D	14	1	1.80E-04	1.80E-04	1.30E-04	3.10E-02	2.6E-01	6.9E-04	4.5E+01	4.0E-06	4.9E+02	3.7E-07
P-06	VOC	Cumene	98-82-8	T	D	14	2	3.30E-02	3.90E-02	1.20E-04	2.00E-02	8.0E-01	4.9E-02	5.6E+01	7.0E-04	5.6E+01	7.0E-04
P-06	VOC	Cyclohexane	110-82-7	T	ID	14	5	4.20E-04	1.10E-01	1.30E-04	3.30E-04						
P-06	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	14				6.20E-04	1.00E-01	2.0E-04		1.2E+00		3.9E-01	
P-06	VOC	Dibromochloromethane	124-48-1	T	C	14				2.60E-04	4.30E-02	1.0E-01		1.1E+02		1.8E+01	
P-06	VOC	1,2-Dibromoethane	106-93-4	T	B2	14				2.20E-04	3.70E-02	1.0E-03		1.5E+01		2.5E-02	
P-06	VOC	1,2-Dichlorobenzene	95-50-1	T	D	14				1.10E-04	2.40E-02	6.0E-01		1.6E+02		1.6E+02	
P-06	VOC	1,3-Dichlorobenzene	541-73-1	T	D	14				1.50E-04	2.50E-02	6.6E-03				2.0E+00	
P-06	VOC	1,4-Dichlorobenzene	106-46-7	T	C	14				1.70E-04	2.80E-02	7.5E-02		7.4E+01		6.4E+00	
P-06	VOC	Dichlorodifluoromethane	75-71-8	T		14				2.60E-04	4.30E-02	1.7E+00		3.0E+02		3.0E+02	
P-06	VOC	1,1-Dichloroethane	75-34-3	T	C	14	1	5.10E-04	5.10E-04	1.60E-04	2.70E-02	8.8E-01	5.8E-04	2.3E+03	2.2E-07	2.4E+03	2.1E-07
P-06	VOC	1,2-Dichloroethane	107-06-2	T	B2	14				2.10E-04	3.50E-02	5.0E-03		5.9E+01		1.9E+01	
P-06	VOC	1,1-Dichloroethene	75-35-4	T	C	14				2.40E-04	4.00E-02	7.0E-03		1.3E+00		1.1E+01	
P-06	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	14				2.20E-04	3.70E-02	7.0E-02		2.1E+02		2.0E+02	
P-06	VOC	trans-1,2-Dichloroethene	156-60-5	T		14				1.50E-04	2.50E-02	1.0E-01		2.0E+02		2.2E+02	
P-06	VOC	1,2-Dichloropropane	78-87-5	T	B2	14				1.70E-04	2.80E-02	5.0E-03		3.6E+01		1.6E+01	
P-06	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	14				2.70E-04	4.50E-02	8.5E-03		2.6E+01		5.5E+00	
P-06	VOC	Ethyl Benzene	100-41-4	T	D	19	10	1.50E-04	1.60E+00	1.20E-04	4.10E-04	7.0E-01	2.3E+00	1.7E+02	9.4E-03	1.7E+02	9.4E-03
P-06	VOC	2-Hexanone	591-78-6	T		14				4.60E-04	7.70E-02	1.0E+00		8.7E+03		5.2E+03	
P-06	VOC	Methyl Acetate	79-20-9	T		14				4.10E-04	6.80E-02						
P-06	VOC	Methyl tert-butyl ether	1634-04-4	T		14	2	5.40E-04	2.10E-03	1.30E-04	2.20E-02	2.4E-01	8.8E-03	4.7E+04	4.5E-08	6.1E+02	3.4E-06
P-06	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	9	1	7.90E-04	7.90E-04	2.30E-04	3.80E-02	1.8E+00	4.4E-04	2.0E+04	4.0E-08	1.3E+04	6.1E-08
P-06	VOC	Methylcyclohexane	108-87-2	T		14	2	4.90E-02	7.80E-02	1.50E-04	2.50E-02						
P-06	VOC	Methylene Chloride	75-09-2	T	B2	13				2.90E-04	5.70E-02	5.0E-03		1.4E+03		2.2E+02	
P-06	VOC	Styrene	100-42-5	T		14				1.50E-04	2.50E-02	1.0E-01		3.1E+02		9.7E+00	
P-06	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	14				2.50E-04	4.20E-02	8.5E-03		7.7E+01		4.7E+00	
P-06	VOC	Tetrachloroethene	127-18-4	T	C-B2	14				2.30E-04	3.80E-02	5.0E-03		1.7E+02		1.2E+01	
P-06	VOC	Toluene	108-88-3	T	D	19	10	1.90E-04	5.40E+00	1.80E-04	3.90E-04	1.0E+00	5.4E+00	5.3E+02	1.0E-02	5.3E+02	1.0E-02
P-06	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	14				1.70E-04	2.80E-02	7.0E-02		3.0E+02		1.9E+01	
P-06	VOC	1,1,1-Trichloroethane	71-55-6	T	D	14				1.50E-04	2.50E-02	2.0E-01		1.3E+03		1.3E+03	
P-06	VOC	1,1,2-Trichloroethane	79-00-5	T	C	14				3.00E-04	5.00E-02	5.0E-03		1.1E+02		2.1E+01	
P-06	VOC	Trichloroethene	79-01-6	T	C-B2	14				1.40E-04	2.60E-02	5.0E-03		9.7E+01		2.2E+01	
P-06	VOC	Trichlorofluoromethane	75-69-4	T		14				2.80E-04	4.70E-02	2.6E+00		1.1E+03		1.1E+03	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

General Motors - Pontiac North Campus, Pontiac, Michigan																	
Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria	
P-06	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		14			3.20E-04	5.30E-02	1.7E+02		1.7E+02		1.7E+02		
P-06	VOC	Vinyl Chloride	75-01-4	T	A	14			1.50E-04	2.50E-02	2.0E-03		1.3E+01		1.0E+00		
P-06	VOC	Xylenes (total)	1330-20-7	T	ID	19	6	3.70E-04	4.20E+00	3.30E-04	1.30E-03	1.0E+01	4.2E-01	1.9E+02	2.2E-02	1.9E+02	2.2E-02
P-06	SVOC	Acenaphthene	83-32-9	T		10			8.00E-04	4.00E-03	1.3E+00		4.2E+00		4.2E+00		
P-06	SVOC	Acenaphthylene	208-96-8	T	D	10			7.10E-04	3.60E-03	5.2E-02		3.9E+00		3.9E+00		
P-06	SVOC	Acetophenone	98-86-2	T	D	10			2.60E-03	1.30E-02	1.5E+00		6.1E+03		6.1E+03		
P-06	SVOC	Anthracene	120-12-7	T	D	10			6.80E-04	3.40E-03	4.3E-02		4.3E-02		4.3E-02		
P-06	SVOC	Atrazine	1912-24-9	T		10			2.50E-03	1.20E-02	3.0E-03				5.4E+00		
P-06	SVOC	Benzaldehyde	100-52-7	T		10			2.80E-03	1.40E-02							
P-06	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10			7.00E-04	3.50E-03	2.1E-03				9.4E-03		
P-06	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10			7.30E-04	3.60E-03	5.0E-03				2.0E-03		
P-06	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10			9.40E-04	4.70E-03	2.0E-03				2.0E-03		
P-06	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10			8.50E-04	4.20E-03	5.0E-03				5.0E-03		
P-06	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10			8.40E-04	4.20E-03	5.0E-03				5.0E-03		
P-06	SVOC	Biphenyl	92-52-4	T	D	10			2.60E-03	1.30E-02							
P-06	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10			8.70E-04	4.40E-03							
P-06	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10			9.70E-04	4.80E-03	2.0E-03		2.1E+02		5.7E+00		
P-06	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10			2.70E-03	1.40E-02	6.0E-03				3.2E-01		
P-06	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10			8.80E-04	4.40E-03							
P-06	SVOC	Butylbenzylphthalate	85-68-7	T	C	10			8.80E-04	4.40E-03	1.2E+00				2.7E+00		
P-06	SVOC	Caprolactam	105-60-2	T		10	1	1.20E-02	1.20E-02	2.50E-03	1.20E-02	5.8E+00	2.1E-03		3.9E+05	3.1E-08	
P-06	SVOC	Carbazole	86-74-8	T	B2	10			8.20E-04	4.10E-03	8.5E-02				7.4E+00		
P-06	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10			9.90E-04	5.00E-03	1.5E-01				7.9E+01		
P-06	SVOC	4-Chloroaniline	106-47-8	T		10			6.10E-04	3.00E-03							
P-06	SVOC	2-Chloronaphthalene	91-58-7	T		10			8.50E-04	4.20E-03	1.8E+00				6.7E+00		
P-06	SVOC	2-Chlorophenol	95-57-8	T		10			1.00E-03	5.00E-03	4.5E-02				9.4E+01		
P-06	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10			7.90E-04	4.00E-03							
P-06	SVOC	Chrysene	218-01-9	T	B2	10			7.50E-04	3.80E-03	5.0E-03				5.0E-03		
P-06	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10			7.90E-04	4.00E-03	2.0E-03				2.0E-03		
P-06	SVOC	Dibenzofuran	132-64-9	T	D	10			1.10E-03	5.50E-03							
P-06	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10			9.30E-04	4.60E-03	1.1E-03				1.8E-01		
P-06	SVOC	2,4-Dichlorophenol	120-83-2	T		10			8.50E-04	4.20E-03	7.3E-02				4.8E+01		
P-06	SVOC	Diethylphthalate	84-66-2	T	D	10			6.50E-04	3.20E-03	5.5E+00				1.1E+03		
P-06	SVOC	2,4-Dimethylphenol	105-67-9	T		10	2	3.50E-03	2.80E-02	8.50E-04	8.50E-04	3.7E-01	7.6E-02		5.2E+02	5.4E-05	
P-06	SVOC	Dimethylphthalate	131-11-3	T	D	10			7.60E-04	3.80E-03	7.3E+01				4.2E+03		
P-06	SVOC	Di-n-butylphthalate	84-74-2	T	D	10			6.70E-04	3.40E-03	8.8E-01				1.1E+01		
P-06	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10			1.30E-03	6.50E-03	2.0E-02				9.5E+00		
P-06	SVOC	2,4-Dinitrophenol	51-28-5	T		10			3.00E-03	1.50E-02							
P-06	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10			7.90E-04	4.00E-03	7.7E-03				8.6E+00		
P-06	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10			5.70E-04	2.80E-03							
P-06	SVOC	Di-n-octylphthalate	117-84-0	T		10			1.10E-03	5.50E-03	1.3E-01				4.0E-01		
P-06	SVOC	Fluoranthene	206-44-0	T	D	10			8.10E-04	4.00E-03	2.1E-01		2.1E-01		2.1E-01		
P-06	SVOC	Fluorene	86-73-7	T	D	10			1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00		
P-06	SVOC	Hexachlorobenzene	118-74-1	T	B2	10			7.40E-04	3.70E-03	1.0E-03		3.0E+00		4.6E-03		
P-06	SVOC	Hexachlorobutadiene	87-68-3	T	C	10			7.30E-04	3.60E-03	1.5E-02		3.2E+00		4.0E-01		
P-06	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	9			1.10E-03	5.50E-03	5.0E-02		4.2E-01		1.6E+00		
P-06	SVOC	Hexachloroethane	67-72-1	T	C	10			7.40E-04	3.70E-03	7.3E-03		5.0E+01		1.9E+00		
P-06	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10			6.30E-04	3.20E-03	2.0E-03				2.0E-03		
P-06	SVOC	Isophorone	78-59-1	T	C	10			6.30E-04	3.20E-03	7.7E-01				9.9E+02		
P-06	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	2	9.90E-03	1.60E-02	6.40E-04	6.40E-04	2.6E-01	6.2E-02		2.5E+01	6.4E-04	
P-06	SVOC	Methylphenol (total)	1319-77-3	T		10	1	2.95E-01	2.95E-01	1.30E-03	3.20E-03	3.7E-01	8.0E-01		8.1E+02	3.6E-04	
P-06	SVOC	Naphthalene	91-20-3	T	C	10	2	8.60E-02	9.30E-02	7.50E-04	7.50E-04	5.2E-01	1.8E-01	3.1E+01	3.0E-03	3.1E+01	3.0E-03
P-06	SVOC	2-Nitroaniline	88-74-4	T		10			7.00E-04	3.50E-03							
P-06	SVOC	3-Nitroaniline	99-09-2	T	C	10			7.10E-04	3.60E-03							
P-06	SVOC	4-Nitroaniline	100-01-6	T	C	10			1.30E-03	6.50E-03							
P-06	SVOC	Nitrobenzene	98-95-3	T	D	10			8.10E-04	4.00E-03	3.4E-03		5.5E+02		1.1E+01		
P-06	SVOC	2-Nitrophenol	88-75-5	T		10			2.10E-03	1.00E-02	2.0E-02				7.9E+01		
P-06	SVOC	4-Nitrophenol	100-02-7	T		10			1.90E-03	9.50E-03							
P-06	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10			1.40E-03	7.00E-03	2.7E-01				3.5E+01		
P-06	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10			6.70E-04	3.40E-03	5.0E-03				3.6E-01		
P-06	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10			7.80E-04	3.90E-03							
P-06	SVOC	Pentachlorophenol	87-86-5	T	B2	10			2.40E-03	1.20E-02	1.0E-03				2.0E-01		
P-06	SVOC	Phenanthrene	85-01-8	T	D	10			8.20E-04	4.10E-03	5.2E-02		1.0E+00		1.0E+00		
P-06	SVOC	Phenol	108-95-2	T	ID	10	1	3.60E-02	3.60E-02	2.60E-03	6.50E-03	4.4E+00	8.2E-03		2.9E+04	1.2E-06	
P-06	SVOC	Pyrene	129-00-0	T	D	10			1.10E-03	5.50E-03	1.4E-01		1.4E-01		1.4E-01		
P-06	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10			1.20E-03	6.00E-03	7.3E-01				1.7E+02		

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria	
P-06	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10			1.70E-03	8.50E-03	1.2E-01				1.0E+01		
P-06	INORG	Antimony	7440-36-0	D		1			2.20E-03	2.20E-03	6.0E-03				6.8E+01		
P-06	INORG	Antimony	7440-36-0	T		1			2.20E-03	2.20E-03	6.0E-03				6.8E+01		
P-06	INORG	Arsenic	7440-38-2	D	A	1			3.90E-03	3.90E-03	5.0E-02				4.3E+00		
P-06	INORG	Arsenic	7440-38-2	T	A	1			3.90E-03	3.90E-03	5.0E-02				4.3E+00		
P-06	INORG	Barium	7440-39-3	D	D	1	9.78E-01	9.78E-01			2.0E+00	4.9E-01			1.4E+04	7.0E-05	
P-06	INORG	Barium	7440-39-3	T	D	1	9.94E-01	9.94E-01			2.0E+00	5.0E-01			1.4E+04	7.1E-05	
P-06	INORG	Beryllium	7440-41-7	D	B1	1			5.40E-04	5.40E-04	4.0E-03				2.9E+02		
P-06	INORG	Beryllium	7440-41-7	T	B1	1			5.40E-04	5.40E-04	4.0E-03				2.9E+02		
P-06	INORG	Cadmium	7440-43-9	D	B1	1	3.80E-04	3.80E-04			5.0E-03	7.6E-02			1.9E+02	2.0E-06	
P-06	INORG	Cadmium	7440-43-9	T	B1	1	3.80E-04	3.80E-04			5.0E-03	7.6E-02			1.9E+02	2.0E-06	
P-06	INORG	Chromium (total)	7440-47-3	D		1			1.40E-03	1.40E-03	1.0E-01				4.6E+02		
P-06	INORG	Chromium (total)	7440-47-3	T		1			1.40E-03	1.40E-03	1.0E-01				4.6E+02		
P-06	INORG	Cobalt	7440-48-4	D	B1	1	8.30E-03	8.30E-03			4.0E-02	2.1E-01			2.4E+03	3.5E-06	
P-06	INORG	Cobalt	7440-48-4	T	B1	1	8.00E-03	8.00E-03			4.0E-02	2.0E-01			2.4E+03	3.3E-06	
P-06	INORG	Copper	7440-50-8	D	D	1			4.20E-03	4.20E-03	1.4E+00				7.4E+03		
P-06	INORG	Copper	7440-50-8	T	D	1			4.20E-03	4.20E-03	1.4E+00				7.4E+03		
P-06	INORG	Lead	7439-92-1	D	B2	9			2.50E-03	2.50E-03	4.0E-03						
P-06	INORG	Lead	7439-92-1	T	B2	10			1.60E-03	2.50E-03	4.0E-03						
P-06	INORG	Manganese	7439-96-5	D	D	1	7.22E-01	7.22E-01			8.6E-01	8.4E-01			9.1E+03	7.9E-05	
P-06	INORG	Manganese	7439-96-5	T	D	1	7.41E-01	7.41E-01			8.6E-01	8.6E-01			9.1E+03	8.1E-05	
P-06	INORG	Mercury	7439-97-6	D	D	1			6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02		
P-06	INORG	Mercury	7439-97-6	T	D	1			6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02		
P-06	INORG	Nickel	7440-02-0	D	A	1	1.30E-02	1.30E-02			1.0E-01	1.3E-01			7.4E+04	1.8E-07	
P-06	INORG	Nickel	7440-02-0	T	A	1	1.32E-02	1.32E-02			1.0E-01	1.3E-01			7.4E+04	1.8E-07	
P-06	INORG	Selenium	7782-49-2	D	D	1			4.50E-03	4.50E-03	5.0E-02				9.7E+02		
P-06	INORG	Selenium	7782-49-2	T	D	1			4.50E-03	4.50E-03	5.0E-02				9.7E+02		
P-06	INORG	Silver	7440-22-4	D	D	1			1.50E-03	1.50E-03	3.4E-02				1.5E+03		
P-06	INORG	Silver	7440-22-4	T	D	1			1.50E-03	1.50E-03	3.4E-02				1.5E+03		
P-06	INORG	Thallium	7440-28-0	D		1	1.50E-04	1.50E-04			2.0E-03	7.5E-02			1.3E+01	1.2E-05	
P-06	INORG	Thallium	7440-28-0	T		1	1.70E-04	1.70E-04			2.0E-03	8.5E-02			1.3E+01	1.3E-05	
P-06	INORG	Vanadium	7440-62-2	D		1			8.20E-04	8.20E-04	4.5E-03				9.7E+02		
P-06	INORG	Vanadium	7440-62-2	T		1			8.20E-04	8.20E-04	4.5E-03				9.7E+02		
P-06	INORG	Zinc	7440-66-6	D	D	1	1.25E-02	1.25E-02			2.4E+00	5.2E-03			1.1E+05	1.1E-07	
P-06	INORG	Zinc	7440-66-6	T	D	1			1.20E-02	1.20E-02	2.4E+00				1.1E+05		
P-09	VOC	Acetone	67-64-1	T	ID	6	5	2.40E-03	7.10E-01	6.60E-04	6.60E-04	7.3E-01	9.7E-01	1.0E+06	7.1E-07	3.1E+04	2.3E-05
P-09	VOC	Benzene	71-43-2	T	A	6			2.00E-04	4.10E-03	5.0E-03			3.5E+01	1.1E+01		
P-09	VOC	Bromodichloromethane	75-27-4	T	B2	3			2.00E-04	1.10E-03	1.0E-01			3.7E+01	1.4E+01		
P-09	VOC	Bromoform	75-25-2	T	B2	6			3.20E-04	4.10E-03	1.0E-01			3.1E+03	1.4E+02		
P-09	VOC	Bromomethane	74-83-9	T	D	6			1.60E-04	3.30E-03	1.0E-02			9.0E+00	7.0E+01		
P-09	VOC	2-Butanone	78-93-3	T	ID	6	4	2.50E-03	1.10E-01	3.60E-04	5.90E-04	1.3E+01	8.5E-03	2.4E+05	4.6E-07	2.4E+05	4.6E-07
P-09	VOC	Carbon Disulfide	75-15-0	T		6	2	3.00E-04	3.40E-04	2.10E-04	2.70E-03	8.0E-01	4.3E-04	5.5E+02	6.2E-07	1.2E+03	2.8E-07
P-09	VOC	Carbon Tetrachloride	56-23-5	T	B2	6			1.80E-04	4.10E-03	5.0E-03			2.4E+00	4.6E+00		
P-09	VOC	Chlorobenzene	108-90-7	T	D	6			1.60E-04	4.20E-03	1.0E-01			4.7E+02	8.6E+01		
P-09	VOC	Chloroethane	75-00-3	T		6			2.20E-04	3.20E-03	4.3E-01			5.7E+03	4.4E+02		
P-09	VOC	Chloroform	67-66-3	T	B2	6			2.10E-04	3.90E-03	1.0E-01			1.8E+02	1.5E+02		
P-09	VOC	Chloromethane	74-87-3	T	D	6			2.60E-04	5.40E-03	2.6E-01			4.5E+01	4.9E+02		
P-09	VOC	Cumene	98-82-8	T	D	6			1.50E-04	4.30E-03	8.0E-01			5.6E+01	5.6E+01		
P-09	VOC	Cyclohexane	110-82-7	T	ID	6			3.30E-04	3.70E-03							
P-09	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6			5.30E-04	9.10E-03	2.0E-04			1.2E+00	3.9E-01		
P-09	VOC	Dibromochloromethane	124-48-1	T	C	6			2.50E-04	4.10E-03	1.0E-01			1.1E+02	1.8E+01		
P-09	VOC	1,2-Dibromoethane	106-93-4	T	B2	6			2.20E-04	3.80E-03	1.0E-03			1.5E+01	2.5E-02		
P-09	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6			1.50E-04	4.20E-03	6.0E-01			1.6E+02	1.6E+02		
P-09	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6			2.00E-04	4.20E-03	6.6E-03				2.0E+00		
P-09	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6			1.60E-04	4.20E-03	7.5E-02			7.4E+01	6.4E+00		
P-09	VOC	Dichlorodifluoromethane	75-71-8	T		6			2.30E-04	5.40E-03	1.7E+00			3.0E+02	3.0E+02		
P-09	VOC	1,1-Dichloroethane	75-34-3	T	C	5	4	5.40E-04	1.10E-03	1.50E-03	1.50E-03	8.8E-01	1.3E-03	2.3E+03	2.4E+03	4.6E-07	
P-09	VOC	1,2-Dichloroethane	107-06-2	T	B2	6			2.20E-04	3.10E-03	5.0E-03			5.9E+01	1.9E+01		
P-09	VOC	1,1-Dichloroethene	75-35-4	T	C	6			2.20E-04	3.40E-03	7.0E-03			1.3E+00	1.1E+01		
P-09	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4			2.50E-04	3.90E-03	7.0E-02			2.1E+02	2.0E+02		
P-09	VOC	trans-1,2-Dichloroethene	156-60-5	T		6			2.40E-04	3.70E-03	1.0E-01			2.0E+02	2.2E+02		
P-09	VOC	1,2-Dichloropropane	78-87-5	T	B2	6			1.80E-04	4.60E-03	5.0E-03			3.6E+01	1.6E+01		
P-09	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6			1.50E-04	3.90E-03	8.5E-03			2.6E+01	5.5E+00		
P-09	VOC	Ethyl Benzene	100-41-4	T	D	6			1.90E-04	4.60E-03	7.0E-01			1.7E+02	1.7E+02		
P-09	VOC	2-Hexanone	591-78-6	T		6			3.10E-04	6.40E-03	1.0E+00			8.7E+03	5.2E+03		
P-09	VOC	Methyl Acetate	79-20-9	T		6			5.40E-04	6.00E-03							

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-09	VOC	Methyl tert-butyl ether	1634-04-4	T		6			2.10E-04	3.00E-03	2.4E-01		4.7E+04		6.1E+02	
P-09	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6	9.80E-04	2.90E-02	2.60E-04	3.40E-04	1.8E+00	1.6E-02	2.0E+04	1.5E-06	1.3E+04	2.2E-06
P-09	VOC	Methylcyclohexane	108-87-2	T		6			2.40E-04	4.70E-03						
P-09	VOC	Methylene Chloride	75-09-2	T	B2	6			2.80E-04	3.20E-03	5.0E-03		1.4E+03		2.2E+02	
P-09	VOC	Styrene	100-42-5	T		4			1.60E-04	3.90E-03	1.0E-01		3.1E+02		9.7E+00	
P-09	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6			2.30E-04	4.00E-03	8.5E-03		7.7E+01		4.7E+00	
P-09	VOC	Tetrachloroethene	127-18-4	T	C-B2	6			1.20E-04	4.70E-03	5.0E-03		1.7E+02		1.2E+01	
P-09	VOC	Toluene	108-88-3	T	D	6			1.70E-04	4.30E-03	1.0E+00		5.3E+02		5.3E+02	
P-09	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6			1.50E-04	4.40E-03	7.0E-02		3.0E+02		1.9E+01	
P-09	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6			1.80E-04	4.30E-03	2.0E-01		1.3E+03		1.3E+03	
P-09	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6			2.10E-04	4.00E-03	5.0E-03		1.1E+02		2.1E+01	
P-09	VOC	Trichloroethene	79-01-6	T	C-B2	6			2.20E-04	4.70E-03	5.0E-03		9.7E+01		2.2E+01	
P-09	VOC	Trichlorofluoromethane	75-69-4	T		6			2.50E-04	6.00E-03	2.6E+00		1.1E+03		1.1E+03	
P-09	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6			2.30E-04	3.60E-03	1.7E+02		1.7E+02		1.7E+02	
P-09	VOC	Vinyl Chloride	75-01-4	T	A	4			2.60E-04	4.00E-03	2.0E-03		1.3E+01		1.0E+00	
P-09	VOC	Xylenes (total)	1330-20-7	T	ID	6			4.40E-04	4.90E-03	1.0E+01		1.9E+02		1.9E+02	
P-09	SVOC	Acenaphthene	83-32-9	T		6			6.90E-04	3.40E-02	1.3E+00		4.2E+00		4.2E+00	
P-09	SVOC	Acenaphthylene	208-96-8	T	D	6			4.10E-04	2.00E-02	5.2E-02		3.9E+00		3.9E+00	
P-09	SVOC	Acetophenone	98-86-2	T	D	6			6.50E-04	3.20E-02	1.5E+00		6.1E+03		6.1E+03	
P-09	SVOC	Anthracene	120-12-7	T	D	6			5.90E-04	3.00E-02	4.3E-02		4.3E-02		4.3E-02	
P-09	SVOC	Atrazine	1912-24-9	T		6			3.50E-04	1.80E-02	3.0E-03				5.4E+00	
P-09	SVOC	Benzaldehyde	100-52-7	T		6			5.90E-04	3.00E-02						
P-09	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6			6.80E-04	3.40E-02	2.1E-03				9.4E-03	
P-09	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6			5.30E-04	2.60E-02	5.0E-03				2.0E-03	
P-09	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6			7.00E-04	3.60E-02	2.0E-03				2.0E-03	
P-09	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6			7.00E-04	3.50E-02	5.0E-03				5.0E-03	
P-09	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6			6.40E-04	3.20E-02	5.0E-03				5.0E-03	
P-09	SVOC	Biphenyl	92-52-4	T	D	6			6.50E-04	3.20E-02						
P-09	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6			1.00E-03	5.00E-02						
P-09	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6			1.70E-03	8.50E-02	2.0E-03		2.1E+02		5.7E+00	
P-09	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6			2.00E-04	1.00E-02	6.0E-03				3.2E-01	
P-09	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6			7.80E-04	3.90E-02						
P-09	SVOC	Butylbenzylphthalate	85-68-7	T	C	6			2.30E-04	1.20E-02	1.2E+00				2.7E+00	
P-09	SVOC	Caprolactam	105-60-2	T		6			4.50E-04	2.20E-02	5.8E+00				3.9E+05	
P-09	SVOC	Carbazole	86-74-8	T	B2	6	9.90E-04	3.20E-02	6.10E-04	3.00E-02	8.5E-02	3.8E-01			7.4E+00	4.3E-03
P-09	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6			5.50E-04	2.80E-02	1.5E-01				7.9E+01	
P-09	SVOC	4-Chloroaniline	106-47-8	T		3			9.00E-04	4.50E-02						
P-09	SVOC	2-Chloronaphthalene	91-58-7	T		6			7.30E-04	3.60E-02	1.8E+00				6.7E+00	
P-09	SVOC	2-Chlorophenol	95-57-8	T		6			1.30E-03	6.50E-02	4.5E-02				9.4E+01	
P-09	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6			6.60E-04	3.30E-02						
P-09	SVOC	Chrysene	218-01-9	T	B2	6			6.70E-04	3.40E-02	5.0E-03				5.0E-03	
P-09	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6			6.80E-04	3.40E-02	2.0E-03				2.0E-03	
P-09	SVOC	Dibenzofuran	132-64-9	T	D	6			6.60E-04	3.30E-02						
P-09	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	3			4.70E-04	2.40E-02	1.1E-03				1.8E-01	
P-09	SVOC	2,4-Dichlorophenol	120-83-2	T		6			7.00E-04	3.50E-02	7.3E-02				4.8E+01	
P-09	SVOC	Diethylphthalate	84-66-2	T	D	6			2.50E-04	1.20E-02	5.5E+00				1.1E+03	
P-09	SVOC	2,4-Dimethylphenol	105-67-9	T		6	3.00E-01	6.00E-01	1.00E-03	2.50E-03	3.7E-01	1.6E+00			5.2E+02	1.2E-03
P-09	SVOC	Dimethylphthalate	131-11-3	T	D	6			2.00E-04	1.00E-02	7.3E+01				4.2E+03	
P-09	SVOC	Di-n-butylphthalate	84-74-2	T	D	6			3.70E-04	1.80E-02	8.8E-01				1.1E+01	
P-09	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6			2.10E-03	1.00E-01	2.0E-02				9.5E+00	
P-09	SVOC	2,4-Dinitrophenol	51-28-5	T		6			3.30E-03	1.60E-01						
P-09	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6			4.60E-04	2.30E-02	7.7E-03				8.6E+00	
P-09	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6			7.10E-04	3.60E-02						
P-09	SVOC	Di-n-octylphthalate	117-84-0	T		6			6.90E-04	3.40E-02	1.3E-01				4.0E-01	
P-09	SVOC	Fluoranthene	206-44-0	T	D	6			7.10E-04	3.60E-02	2.1E-01		2.1E-01		2.1E-01	
P-09	SVOC	Fluorene	86-73-7	T	D	6	1.65E-03	1.65E-03	7.50E-04	3.80E-02	8.8E-01	1.9E-03	2.0E+00	8.3E-04	2.0E+00	8.3E-04
P-09	SVOC	Hexachlorobenzene	118-74-1	T	B2	6			7.70E-04	3.80E-02	1.0E-03		3.0E+00		4.6E-03	
P-09	SVOC	Hexachlorobutadiene	87-68-3	T	C	6			1.50E-03	7.50E-02	1.5E-02		3.2E+00		4.0E-01	
P-09	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1			1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
P-09	SVOC	Hexachloroethane	67-72-1	T	C	6			1.60E-03	8.00E-02	7.3E-03		5.0E+01		1.9E+00	
P-09	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6			6.90E-04	3.40E-02	2.0E-03				2.0E-03	
P-09	SVOC	Isophorone	78-59-1	T	C	6			8.60E-04	4.30E-02	7.7E-01				9.9E+02	
P-09	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6			9.30E-04	4.60E-02	2.6E-01				2.5E+01	
P-09	SVOC	Methylphenol (total)	1319-77-3	T		6	2.15E-03	1.28E+00	9.00E-04	2.20E-03	3.7E-01	3.5E+00			8.1E+02	1.6E-03
P-09	SVOC	Naphthalene	91-20-3	T	C	6	7.50E-02	9.90E-02	1.30E-03	3.25E-03	5.2E-01	1.9E-01	3.1E+01	3.2E-03	3.1E+01	3.2E-03
P-09	SVOC	2-Nitroaniline	88-74-4	T		6			4.90E-04	2.40E-02						

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-09	SVOC	3-Nitroaniline	99-09-2	T	C	3				4.80E-04	2.40E-02						
P-09	SVOC	4-Nitroaniline	100-01-6	T	C	6				5.90E-04	3.00E-02						
P-09	SVOC	Nitrobenzene	98-95-3	T	D	6				1.30E-03	6.50E-02	3.4E-03		5.5E+02		1.1E+01	
P-09	SVOC	2-Nitrophenol	88-75-5	T		6				9.50E-04	4.80E-02	2.0E-02				7.9E+01	
P-09	SVOC	4-Nitrophenol	100-02-7	T		6				3.50E-03	1.80E-01						
P-09	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				6.40E-04	3.20E-02	2.7E-01				3.5E+01	
P-09	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				1.10E-03	5.50E-02	5.0E-03				3.6E-01	
P-09	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				1.80E-03	9.00E-02						
P-09	SVOC	Pentachlorophenol	87-86-5	T	B2	6	1	3.90E-03	3.90E-03	2.60E-03	1.30E-01	1.0E-03	3.9E+00			2.0E-01	2.0E-02
P-09	SVOC	Phenanthrene	85-01-8	T	D	6	1	2.35E-03	2.35E-03	6.80E-04	3.40E-02	5.2E-02	4.5E-02	1.0E+00	2.4E-03	1.0E+00	2.4E-03
P-09	SVOC	Phenol	108-95-2	T	ID	6	4	3.30E-03	1.60E+00	1.30E-03	3.20E-03	4.4E+00	3.6E-01			2.9E+04	5.5E-05
P-09	SVOC	Pyrene	129-00-0	T	D	6				6.30E-04	3.20E-02	1.4E-01		1.4E-01		1.4E-01	
P-09	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				8.60E-04	4.30E-02	7.3E-01				1.7E+02	
P-09	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				7.10E-04	3.60E-02	1.2E-01				1.0E+01	
P-09	P/PCB	PCBs (total)	1336-36-3	T	B2	6	1	3.69E-04	3.69E-04	8.20E-05	8.20E-05	5.0E-04	7.4E-01	4.5E-02	8.2E-03	3.3E-03	1.1E-01
P-09	INORG	Antimony	7440-36-0	T		6	2	9.40E-03	1.31E-02	3.10E-03	3.40E-03	6.0E-03	2.2E+00			6.8E+01	1.9E-04
P-09	INORG	Arsenic	7440-38-2	T	A	6	5	3.20E-03	4.49E-02	2.10E-03	2.10E-03	5.0E-02	9.0E-01			4.3E+00	1.0E-02
P-09	INORG	Barium	7440-39-3	T	D	6	6	3.10E-03	5.16E-02			2.0E+00	2.6E-02			1.4E+04	3.7E-06
P-09	INORG	Beryllium	7440-41-7	T	B1	6				4.70E-04	6.00E-04	4.0E-03				2.9E+02	
P-09	INORG	Cadmium	7440-43-9	T	B1	6				2.80E-04	3.60E-04	5.0E-03				1.9E+02	
P-09	INORG	Chromium (total)	7440-47-3	T		6	1	5.30E-03	5.30E-03	1.00E-03	1.50E-03	1.0E-01	5.3E-02			4.6E+02	1.2E-05
P-09	INORG	Cobalt	7440-48-4	T	B1	6	2	1.20E-03	1.60E-03	7.40E-04	1.10E-03	4.0E-02	4.0E-02			2.4E+03	6.7E-07
P-09	INORG	Copper	7440-50-8	T	D	6	2	4.35E-03	6.70E-03	1.70E-03	1.80E-03	1.4E+00	4.8E-03			7.4E+03	9.1E-07
P-09	INORG	Lead	7439-92-1	T	B2	6	1	2.85E-03	2.85E-03	1.60E-03	2.30E-03	4.0E-03	7.1E-01				
P-09	INORG	Manganese	7439-96-5	T	D	6	4	3.80E-03	4.36E-02	6.60E-04	6.60E-04	8.6E-01	5.1E-02			9.1E+03	4.8E-06
P-09	INORG	Mercury	7439-97-6	T	D	6				6.70E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
P-09	INORG	Nickel	7440-02-0	T	A	6	5	5.60E-03	1.28E-01	2.90E-03	2.90E-03	1.0E-01	1.3E+00			7.4E+04	1.7E-06
P-09	INORG	Selenium	7782-49-2	T	D	6	3	4.40E-03	6.07E-02	3.90E-03	4.70E-03	5.0E-02	1.2E+00			9.7E+02	6.3E-05
P-09	INORG	Silver	7440-22-4	T	D	6				9.80E-04	1.10E-03	3.4E-02				1.5E+03	
P-09	INORG	Thallium	7440-28-0	T		6				1.50E-05	3.30E-05	2.0E-03				1.3E+01	
P-09	INORG	Vanadium	7440-62-2	T		6	4	8.70E-03	5.78E-01	6.70E-04	9.60E-04	4.5E-03	1.3E+02			9.7E+02	6.0E-04
P-09	INORG	Zinc	7440-66-6	T	D	6	1	2.02E-02	2.02E-02	1.30E-02	1.40E-02	2.4E+00	8.4E-03			1.1E+05	1.8E-07
P-11	VOC	Acetone	67-64-1	T	ID	2	1	1.90E-02	1.90E-02	1.10E-03	1.10E-03	7.3E-01	2.6E-02	1.0E+06	1.9E-08	3.1E+04	6.1E-07
P-11	VOC	Benzene	71-43-2	T	A	2				3.70E-04	1.50E-03	5.0E-03				1.1E+01	
P-11	VOC	Bromodichloromethane	75-27-4	T	B2	1				3.20E-04	3.20E-04	1.0E-01				3.7E+01	
P-11	VOC	Bromoform	75-25-2	T	B2	2				3.70E-04	1.50E-03	1.0E-01				3.1E+03	
P-11	VOC	Bromomethane	74-83-9	T	D	2				3.00E-04	1.25E-03	1.0E-02				9.0E+00	
P-11	VOC	2-Butanone	78-93-3	T	ID	2				5.90E-04	2.50E-03	1.3E+01				2.4E+05	
P-11	VOC	Carbon Disulfide	75-15-0	T		2				2.40E-04	1.00E-03	8.0E-01				5.5E+02	
P-11	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				3.70E-04	1.50E-03	5.0E-03				2.4E+00	
P-11	VOC	Chlorobenzene	108-90-7	T	D	2				3.80E-04	1.60E-03	1.0E-01				4.7E+02	
P-11	VOC	Chloroethane	75-00-3	T		2				2.90E-04	1.19E-03	4.3E-01				5.7E+03	
P-11	VOC	Chloroform	67-66-3	T	B2	2				3.50E-04	1.50E-03	1.0E-01				1.8E+02	
P-11	VOC	Chloromethane	74-87-3	T	D	2				4.90E-04	2.00E-03	2.6E-01				4.5E+01	
P-11	VOC	Cumene	98-82-8	T	D	2				3.90E-04	1.65E-03	8.0E-01				5.6E+01	
P-11	VOC	Cyclohexane	110-82-7	T	ID	2				3.30E-04	1.35E-03						
P-11	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				8.20E-04	3.40E-03	2.0E-04				1.2E+00	
P-11	VOC	Dibromochloromethane	124-48-1	T	C	2				3.70E-04	1.50E-03	1.0E-01				1.1E+02	
P-11	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				3.40E-04	1.40E-03	1.0E-03				1.5E+01	
P-11	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				3.80E-04	1.60E-03	6.0E-01				1.6E+02	
P-11	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				3.80E-04	1.60E-03	6.6E-03				2.0E+00	
P-11	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				3.80E-04	1.60E-03	7.5E-02				6.4E+00	
P-11	VOC	Dichlorodifluoromethane	75-71-8	T		2				4.90E-04	2.00E-03	1.7E+00				3.0E+02	
P-11	VOC	1,1-Dichloroethane	75-34-3	T	C	2				3.00E-04	1.25E-03	8.8E-01				2.3E+03	
P-11	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.80E-04	1.17E-03	5.0E-03				5.9E+01	
P-11	VOC	1,1-Dichloroethene	75-35-4	T	C	2				3.10E-04	1.30E-03	7.0E-03				1.3E+00	
P-11	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1				3.50E-04	3.50E-04	7.0E-02				2.1E+02	
P-11	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				3.30E-04	1.35E-03	1.0E-01				2.2E+02	
P-11	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				4.10E-04	1.70E-03	5.0E-03				3.6E+01	
P-11	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				3.50E-04	1.50E-03	8.5E-03				2.6E+01	
P-11	VOC	Ethyl Benzene	100-41-4	T	D	1				1.70E-03	1.70E-03	7.0E-01				1.7E+02	
P-11	VOC	2-Hexanone	591-78-6	T		2				5.80E-04	2.40E-03	1.0E+00				8.7E+03	
P-11	VOC	Methyl Acetate	79-20-9	T		2				5.40E-04	2.25E-03						
P-11	VOC	Methyl tert-butyl ether	1634-04-4	T		2				2.70E-04	1.15E-03	2.4E-01				4.7E+04	
P-11	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2	1	2.30E-03	2.30E-03	2.60E-04	2.60E-04	1.8E+00	1.3E-03	2.0E+04	1.2E-07	1.3E+04	1.8E-07
P-11	VOC	Methylcyclohexane	108-87-2	T		2				4.20E-04	1.75E-03						

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-11	VOC	Methylene Chloride	75-09-2	T	B2	2			2.90E-04	1.19E-03	5.0E-03		1.4E+03		2.2E+02	
P-11	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2			3.60E-04	1.50E-03	8.5E-03		7.7E+01		4.7E+00	
P-11	VOC	Tetrachloroethene	127-18-4	T	C-B2	1			1.75E-03	1.75E-03	5.0E-03		1.7E+02		1.2E+01	
P-11	VOC	Toluene	108-88-3	T	D	2			3.90E-04	1.65E-03	1.0E+00		5.3E+02		5.3E+02	
P-11	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2			4.00E-04	1.65E-03	7.0E-02		3.0E+02		1.9E+01	
P-11	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2			3.90E-04	1.65E-03	2.0E-01		1.3E+03		1.3E+03	
P-11	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2			3.60E-04	1.50E-03	5.0E-03		1.1E+02		2.1E+01	
P-11	VOC	Trichloroethene	79-01-6	T	C-B2	2			4.20E-04	1.75E-03	5.0E-03		9.7E+01		2.2E+01	
P-11	VOC	Trichlorofluoromethane	75-69-4	T	C	2			5.40E-04	2.25E-03	2.6E+00		1.1E+03		1.1E+03	
P-11	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2			3.20E-04	1.35E-03	1.7E+02		1.7E+02		1.7E+02	
P-11	VOC	Vinyl Chloride	75-01-4	T	A	1			3.60E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
P-11	VOC	Xylenes (total)	1330-20-7	T	ID	2			4.40E-04	1.85E-03	1.0E+01		1.9E+02		1.9E+02	
P-11	SVOC	Acenaphthene	83-32-9	T		2			6.90E-04	6.90E-03	1.3E+00		4.2E+00		4.2E+00	
P-11	SVOC	Acenaphthylene	208-96-8	T	D	2			4.10E-04	4.10E-03	5.2E-02		3.9E+00		3.9E+00	
P-11	SVOC	Acetophenone	98-86-2	T	D	2			6.50E-04	6.50E-03	1.5E+00		6.1E+03		6.1E+03	
P-11	SVOC	Anthracene	120-12-7	T	D	2			5.90E-04	5.90E-03	4.3E-02		4.3E-02		4.3E-02	
P-11	SVOC	Atrazine	1912-24-9	T		2			3.50E-04	3.50E-03	3.0E-03				5.4E+00	
P-11	SVOC	Benzaldehyde	100-52-7	T		2			5.90E-04	5.90E-03						
P-11	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2			6.80E-04	6.80E-03	2.1E-03				9.4E-03	
P-11	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2			5.30E-04	5.30E-03	5.0E-03				2.0E-03	
P-11	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2			7.10E-04	7.10E-03	2.0E-03				2.0E-03	
P-11	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2			7.00E-04	7.00E-03	5.0E-03				5.0E-03	
P-11	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2			6.40E-04	6.40E-03	5.0E-03				5.0E-03	
P-11	SVOC	Biphenyl	92-52-4	T	D	2			6.50E-04	6.50E-03						
P-11	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2			1.00E-03	1.00E-02						
P-11	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2			1.70E-03	1.70E-02	2.0E-03		2.1E+02		5.7E+00	
P-11	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2			2.00E-04	2.00E-03	6.0E-03				3.2E-01	
P-11	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2			7.80E-04	7.80E-03						
P-11	SVOC	Butylbenzylphthalate	85-68-7	T	C	2			2.30E-04	2.30E-03	1.2E+00				2.7E+00	
P-11	SVOC	Caprolactam	105-60-2	T		2			4.50E-04	4.50E-03	5.8E+00				3.9E+05	
P-11	SVOC	Carbazole	86-74-8	T	B2	2			6.10E-04	6.10E-03	8.5E-02				7.4E+00	
P-11	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2			5.50E-04	5.50E-03	1.5E-01				7.9E+01	
P-11	SVOC	2-Chloronaphthalene	91-58-7	T		2			7.30E-04	7.30E-03	1.8E+00				6.7E+00	
P-11	SVOC	2-Chlorophenol	95-57-8	T		2			1.30E-03	1.30E-02	4.5E-02				9.4E+01	
P-11	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2			6.60E-04	6.60E-03						
P-11	SVOC	Chrysene	218-01-9	T	B2	2			6.70E-04	6.70E-03	5.0E-03				5.0E-03	
P-11	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2			6.80E-04	6.80E-03	2.0E-03				2.0E-03	
P-11	SVOC	Dibenzofuran	132-64-9	T	D	2			6.60E-04	6.60E-03						
P-11	SVOC	2,4-Dichlorophenol	120-83-2	T		2			7.00E-04	7.00E-03	7.3E-02				4.8E+01	
P-11	SVOC	Diethylphthalate	84-66-2	T	D	2			2.50E-04	2.50E-03	5.5E+00				1.1E+03	
P-11	SVOC	2,4-Dimethylphenol	105-67-9	T		2			1.00E-03	1.00E-02	3.7E-01				5.2E+02	
P-11	SVOC	Dimethylphthalate	131-11-3	T	D	2			2.00E-04	2.00E-03	7.3E+01				4.2E+03	
P-11	SVOC	Di-n-butylphthalate	84-74-2	T	D	2			3.70E-04	3.70E-03	8.8E-01				1.1E+01	
P-11	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2			2.10E-03	2.10E-02	2.0E-02				9.5E+00	
P-11	SVOC	2,4-Dinitrophenol	51-28-5	T		2			3.30E-03	3.30E-02						
P-11	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2			4.60E-04	4.60E-03	7.7E-03				8.6E+00	
P-11	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2			7.10E-04	7.10E-03						
P-11	SVOC	Di-n-octylphthalate	117-84-0	T		2			6.90E-04	6.90E-03	1.3E-01				4.0E-01	
P-11	SVOC	Fluoranthene	206-44-0	T	D	2			7.10E-04	7.10E-03	2.1E-01		2.1E-01		2.1E-01	
P-11	SVOC	Fluorene	86-73-7	T	D	2			7.50E-04	7.50E-03	8.8E-01		2.0E+00		2.0E+00	
P-11	SVOC	Hexachlorobenzene	118-74-1	T	B2	2			7.70E-04	7.70E-03	1.0E-03		3.0E+00		4.6E-03	
P-11	SVOC	Hexachlorobutadiene	87-68-3	T	C	2			1.50E-03	1.50E-02	1.5E-02		3.2E+00		4.0E-01	
P-11	SVOC	Hexachloroethane	67-72-1	T	C	2			1.60E-03	1.60E-02	7.3E-03		5.0E+01		1.9E+00	
P-11	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2			6.90E-04	6.90E-03	2.0E-03				2.0E-03	
P-11	SVOC	Isophorone	78-59-1	T	C	2			8.60E-04	8.60E-03	7.7E-01				9.9E+02	
P-11	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2			9.30E-04	9.30E-03	2.6E-01				2.5E+01	
P-11	SVOC	Methylphenol (total)	1319-77-3	T		2			9.00E-04	9.00E-03	3.7E-01				8.1E+02	
P-11	SVOC	Naphthalene	91-20-3	T	C	2			1.30E-03	1.30E-02	5.2E-01		3.1E+01		3.1E+01	
P-11	SVOC	2-Nitroaniline	88-74-4	T		2			4.90E-04	4.90E-03						
P-11	SVOC	4-Nitroaniline	100-01-6	T	C	2			5.90E-04	5.90E-03						
P-11	SVOC	Nitrobenzene	98-95-3	T	D	2			1.30E-03	1.30E-02	3.4E-03		5.5E+02		1.1E+01	
P-11	SVOC	2-Nitrophenol	88-75-5	T		2			9.50E-04	9.50E-03	2.0E-02				7.9E+01	
P-11	SVOC	4-Nitrophenol	100-02-7	T		2			3.50E-03	3.50E-02						
P-11	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2			6.40E-04	6.40E-03	2.7E-01				3.5E+01	
P-11	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2			1.10E-03	1.10E-02	5.0E-03				3.6E-01	
P-11	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2			1.80E-03	1.80E-02						

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-11	SVOC	Pentachlorophenol	87-86-5	T	B2	1			2.60E-02	2.60E-02	1.0E-03				2.0E-01	
P-11	SVOC	Phenanthrene	85-01-8	T	D	2			6.80E-04	6.80E-03	5.2E-02		1.0E+00		1.0E+00	
P-11	SVOC	Phenol	108-95-2	T	ID	2			1.30E-03	1.30E-02	4.4E+00				2.9E+04	
P-11	SVOC	Pyrene	129-00-0	T	D	2			6.30E-04	6.30E-03	1.4E-01		1.4E-01		1.4E-01	
P-11	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2			8.60E-04	8.60E-03	7.3E-01				1.7E+02	
P-11	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2			7.10E-04	7.10E-03	1.2E-01				1.0E+01	
P-11	P/PCB	PCBs (total)	1336-36-3	T	B2	2			8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
P-11	INORG	Antimony	7440-36-0	T		2			3.40E-03	3.40E-03	6.0E-03				6.8E+01	
P-11	INORG	Arsenic	7440-38-2	T	A	2	3.90E-03	2.36E-02			5.0E-02	4.7E-01			4.3E+00	5.5E-03
P-11	INORG	Barium	7440-39-3	T	D	2	4.23E-02	3.97E-01			2.0E+00	2.0E-01			1.4E+04	2.8E-05
P-11	INORG	Beryllium	7440-41-7	T	B1	2			6.00E-04	6.00E-04	4.0E-03				2.9E+02	
P-11	INORG	Cadmium	7440-43-9	T	B1	2			2.80E-04	2.80E-04	5.0E-03				1.9E+02	
P-11	INORG	Chromium (total)	7440-47-3	T		2			1.50E-03	1.50E-03	1.0E-01				4.6E+02	
P-11	INORG	Cobalt	7440-48-4	T	B1	2	5.35E-02	5.35E-02	7.40E-04	7.40E-04	4.0E-02	1.3E+00			2.4E+03	2.2E-05
P-11	INORG	Copper	7440-50-8	T	D	2	9.10E-03	9.10E-03	1.70E-03	1.70E-03	1.4E+00	6.5E-03			7.4E+03	1.2E-06
P-11	INORG	Lead	7439-92-1	T	B2	2			1.60E-03	1.60E-03	4.0E-03					
P-11	INORG	Manganese	7439-96-5	T	D	2	3.11E-02	5.01E-01			8.6E-01	5.8E-01			9.1E+03	5.5E-05
P-11	INORG	Mercury	7439-97-6	T	D	2			8.70E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
P-11	INORG	Nickel	7440-02-0	T	A	2	9.75E-03	9.75E-03	2.90E-03	2.90E-03	1.0E-01	9.8E-02			7.4E+04	1.3E-07
P-11	INORG	Selenium	7782-49-2	T	D	2			4.70E-03	4.70E-03	5.0E-02				9.7E+02	
P-11	INORG	Silver	7440-22-4	T	D	2			9.80E-04	9.80E-04	3.4E-02				1.5E+03	
P-11	INORG	Thallium	7440-28-0	T		2			3.30E-05	3.30E-05	2.0E-03				1.3E+01	
P-11	INORG	Vanadium	7440-62-2	T		2	5.98E-04	5.98E-04	6.70E-04	6.70E-04	4.5E-03	1.3E-01			9.7E+02	6.2E-07
P-11	INORG	Zinc	7440-66-6	T	D	2			1.40E-02	1.40E-02	2.4E+00				1.1E+05	
PSB	VOC	Acetone	67-64-1	T	ID	4			5.10E-04	1.00E-03	7.3E-01		1.0E+06		3.1E+04	
PSB	VOC	Benzene	71-43-2	T	A	4	1.20E-03	1.40E-03	1.60E-04	1.60E-04	5.0E-03	2.8E-01		4.0E-05	1.1E+01	1.3E-04
PSB	VOC	Bromodichloromethane	75-27-4	T	B2	4			1.70E-04	3.40E-04	1.0E-01				1.4E+01	
PSB	VOC	Bromoform	75-25-2	T	B2	4			1.80E-04	3.60E-04	1.0E-01				1.4E+02	
PSB	VOC	Bromomethane	74-83-9	T	D	4			2.00E-04	4.00E-04	1.0E-02		9.0E+00		7.0E+01	
PSB	VOC	2-Butanone	78-93-3	T	ID	4	4.00E-03	4.00E-03	4.10E-04	8.20E-04	1.3E+01	3.1E-04	2.4E+05	1.7E-08	2.4E+05	1.7E-08
PSB	VOC	Carbon Disulfide	75-15-0	T		4	8.30E-04	8.30E-04	2.00E-04	4.00E-04	8.0E-01	1.0E-03	5.5E+02	1.5E-06	1.2E+03	6.9E-07
PSB	VOC	Carbon Tetrachloride	56-23-5	T	B2	4			1.20E-04	2.40E-04	5.0E-03		2.4E+00		4.6E+00	
PSB	VOC	Chlorobenzene	108-90-7	T	D	4			1.40E-04	2.80E-04	1.0E-01		4.7E+02		8.6E+01	
PSB	VOC	Chloroethane	75-00-3	T		4			2.60E-04	5.20E-04	4.3E-01		5.7E+03		4.4E+02	
PSB	VOC	Chloroform	67-66-3	T	B2	4			1.40E-04	2.80E-04	1.0E-01		1.8E+02		1.5E+02	
PSB	VOC	Chloromethane	74-87-3	T	D	4			1.30E-04	2.60E-04	2.6E-01		4.5E+01		4.9E+02	
PSB	VOC	Cumene	98-82-8	T	D	4	1.70E-04	3.20E-04	1.20E-04	1.20E-04	8.0E-01	4.0E-04	5.6E+01	5.7E-06	5.6E+01	5.7E-06
PSB	VOC	Cyclohexane	110-82-7	T	ID	4	2.00E-04	4.40E-04								
PSB	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4			6.20E-04	1.20E-03	2.0E-04		1.2E+00		3.9E-01	
PSB	VOC	Dibromochloromethane	124-48-1	T	C	4			2.60E-04	5.20E-04	1.0E-01		1.1E+02		1.8E+01	
PSB	VOC	1,2-Dibromoethane	106-93-4	T	B2	4			2.20E-04	4.40E-04	1.0E-03		1.5E+01		2.5E-02	
PSB	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4			1.10E-04	2.20E-04	6.0E-01		1.6E+02		1.6E+02	
PSB	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4			1.50E-04	3.00E-04	6.6E-03				2.0E+00	
PSB	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4			1.70E-04	3.40E-04	7.5E-02		7.4E+01		6.4E+00	
PSB	VOC	Dichlorodifluoromethane	75-71-8	T		4			2.60E-04	5.20E-04	1.7E+00		3.0E+02		3.0E+02	
PSB	VOC	1,1-Dichloroethane	75-34-3	T	C	4			1.60E-04	3.20E-04	8.8E-01		2.3E+03		2.4E+03	
PSB	VOC	1,2-Dichloroethane	107-06-2	T	B2	4			2.10E-04	4.20E-04	5.0E-03		5.9E+01		1.9E+01	
PSB	VOC	1,1-Dichloroethene	75-35-4	T	C	4			2.40E-04	4.80E-04	7.0E-03		1.3E+00		1.1E+01	
PSB	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4			2.20E-04	4.40E-04	7.0E-02		2.1E+02		2.0E+02	
PSB	VOC	trans-1,2-Dichloroethene	156-60-5	T		4			1.50E-04	3.00E-04	1.0E-01		2.0E+02		2.2E+02	
PSB	VOC	1,2-Dichloropropane	78-87-5	T	B2	4			1.70E-04	3.40E-04	5.0E-03		3.6E+01		1.6E+01	
PSB	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4			2.70E-04	5.40E-04	8.5E-03		2.6E+01		5.5E+00	
PSB	VOC	Ethyl Benzene	100-41-4	T	D	4	5.70E-04	7.40E-04	1.20E-04	1.20E-04	7.0E-01	1.1E-03	1.7E+02	4.4E-06	1.7E+02	4.4E-06
PSB	VOC	2-Hexanone	591-78-6	T		4			4.60E-04	9.20E-04	1.0E+00		8.7E+03		5.2E+03	
PSB	VOC	Methyl Acetate	79-20-9	T		4			4.10E-04	8.20E-04						
PSB	VOC	Methyl tert-butyl ether	1634-04-4	T		4			1.30E-04	2.60E-04	2.4E-01		4.7E+04		6.1E+02	
PSB	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4			2.30E-04	4.60E-04	1.8E+00		2.0E+04		1.3E+04	
PSB	VOC	Methylcyclohexane	108-87-2	T		4	1.60E-04	4.70E-04								
PSB	VOC	Methylene Chloride	75-09-2	T	B2	4			3.40E-04	6.80E-04	5.0E-03		1.4E+03		2.2E+02	
PSB	VOC	Styrene	100-42-5	T		4			1.50E-04	3.00E-04	1.0E-01		3.1E+02		9.7E+00	
PSB	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4			2.50E-04	5.00E-04	8.5E-03		7.7E+01		4.7E+00	
PSB	VOC	Tetrachloroethene	127-18-4	T	C-B2	4			2.30E-04	4.60E-04	5.0E-03		1.7E+02		1.2E+01	
PSB	VOC	Toluene	108-88-3	T	D	4	1.20E-03	2.40E-03	1.80E-04	1.80E-04	1.0E+00	2.4E-03	5.3E+02	4.5E-06	5.3E+02	4.5E-06
PSB	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4			1.70E-04	3.40E-04	7.0E-02		3.0E+02		1.9E+01	
PSB	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4			1.50E-04	3.00E-04	2.0E-01		1.3E+03		1.3E+03	
PSB	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4			3.00E-04	6.00E-04	5.0E-03		1.1E+02		2.1E+01	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
PSB	VOC	Trichloroethene	79-01-6	T	C-B2	4			1.40E-04	2.80E-04	5.0E-03		9.7E+01		2.2E+01	
PSB	VOC	Trichlorofluoromethane	75-69-4	T		4			2.80E-04	5.60E-04	2.6E+00				1.1E+03	
PSB	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4			3.20E-04	6.40E-04	1.7E+02		1.7E+02		1.7E+02	
PSB	VOC	Vinyl Chloride	75-01-4	T	A	4			1.50E-04	3.00E-04	2.0E-03		1.3E+01		1.0E+00	
PSB	VOC	Xylenes (total)	1330-20-7	T	ID	4	3 4.90E-04	9.50E-03	3.30E-04	3.30E-04	1.0E+01	9.5E-04	1.9E+02	5.0E-05	1.9E+02	5.0E-05
PSB	SVOC	Acenaphthene	83-32-9	T		4	1 1.50E-03	1.50E-03	8.00E-04	8.00E-04	1.3E+00	1.2E-03	4.2E+00	3.6E-04	4.2E+00	3.6E-04
PSB	SVOC	Acenaphthylene	208-96-8	T	D	4			7.10E-04	7.10E-04	5.2E-02		3.9E+00		3.9E+00	
PSB	SVOC	Acetophenone	98-86-2	T	D	4			2.60E-03	2.60E-03	1.5E+00		6.1E+03		6.1E+03	
PSB	SVOC	Anthracene	120-12-7	T	D	4			6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	
PSB	SVOC	Atrazine	1912-24-9	T		4			2.50E-03	2.50E-03	3.0E-03				5.4E+00	
PSB	SVOC	Benzaldehyde	100-52-7	T		4			2.80E-03	2.80E-03						
PSB	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4			7.00E-04	7.00E-04	2.1E-03				9.4E-03	
PSB	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4			7.30E-04	7.30E-04	5.0E-03				2.0E-03	
PSB	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4			9.40E-04	9.40E-04	2.0E-03				2.0E-03	
PSB	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4			8.50E-04	8.50E-04	5.0E-03				5.0E-03	
PSB	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4			8.40E-04	8.40E-04	5.0E-03				5.0E-03	
PSB	SVOC	Biphenyl	92-52-4	T	D	4			2.60E-03	2.60E-03						
PSB	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4			8.70E-04	8.70E-04						
PSB	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4			9.70E-04	9.70E-04	2.0E-03		2.1E+02		5.7E+00	
PSB	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4			2.70E-03	2.70E-03	6.0E-03				3.2E-01	
PSB	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4			8.80E-04	8.80E-04						
PSB	SVOC	Butylbenzylphthalate	85-68-7	T	C	4			8.80E-04	8.80E-04	1.2E+00				2.7E+00	
PSB	SVOC	Caprolactam	105-60-2	T		4			2.50E-03	2.50E-03	5.8E+00				3.9E+05	
PSB	SVOC	Carbazole	86-74-8	T	B2	4	2 1.10E-03	1.40E-03	8.20E-04	8.20E-04	8.5E-02	1.6E-02			7.4E+00	1.9E-04
PSB	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4			9.90E-04	9.90E-04	1.5E-01				7.9E+01	
PSB	SVOC	4-Chloroaniline	106-47-8	T		2			6.10E-04	6.10E-04						
PSB	SVOC	2-Chloronaphthalene	91-58-7	T		4			8.50E-04	8.50E-04	1.8E+00				6.7E+00	
PSB	SVOC	2-Chlorophenol	95-57-8	T		4			1.00E-03	1.00E-03	4.5E-02				9.4E+01	
PSB	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4			7.90E-04	7.90E-04						
PSB	SVOC	Chrysene	218-01-9	T	B2	4			7.50E-04	7.50E-04	5.0E-03				5.0E-03	
PSB	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4			7.90E-04	7.90E-04	2.0E-03				2.0E-03	
PSB	SVOC	Dibenzofuran	132-64-9	T	D	4			1.10E-03	1.10E-03						
PSB	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4			9.30E-04	9.30E-04	1.1E-03				1.8E-01	
PSB	SVOC	2,4-Dichlorophenol	120-83-2	T		4			8.50E-04	8.50E-04	7.3E-02				4.8E+01	
PSB	SVOC	Diethylphthalate	84-66-2	T	D	4			6.50E-04	6.50E-04	5.5E+00				1.1E+03	
PSB	SVOC	2,4-Dimethylphenol	105-67-9	T		4			8.50E-04	8.50E-04	3.7E-01				5.2E+02	
PSB	SVOC	Dimethylphthalate	131-11-3	T	D	4			7.60E-04	7.60E-04	7.3E+01				4.2E+03	
PSB	SVOC	Di-n-butylphthalate	84-74-2	T	D	4			6.70E-04	6.70E-04	8.8E-01				1.1E+01	
PSB	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4			1.30E-03	1.30E-03	2.0E-02				9.5E+00	
PSB	SVOC	2,4-Dinitrophenol	51-28-5	T		4			3.00E-03	3.00E-03						
PSB	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4			7.90E-04	7.90E-04	7.7E-03				8.6E+00	
PSB	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4			5.70E-04	5.70E-04						
PSB	SVOC	Di-n-octylphthalate	117-84-0	T		4			1.10E-03	1.10E-03	1.3E-01				4.0E-01	
PSB	SVOC	Fluoranthene	206-44-0	T	D	4			8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
PSB	SVOC	Fluorene	86-73-7	T	D	4			1.00E-03	1.00E-03	8.8E-01		2.0E+00		2.0E+00	
PSB	SVOC	Hexachlorobenzene	118-74-1	T	B2	4			7.40E-04	7.40E-04	1.0E-03		3.0E+00		4.6E-03	
PSB	SVOC	Hexachlorobutadiene	87-68-3	T	C	4			7.30E-04	7.30E-04	1.5E-02		3.2E+00		4.0E-01	
PSB	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4			1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
PSB	SVOC	Hexachloroethane	67-72-1	T	C	4			7.40E-04	7.40E-04	7.3E-03		5.0E+01		1.9E+00	
PSB	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4			6.30E-04	6.30E-04	2.0E-03				2.0E-03	
PSB	SVOC	Isophorone	78-59-1	T	C	4			6.30E-04	6.30E-04	7.7E-01				9.9E+02	
PSB	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4	1 8.90E-04	8.90E-04	6.40E-04	6.40E-04	2.6E-01	3.4E-03			2.5E+01	3.6E-05
PSB	SVOC	Methylphenol (total)	1319-77-3	T		4	2 3.75E-03	4.55E-03	1.30E-03	1.30E-03	3.7E-01	1.2E-02			8.1E+02	5.6E-06
PSB	SVOC	Naphthalene	91-20-3	T	C	4	2 5.30E-03	6.80E-03	7.50E-04	7.50E-04	5.2E-01	1.3E-02	3.1E+01	2.2E-04	3.1E+01	2.2E-04
PSB	SVOC	2-Nitroaniline	88-74-4	T		4			7.00E-04	7.00E-04						
PSB	SVOC	3-Nitroaniline	99-09-2	T	C	4			7.10E-04	7.10E-04						
PSB	SVOC	4-Nitroaniline	100-01-6	T	C	4			1.30E-03	1.30E-03						
PSB	SVOC	Nitrobenzene	98-95-3	T	D	4			8.10E-04	8.10E-04	3.4E-03		5.5E+02		1.1E+01	
PSB	SVOC	2-Nitrophenol	88-75-5	T		4			2.10E-03	2.10E-03	2.0E-02				7.9E+01	
PSB	SVOC	4-Nitrophenol	100-02-7	T		4			1.90E-03	1.90E-03						
PSB	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4			1.40E-03	1.40E-03	2.7E-01				3.5E+01	
PSB	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4			6.70E-04	6.70E-04	5.0E-03				3.6E-01	
PSB	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4			7.80E-04	7.80E-04						
PSB	SVOC	Pentachlorophenol	87-86-5	T	B2	4			2.40E-03	2.40E-03	1.0E-03				2.0E-01	
PSB	SVOC	Phenanthrene	85-01-8	T	D	4	1 1.10E-03	1.10E-03	8.20E-04	8.20E-04	5.2E-02	2.1E-02	1.0E+00	1.1E-03	1.0E+00	1.1E-03
PSB	SVOC	Phenol	108-95-2	T	ID	4	2 6.10E-02	6.70E-02	2.60E-03	2.60E-03	4.4E+00	1.5E-02			2.9E+04	2.3E-06

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
PSB	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
PSB	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	1.20E-03	7.3E-01				1.7E+02	
PSB	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	1.70E-03	1.2E-01				1.0E+01	
PSB	P/PCB	PCBs (total)	1336-36-3	D	B2	2				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
PSB	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
PSB	INORG	Antimony	7440-36-0	D		4	1	2.70E-03	2.70E-03	2.20E-03	2.20E-03	6.0E-03	4.5E-01			6.8E+01	4.0E-05
PSB	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
PSB	INORG	Arsenic	7440-38-2	D	A	4	4	4.50E-03	1.51E-02			5.0E-02	3.0E-01			4.3E+00	3.5E-03
PSB	INORG	Arsenic	7440-38-2	T	A	4	3	6.00E-03	1.42E-02	3.90E-03	3.90E-03	5.0E-02	2.8E-01			4.3E+00	3.3E-03
PSB	INORG	Barium	7440-39-3	D	D	4	4	5.55E-01	9.09E-01			2.0E+00	4.5E-01			1.4E+04	6.5E-05
PSB	INORG	Barium	7440-39-3	T	D	4	4	5.66E-01	8.79E-01			2.0E+00	4.4E-01			1.4E+04	6.3E-05
PSB	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
PSB	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
PSB	INORG	Cadmium	7440-43-9	D	B1	4				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
PSB	INORG	Cadmium	7440-43-9	T	B1	4				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
PSB	INORG	Chromium (total)	7440-47-3	D		4				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
PSB	INORG	Chromium (total)	7440-47-3	T		4				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
PSB	INORG	Cobalt	7440-48-4	D	B1	4				1.30E-03	1.30E-03	4.0E-02				2.4E+03	
PSB	INORG	Cobalt	7440-48-4	T	B1	4				1.30E-03	1.30E-03	4.0E-02				2.4E+03	
PSB	INORG	Copper	7440-50-8	D	D	4				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
PSB	INORG	Copper	7440-50-8	T	D	4				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
PSB	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	2.50E-03	4.0E-03					
PSB	INORG	Lead	7439-92-1	T	B2	4				2.50E-03	2.50E-03	4.0E-03					
PSB	INORG	Manganese	7439-96-5	D	D	4	2	3.43E-01	4.14E-01	9.00E-04	9.00E-04	8.6E-01	4.8E-01			9.1E+03	4.5E-05
PSB	INORG	Manganese	7439-96-5	T	D	4	4	4.50E-03	3.97E-01			8.6E-01	4.6E-01			9.1E+03	4.4E-05
PSB	INORG	Mercury	7439-97-6	D	D	4	1	2.50E-04	2.50E-04	6.90E-05	6.90E-05	2.0E-03	1.3E-01	5.6E-02	4.5E-03	5.6E-02	4.5E-03
PSB	INORG	Mercury	7439-97-6	T	D	4	2	9.20E-05	1.10E-04	6.90E-05	6.90E-05	2.0E-03	5.5E-02	5.6E-02	2.0E-03	5.6E-02	2.0E-03
PSB	INORG	Nickel	7440-02-0	D	A	4	2	4.30E-03	1.56E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.1E-07
PSB	INORG	Nickel	7440-02-0	T	A	4	2	3.90E-03	1.55E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.1E-07
PSB	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
PSB	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
PSB	INORG	Silver	7440-22-4	D	D	4				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
PSB	INORG	Silver	7440-22-4	T	D	4				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
PSB	INORG	Thallium	7440-28-0	D		4				1.80E-05	5.00E-03	2.0E-03				1.3E+01	
PSB	INORG	Thallium	7440-28-0	T		4				1.80E-05	5.00E-03	2.0E-03				1.3E+01	
PSB	INORG	Vanadium	7440-62-2	D		4	1	2.50E-03	2.50E-03	8.20E-04	8.20E-04	4.5E-03	5.6E-01			9.7E+02	2.6E-06
PSB	INORG	Vanadium	7440-62-2	T		4	1	2.40E-03	2.40E-03	8.20E-04	8.20E-04	4.5E-03	5.3E-01			9.7E+02	2.5E-06
PSB	INORG	Zinc	7440-66-6	D	D	4				1.20E-02	1.20E-02	2.4E+00				1.1E+05	
PSB	INORG	Zinc	7440-66-6	T	D	4	3	1.33E-02	1.97E-02	1.20E-02	1.20E-02	2.4E+00	8.2E-03			1.1E+05	1.8E-07
SWDF	VOC	Acetone	67-64-1	T	ID	10	3	2.10E-03	5.50E-03	1.10E-03	1.10E-03	7.3E-01	7.5E-03	1.0E+06	5.5E-09	3.1E+04	1.8E-07
SWDF	VOC	Benzene	71-43-2	T	A	10	1	4.50E-04	4.50E-04	3.70E-04	3.70E-04	5.0E-03	9.0E-02	3.5E+01	1.3E-05	1.1E+01	4.1E-05
SWDF	VOC	Bromodichloromethane	75-27-4	T	B2	10				3.20E-04	3.20E-04	1.0E-01				1.4E+01	
SWDF	VOC	Bromoform	75-25-2	T	B2	10				3.70E-04	3.70E-04	1.0E-01				1.4E+02	
SWDF	VOC	Bromomethane	74-83-9	T	D	10				3.00E-04	3.00E-04	1.0E-02				7.0E+01	
SWDF	VOC	2-Butanone	78-93-3	T	ID	10	1	1.30E-03	1.30E-03	5.90E-04	5.90E-04	1.3E+01	1.0E-04	2.4E+05	5.4E-09	2.4E+05	5.4E-09
SWDF	VOC	Carbon Disulfide	75-15-0	T		10	6	1.80E-04	2.30E-03	2.40E-04	2.40E-04	8.0E-01	2.9E-03	5.5E+02	4.2E-06	1.2E+03	1.9E-06
SWDF	VOC	Carbon Tetrachloride	56-23-5	T	B2	10				3.70E-04	3.70E-04	5.0E-03				4.6E+00	
SWDF	VOC	Chlorobenzene	108-90-7	T	D	10				3.80E-04	3.80E-04	1.0E-01				8.6E+01	
SWDF	VOC	Chloroethane	75-00-3	T		10				2.90E-04	2.90E-04	4.3E-01				5.7E+03	
SWDF	VOC	Chloroform	67-66-3	T	B2	10				3.50E-04	3.50E-04	1.0E-01				1.5E+02	
SWDF	VOC	Chloromethane	74-87-3	T	D	10				4.90E-04	4.90E-04	2.6E-01				4.9E+02	
SWDF	VOC	Cumene	98-82-8	T	D	10				3.90E-04	3.90E-04	8.0E-01				5.6E+01	
SWDF	VOC	Cyclohexane	110-82-7	T	ID	10				3.30E-04	3.30E-04						
SWDF	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	10				8.20E-04	8.20E-04	2.0E-04				3.9E-01	
SWDF	VOC	Dibromochloromethane	124-48-1	T	C	10				3.70E-04	3.70E-04	1.0E-01				1.8E+01	
SWDF	VOC	1,2-Dibromoethane	106-93-4	T	B2	10				3.40E-04	3.40E-04	1.0E-03				2.5E-02	
SWDF	VOC	1,2-Dichlorobenzene	95-50-1	T	D	10				3.80E-04	3.80E-04	6.0E-01				1.6E+02	
SWDF	VOC	1,3-Dichlorobenzene	541-73-1	T	D	10				3.80E-04	3.80E-04	6.6E-03				2.0E+00	
SWDF	VOC	1,4-Dichlorobenzene	106-46-7	T	C	10				3.80E-04	3.80E-04	7.5E-02				6.4E+00	
SWDF	VOC	Dichlorodifluoromethane	75-71-8	T		10				4.90E-04	4.90E-04	1.7E+00				3.0E+02	
SWDF	VOC	1,1-Dichloroethane	75-34-3	T	C	10	1	5.40E-04	5.40E-04	3.00E-04	3.00E-04	8.8E-01	6.1E-04	2.3E+03	2.3E-07	2.4E+03	2.3E-07
SWDF	VOC	1,2-Dichloroethane	107-06-2	T	B2	10				2.80E-04	2.80E-04	5.0E-03				1.9E+01	
SWDF	VOC	1,1-Dichloroethene	75-35-4	T	C	10				3.10E-04	3.10E-04	7.0E-03				1.1E+01	
SWDF	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				3.50E-04	3.50E-04	7.0E-02				2.0E+02	
SWDF	VOC	trans-1,2-Dichloroethene	156-60-5	T		10				3.30E-04	3.30E-04	1.0E-01				2.2E+02	
SWDF	VOC	1,2-Dichloropropane	78-87-5	T	B2	10				4.10E-04	4.10E-04	5.0E-03				1.6E+01	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWDF	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				3.50E-04	3.50E-04	8.5E-03		2.6E+01		5.5E+00	
SWDF	VOC	Ethyl Benzene	100-41-4	T	D	10				4.10E-04	4.10E-04	7.0E-01		1.7E+02		1.7E+02	
SWDF	VOC	2-Hexanone	591-78-6	T		10				5.80E-04	5.80E-04	1.0E+00		8.7E+03		5.2E+03	
SWDF	VOC	Methyl Acetate	79-20-9	T		10				5.40E-04	5.40E-04						
SWDF	VOC	Methyl tert-butyl ether	1634-04-4	T		10				2.70E-04	2.70E-04	2.4E-01		4.7E+04		6.1E+02	
SWDF	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	9	6	7.80E-04	3.30E-03	2.60E-04	2.60E-04	1.8E+00	1.8E-03	2.0E+04	1.7E-07	1.3E+04	2.5E-07
SWDF	VOC	Methylcyclohexane	108-87-2	T		10				4.20E-04	4.20E-04						
SWDF	VOC	Methylene Chloride	75-09-2	T	B2	10				2.90E-04	2.90E-04	5.0E-03		1.4E+03		2.2E+02	
SWDF	VOC	Styrene	100-42-5	T		10				3.50E-04	3.50E-04	1.0E-01		3.1E+02		9.7E+00	
SWDF	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	10				3.60E-04	3.60E-04	8.5E-03		7.7E+01		4.7E+00	
SWDF	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				4.20E-04	4.20E-04	5.0E-03		1.7E+02		1.2E+01	
SWDF	VOC	Toluene	108-88-3	T	D	10	8	4.70E-04	9.50E-04	3.90E-04	3.90E-04	1.0E+00	9.5E-04	5.3E+02	1.8E-06	5.3E+02	1.8E-06
SWDF	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	10				4.00E-04	4.00E-04	7.0E-02		3.0E+02		1.9E+01	
SWDF	VOC	1,1,1-Trichloroethane	71-55-6	T	D	10				3.90E-04	3.90E-04	2.0E-01		1.3E+03		1.3E+03	
SWDF	VOC	1,1,2-Trichloroethane	79-00-5	T	C	10				3.60E-04	3.60E-04	5.0E-03		1.1E+02		2.1E+01	
SWDF	VOC	Trichloroethene	79-01-6	T	C-B2	10				4.20E-04	4.20E-04	5.0E-03		9.7E+01		2.2E+01	
SWDF	VOC	Trichlorofluoromethane	75-69-4	T		10				5.40E-04	5.40E-04	2.6E+00		1.1E+03		1.1E+03	
SWDF	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		10				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
SWDF	VOC	Vinyl Chloride	75-01-4	T	A	10				3.60E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
SWDF	VOC	Xylenes (total)	1330-20-7	T	ID	10	6	5.20E-04	1.50E-03	4.40E-04	4.40E-04	1.0E+01	1.5E-04	1.9E+02	7.9E-06	1.9E+02	7.9E-06
SWDF	SVOC	Acenaphthene	83-32-9	T		10	3	8.60E-04	1.35E-03	8.00E-04	2.00E-03	1.3E+00	1.0E-03	4.2E+00	3.2E-04	4.2E+00	3.2E-04
SWDF	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	1.80E-03	5.2E-02		3.9E+00		3.9E+00	
SWDF	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	6.50E-03	1.5E+00		6.1E+03		6.1E+03	
SWDF	SVOC	Anthracene	120-12-7	T	D	10	1	7.40E-04	7.40E-04	6.80E-04	1.70E-03	4.3E-02	1.7E-02	4.3E-02	1.7E-02	4.3E-02	1.7E-02
SWDF	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	6.20E-03	3.0E-03				5.4E+00	
SWDF	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	7.00E-03						
SWDF	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	1.80E-03	2.1E-03				9.4E-03	
SWDF	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	1.80E-03	5.0E-03				2.0E-03	
SWDF	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	2.40E-03	2.0E-03				2.0E-03	
SWDF	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	2.10E-03	5.0E-03				5.0E-03	
SWDF	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	2.10E-03	5.0E-03				5.0E-03	
SWDF	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	6.50E-03						
SWDF	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	2.20E-03						
SWDF	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	2.40E-03	2.0E-03		2.1E+02		5.7E+00	
SWDF	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10				2.70E-03	6.80E-03	6.0E-03				3.2E-01	
SWDF	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	2.20E-03						
SWDF	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	2.20E-03	1.2E+00				2.7E+00	
SWDF	SVOC	Caprolactam	105-60-2	T		10				2.50E-03	6.20E-03	5.8E+00				3.9E+05	
SWDF	SVOC	Carbazole	86-74-8	T	B2	10	5	1.00E-03	4.70E-03	8.20E-04	2.00E-03	8.5E-02	5.5E-02			7.4E+00	6.4E-04
SWDF	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	2.50E-03	1.5E-01				7.9E+01	
SWDF	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	1.50E-03						
SWDF	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	2.10E-03	1.8E+00				6.7E+00	
SWDF	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	2.50E-03	4.5E-02				9.4E+01	
SWDF	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	2.00E-03						
SWDF	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	1.90E-03	5.0E-03				5.0E-03	
SWDF	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	2.00E-03	2.0E-03				2.0E-03	
SWDF	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	2.80E-03						
SWDF	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	2.30E-03	1.1E-03				1.8E-01	
SWDF	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	2.10E-03	7.3E-02				4.8E+01	
SWDF	SVOC	Diethylphthalate	84-66-2	T	D	10	4	8.00E-04	2.30E-03	6.50E-04	1.60E-03	5.5E+00	4.2E-04			1.1E+03	2.1E-06
SWDF	SVOC	2,4-Dimethylphenol	105-67-9	T		10	7	1.30E-03	1.50E-02	8.50E-04	8.50E-04	3.7E-01	4.1E-02			5.2E+02	2.9E-05
SWDF	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	1.90E-03	7.3E+01				4.2E+03	
SWDF	SVOC	Di-n-butylphthalate	84-74-2	T	D	10	1	7.70E-04	7.70E-04	6.70E-04	1.70E-03	8.8E-01	8.8E-04			1.1E+01	7.0E-05
SWDF	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	3.20E-03	2.0E-02				9.5E+00	
SWDF	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	7.50E-03						
SWDF	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	2.00E-03	7.7E-03				8.6E+00	
SWDF	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	1.40E-03						
SWDF	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	2.80E-03	1.3E-01				4.0E-01	
SWDF	SVOC	Fluoranthene	206-44-0	T	D	10	1	9.15E-04	9.15E-04	8.10E-04	2.00E-03	2.1E-01	4.4E-03	2.1E-01	4.4E-03	2.1E-01	4.4E-03
SWDF	SVOC	Fluorene	86-73-7	T	D	10	2	1.65E-03	1.70E-03	1.00E-03	2.50E-03	8.8E-01	1.9E-03	2.0E+00	8.5E-04	2.0E+00	8.5E-04
SWDF	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	1.80E-03	1.0E-03		3.0E+00		4.6E-03	
SWDF	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	1.80E-03	1.5E-02		3.2E+00		4.6E-01	
SWDF	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	10				1.10E-03	2.80E-03	5.0E-02		4.2E-01		1.6E+00	
SWDF	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	1.80E-03	7.3E-03		5.0E+01		1.9E+00	
SWDF	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	1.60E-03	2.0E-03				2.0E-03	
SWDF	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	1.60E-03	7.7E-01				9.9E+02	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWDF	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10 2	7.20E-04	7.30E-04	6.40E-04	1.60E-03	2.6E-01	2.8E-03			2.5E+01	2.9E-05
SWDF	SVOC	Methylphenol (total)	1319-77-3	T		10 7	2.45E-03	1.75E-02	1.30E-03	1.30E-03	3.7E-01	4.7E-02			8.1E+02	2.2E-05
SWDF	SVOC	Naphthalene	91-20-3	T	C	10 6	7.60E-04	3.60E-03	7.50E-04	1.90E-03	5.2E-01	6.9E-03	3.1E+01	1.2E-04	3.1E+01	1.2E-04
SWDF	SVOC	2-Nitroaniline	88-74-4	T		10			7.00E-04	1.80E-03						
SWDF	SVOC	3-Nitroaniline	99-09-2	T	C	10			7.10E-04	1.80E-03						
SWDF	SVOC	4-Nitroaniline	100-01-6	T	C	10			1.30E-03	3.20E-03						
SWDF	SVOC	Nitrobenzene	98-95-3	T	D	10			8.10E-04	2.00E-03	3.4E-03		5.5E+02		1.1E+01	
SWDF	SVOC	2-Nitrophenol	88-75-5	T		10			2.10E-03	5.20E-03	2.0E-02				7.9E+01	
SWDF	SVOC	4-Nitrophenol	100-02-7	T		10			1.90E-03	4.80E-03						
SWDF	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10			1.40E-03	3.50E-03	2.7E-01				3.5E+01	
SWDF	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10			6.70E-04	1.70E-03	5.0E-03				3.6E-01	
SWDF	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10			7.80E-04	2.00E-03						
SWDF	SVOC	Pentachlorophenol	87-86-5	T	B2	10			2.40E-03	6.00E-03	1.0E-03				2.0E-01	
SWDF	SVOC	Phenanthrene	85-01-8	T	D	10 4	9.10E-04	2.25E-03	8.20E-04	2.00E-03	5.2E-02	4.3E-02	1.0E+00	2.3E-03	1.0E+00	2.3E-03
SWDF	SVOC	Phenol	108-95-2	T	ID	10 5	2.70E-03	9.40E-02	2.60E-03	2.60E-03	4.4E+00	2.1E-02			2.9E+04	3.2E-06
SWDF	SVOC	Pyrene	129-00-0	T	D	10			1.10E-03	2.80E-03	1.4E-01		1.4E-01		1.4E-01	
SWDF	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10			1.20E-03	3.00E-03	7.3E-01				1.7E+02	
SWDF	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10			1.70E-03	4.20E-03	1.2E-01				1.0E+01	
SWDF	P/PCB	PCBs (total)	1336-36-3	T	B2	10 9	1.28E-04	1.40E-03	8.20E-05	8.20E-05	5.0E-04	2.8E+00	4.5E-02	3.1E-02	3.3E-03	4.2E-01
SWDF	INORG	Antimony	7440-36-0	D		8 3	8.20E-03	2.23E-02	3.40E-03	3.40E-03	6.0E-03	3.7E+00			6.8E+01	3.3E-04
SWDF	INORG	Antimony	7440-36-0	T		9 2	6.70E-03	1.29E-02	3.40E-03	3.40E-03	6.0E-03	2.2E+00			6.8E+01	1.9E-04
SWDF	INORG	Arsenic	7440-38-2	D	A	8 7	3.60E-03	1.64E-02	2.10E-03	2.10E-03	5.0E-02	3.3E-01			4.3E+00	3.8E-03
SWDF	INORG	Arsenic	7440-38-2	T	A	9 9	3.40E-03	3.06E-02			5.0E-02	6.1E-01			4.3E+00	7.1E-03
SWDF	INORG	Barium	7440-39-3	D	D	8 8	6.01E-02	3.84E-01			2.0E+00	1.9E-01			1.4E+04	2.7E-05
SWDF	INORG	Barium	7440-39-3	T	D	9 9	1.87E-02	4.13E-01			2.0E+00	2.1E-01			1.4E+04	3.0E-05
SWDF	INORG	Beryllium	7440-41-7	D	B1	8 2	6.10E-04	6.20E-04	6.00E-04	6.00E-04	4.0E-03	1.6E-01			2.9E+02	2.1E-06
SWDF	INORG	Beryllium	7440-41-7	T	B1	9 3	6.90E-04	9.00E-04	6.00E-04	6.00E-04	4.0E-03	2.3E-01			2.9E+02	3.1E-06
SWDF	INORG	Cadmium	7440-43-9	D	B1	8 5	3.80E-04	4.90E-04	2.80E-04	2.80E-04	5.0E-03	9.8E-02			1.9E+02	2.6E-06
SWDF	INORG	Cadmium	7440-43-9	T	B1	9 9	3.80E-04	6.70E-03			5.0E-03	1.3E+00			1.9E+02	3.5E-05
SWDF	INORG	Chromium (total)	7440-47-3	D		8			1.50E-03	1.50E-03	1.0E-01				4.6E+02	
SWDF	INORG	Chromium (total)	7440-47-3	T		9 5	4.70E-03	9.00E-02	1.50E-03	1.50E-03	1.0E-01	9.0E-01			4.6E+02	2.0E-04
SWDF	INORG	Cobalt	7440-48-4	D	B1	8 1	1.40E-03	1.40E-03	7.40E-04	7.40E-04	4.0E-02	3.5E-02			2.4E+03	5.8E-07
SWDF	INORG	Cobalt	7440-48-4	T	B1	9 6	9.80E-04	2.80E-02	7.40E-04	7.40E-04	4.0E-02	7.0E-01			2.4E+03	1.2E-05
SWDF	INORG	Copper	7440-50-8	D	D	8 1	8.50E-03	8.50E-03	1.70E-03	1.70E-03	1.4E+00	6.1E-03			7.4E+03	1.1E-06
SWDF	INORG	Copper	7440-50-8	T	D	9 1	1.56E-01	1.56E-01	1.70E-03	1.70E-03	1.4E+00	1.1E-01			7.4E+03	2.1E-05
SWDF	INORG	Lead	7439-92-1	D	B2	8			1.60E-03	1.60E-03	4.0E-03					
SWDF	INORG	Lead	7439-92-1	T	B2	9 6	1.70E-03	1.64E-01	1.60E-03	1.60E-03	4.0E-03	4.1E+01				
SWDF	INORG	Manganese	7439-96-5	D	D	8 4	2.52E-02	1.02E+00	6.80E-04	6.80E-04	8.6E-01	1.2E+00			9.1E+03	1.1E-04
SWDF	INORG	Manganese	7439-96-5	T	D	9 6	5.82E-02	1.64E+00	6.80E-04	6.80E-04	8.6E-01	1.9E+00			9.1E+03	1.8E-04
SWDF	INORG	Mercury	7439-97-6	D	D	8			8.70E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
SWDF	INORG	Mercury	7439-97-6	T	D	9 2	1.60E-04	9.30E-04	8.70E-05	8.70E-05	2.0E-03	4.7E-01	5.6E-02	1.7E-02	5.6E-02	1.7E-02
SWDF	INORG	Nickel	7440-02-0	D	A	8 7	3.40E-03	1.45E-02	2.90E-03	2.90E-03	1.0E-01	1.5E-01			7.4E+04	2.0E-07
SWDF	INORG	Nickel	7440-02-0	T	A	9 9	3.00E-03	9.84E-02			1.0E-01	9.8E-01			7.4E+04	1.3E-06
SWDF	INORG	Selenium	7782-49-2	D	D	8			4.70E-03	4.70E-03	5.0E-02				9.7E+02	
SWDF	INORG	Selenium	7782-49-2	T	D	9			4.70E-03	4.70E-03	5.0E-02				9.7E+02	
SWDF	INORG	Silver	7440-22-4	D	D	8			9.80E-04	9.80E-04	3.4E-02				1.5E+03	
SWDF	INORG	Silver	7440-22-4	T	D	9			9.80E-04	9.80E-04	3.4E-02				1.5E+03	
SWDF	INORG	Thallium	7440-28-0	D		8			3.30E-05	3.30E-05	2.0E-03				1.3E+01	
SWDF	INORG	Thallium	7440-28-0	T		9 1	2.50E-04	2.50E-04	3.30E-05	3.30E-05	2.0E-03	1.3E-01			1.3E+01	1.9E-05
SWDF	INORG	Vanadium	7440-62-2	D		8 7	9.90E-04	1.16E-02	6.70E-04	6.70E-04	4.5E-03	2.6E+00			9.7E+02	1.2E-05
SWDF	INORG	Vanadium	7440-62-2	T		9 9	1.40E-03	8.70E-02			4.5E-03	1.9E+01			9.7E+02	9.0E-05
SWDF	INORG	Zinc	7440-66-6	D	D	8 1	3.59E-02	3.59E-02	1.40E-02	1.40E-02	2.4E+00	1.5E-02			1.1E+05	3.3E-07
SWDF	INORG	Zinc	7440-66-6	T	D	9 2	2.23E-01	3.95E-01	1.40E-02	1.40E-02	2.4E+00	1.6E-01			1.1E+05	3.6E-06
SWHI	VOC	Acetone	67-64-1	T	ID	24 6	1.50E-02	7.80E-02	5.10E-04	1.00E-02	7.3E-01	1.1E-01	1.0E+06	7.8E-08	3.1E+04	2.5E-06
SWHI	VOC	Benzene	71-43-2	T	A	24			1.60E-04	1.00E-03	5.0E-03				1.1E+01	
SWHI	VOC	Bromodichloromethane	75-27-4	T	B2	24 2	1.80E-04	4.20E-04	1.70E-04	1.00E-03	1.0E-01	4.2E-03			1.4E+01	3.0E-05
SWHI	VOC	Bromoform	75-25-2	T	B2	24			1.80E-04	1.00E-03	1.0E-01				1.4E+02	
SWHI	VOC	Bromomethane	74-83-9	T	D	23			2.00E-04	1.00E-03	1.0E-02				7.0E+01	
SWHI	VOC	2-Butanone	78-93-3	T	ID	24 1	5.00E-04	5.00E-04	4.10E-04	1.00E-02	1.3E+01	3.8E-05	2.4E+05	2.1E-09	2.4E+05	2.1E-09
SWHI	VOC	Carbon Disulfide	75-15-0	T		24			2.00E-04	1.00E-03	8.0E-01				1.2E+03	
SWHI	VOC	Carbon Tetrachloride	56-23-5	T	B2	24			1.20E-04	1.00E-03	5.0E-03				4.6E+00	
SWHI	VOC	Chlorobenzene	108-90-7	T	D	24			1.40E-04	1.00E-03	1.0E-01				8.6E+01	
SWHI	VOC	Chloroethane	75-00-3	T		24			2.60E-04	1.00E-03	4.3E-01				4.4E+02	
SWHI	VOC	Chloroform	67-66-3	T	B2	24 6	1.40E-04	1.70E-03	1.40E-04	1.00E-03	1.0E-01	1.7E-02		9.4E-06	1.5E+02	1.1E-05
SWHI	VOC	Chloromethane	74-87-3	T	D	24 3	1.30E-04	3.35E-04	1.30E-04	1.00E-03	2.6E-01	1.3E-03	4.5E+01	7.4E-06	4.9E+02	6.8E-07
SWHI	VOC	Cumene	98-82-8	T	D	24			1.20E-04	1.00E-03	8.0E-01				5.6E+01	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWHI	VOC	Cyclohexane	110-82-7	T	ID	24				1.30E-04	1.00E-03						
SWHI	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	24				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
SWHI	VOC	Dibromochloromethane	124-48-1	T	C	24				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
SWHI	VOC	1,2-Dibromoethane	106-93-4	T	B2	24				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
SWHI	VOC	1,2-Dichlorobenzene	95-50-1	T	D	24	1	2.20E-04	2.20E-04	1.10E-04	1.00E-03	6.0E-01	3.7E-04	1.6E+02	1.4E-06	1.6E+02	1.4E-06
SWHI	VOC	1,3-Dichlorobenzene	541-73-1	T	D	24				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
SWHI	VOC	1,4-Dichlorobenzene	106-46-7	T	C	24				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
SWHI	VOC	Dichlorodifluoromethane	75-71-8	T		24				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
SWHI	VOC	1,1-Dichloroethane	75-34-3	T	C	24	2	8.50E-04	1.00E-03	1.60E-04	1.00E-03	8.8E-01	1.1E-03	2.3E+03	4.3E-07	2.4E+03	4.2E-07
SWHI	VOC	1,2-Dichloroethane	107-06-2	T	B2	24				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
SWHI	VOC	1,1-Dichloroethene	75-35-4	T	C	24	2	8.10E-04	9.70E-04	2.40E-04	1.00E-03	7.0E-03	1.4E-01	1.3E+00	7.5E-04	1.1E+01	8.8E-05
SWHI	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	24				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
SWHI	VOC	trans-1,2-Dichloroethene	156-60-5	T		24				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
SWHI	VOC	1,2-Dichloropropane	78-87-5	T	B2	24				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
SWHI	VOC	1,3-Dichloropropane (total)	542-75-6	T	B2	24				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
SWHI	VOC	Ethyl Benzene	100-41-4	T	D	24	1	1.80E-04	1.80E-04	1.20E-04	1.00E-03	7.0E-01	2.6E-04	1.7E+02	1.1E-06	1.7E+02	1.1E-06
SWHI	VOC	2-Hexanone	591-78-6	T		24				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
SWHI	VOC	Methyl Acetate	79-20-9	T		24				4.10E-04	1.00E-02						
SWHI	VOC	Methyl tert-butyl ether	1634-04-4	T		24				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
SWHI	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	23				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
SWHI	VOC	Methylcyclohexane	108-87-2	T		24				1.50E-04	1.00E-03						
SWHI	VOC	Methylene Chloride	75-09-2	T	B2	24				2.90E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
SWHI	VOC	Styrene	100-42-5	T		24				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
SWHI	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	24				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
SWHI	VOC	Tetrachloroethene	127-18-4	T	C-B2	24	2	4.60E-04	5.50E-04	2.30E-04	1.00E-03	5.0E-03	1.1E-01	1.7E+02	3.2E-06	1.2E+01	4.6E-05
SWHI	VOC	Toluene	108-88-3	T	D	24	5	1.90E-04	8.10E-04	1.80E-04	1.00E-03	1.0E+00	8.1E-04	5.3E+02	1.5E-06	5.3E+02	1.5E-06
SWHI	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	24				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
SWHI	VOC	1,1,1-Trichloroethane	71-55-6	T	D	24	5	5.25E-04	7.00E-03	1.50E-04	1.00E-03	2.0E-01	3.5E-02	1.3E+03	5.4E-06	1.3E+03	5.4E-06
SWHI	VOC	1,1,2-Trichloroethane	79-00-5	T	C	24				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
SWHI	VOC	Trichloroethene	79-01-6	T	C-B2	24	2	7.10E-04	1.10E-03	1.40E-04	1.00E-03	5.0E-03	2.2E-01	9.7E+01	1.1E-05	2.2E+01	5.0E-05
SWHI	VOC	Trichlorofluoromethane	75-69-4	T		24				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
SWHI	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		24				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
SWHI	VOC	Vinyl Chloride	75-01-4	T	A	24				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
SWHI	VOC	Xylenes (total)	1330-20-7	T	ID	24	1	9.90E-04	9.90E-04	3.30E-04	1.00E-03	1.0E+01	9.9E-05	1.9E+02	5.2E-06	1.9E+02	5.2E-06
SWHI	SVOC	Acenaphthene	83-32-9	T		24				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
SWHI	SVOC	Acenaphthylene	208-96-8	T	D	24				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
SWHI	SVOC	Acetophenone	98-86-2	T	D	24				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
SWHI	SVOC	Anthracene	120-12-7	T	D	24				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
SWHI	SVOC	Atrazine	1912-24-9	T		24				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
SWHI	SVOC	Benzaldehyde	100-52-7	T		24				2.80E-03	1.00E-02						
SWHI	SVOC	Benzo(a)anthracene	56-55-3	T	B2	24				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
SWHI	SVOC	Benzo(a)pyrene	50-32-8	T	B2	24				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
SWHI	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	24				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
SWHI	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	24				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
SWHI	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	24				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
SWHI	SVOC	Biphenyl	92-52-4	T	D	24				2.60E-03	1.00E-02						
SWHI	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	24				8.70E-04	5.00E-03						
SWHI	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	24				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
SWHI	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	24				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
SWHI	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	24				8.80E-04	5.00E-03						
SWHI	SVOC	Butylbenzylphthalate	85-68-7	T	C	24				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
SWHI	SVOC	Caprolactam	105-60-2	T		24				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
SWHI	SVOC	Carbazole	86-74-8	T	B2	24				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
SWHI	SVOC	4-Chloro-3-methylphenol	59-50-7	T		24				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
SWHI	SVOC	4-Chloroaniline	106-47-8	T		20				6.10E-04	1.00E-02						
SWHI	SVOC	2-Chloronaphthalene	91-58-7	T		24				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
SWHI	SVOC	2-Chlorophenol	95-57-8	T		24				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
SWHI	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		24				7.90E-04	5.00E-03						
SWHI	SVOC	Chrysene	218-01-9	T	B2	24				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
SWHI	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	24				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
SWHI	SVOC	Dibenzofuran	132-64-9	T	D	24				1.10E-03	5.00E-03						
SWHI	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	20				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
SWHI	SVOC	2,4-Dichlorophenol	120-83-2	T		24				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
SWHI	SVOC	Diethylphthalate	84-66-2	T	D	24				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
SWHI	SVOC	2,4-Dimethylphenol	105-67-9	T		24				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
SWHI	SVOC	Dimethylphthalate	131-11-3	T	D	24				7.60E-04	5.00E-03	7.3E+01				4.2E+03	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWHI	SVOC	Di-n-butylphthalate	84-74-2	T	D	24				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
SWHI	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		24				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
SWHI	SVOC	2,4-Dinitrophenol	51-28-5	T		24				3.00E-03	2.00E-02						
SWHI	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	24				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
SWHI	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	24				5.70E-04	5.00E-03						
SWHI	SVOC	Di-n-octylphthalate	117-84-0	T		24				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
SWHI	SVOC	Fluoranthene	206-44-0	T	D	24				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
SWHI	SVOC	Fluorene	86-73-7	T	D	24				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
SWHI	SVOC	Hexachlorobenzene	118-74-1	T	B2	24				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
SWHI	SVOC	Hexachlorobutadiene	87-68-3	T	C	24				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
SWHI	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	24				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
SWHI	SVOC	Hexachloroethane	67-72-1	T	C	24				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
SWHI	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	24				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
SWHI	SVOC	Isophorone	78-59-1	T	C	24				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
SWHI	SVOC	2-Methylnaphthalene	91-57-6	T	ID	24				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
SWHI	SVOC	Methylphenol (total)	1319-77-3	T		24				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
SWHI	SVOC	Naphthalene	91-20-3	T	C	24				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
SWHI	SVOC	2-Nitroaniline	88-74-4	T		24				7.00E-04	2.00E-02						
SWHI	SVOC	3-Nitroaniline	99-09-2	T	C	20				7.10E-04	2.00E-02						
SWHI	SVOC	4-Nitroaniline	100-01-6	T	C	24				1.30E-03	2.00E-02						
SWHI	SVOC	Nitrobenzene	98-95-3	T	D	24				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
SWHI	SVOC	2-Nitrophenol	88-75-5	T		24				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
SWHI	SVOC	4-Nitrophenol	100-02-7	T		24				1.90E-03	2.00E-02						
SWHI	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	24				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
SWHI	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	24				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
SWHI	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	24				7.80E-04	5.00E-03						
SWHI	SVOC	Pentachlorophenol	87-86-5	T	B2	24				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
SWHI	SVOC	Phenanthrene	85-01-8	T	D	24				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
SWHI	SVOC	Phenol	108-95-2	T	ID	24				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
SWHI	SVOC	Pyrene	129-00-0	T	D	24				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
SWHI	SVOC	2,4,5-Trichlorophenol	95-95-4	T		24				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
SWHI	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	24				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
SWHI	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
SWHI	P/PCB	PCBs (total)	1336-36-3	D	B2	9				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
SWHI	INORG	Antimony	7440-36-0	D		22	1	2.60E-03	2.60E-03	2.20E-03	2.50E-02	6.0E-03	4.3E-01			6.8E+01	3.8E-05
SWHI	INORG	Antimony	7440-36-0	T		24				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
SWHI	INORG	Arsenic	7440-38-2	D	A	22	6	3.90E-03	7.80E-03	3.90E-03	1.00E-02	5.0E-02	1.6E-01			4.3E+00	1.8E-03
SWHI	INORG	Arsenic	7440-38-2	T	A	24	6	2.10E-03	9.60E-03	2.10E-03	1.00E-02	5.0E-02	1.9E-01			4.3E+00	2.2E-03
SWHI	INORG	Barium	7440-39-3	D	D	22	22	5.33E-02	9.29E-01			2.0E+00	4.6E-01			1.4E+04	6.6E-05
SWHI	INORG	Barium	7440-39-3	T	D	24	24	5.04E-02	9.29E-01			2.0E+00	4.6E-01			1.4E+04	6.6E-05
SWHI	INORG	Beryllium	7440-41-7	D	B1	22				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
SWHI	INORG	Beryllium	7440-41-7	T	B1	24				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
SWHI	INORG	Cadmium	7440-43-9	D	B1	22	9	2.90E-04	1.47E-03	2.80E-04	5.00E-03	5.0E-03	2.9E-01			1.9E+02	7.7E-06
SWHI	INORG	Cadmium	7440-43-9	T	B1	24	6	3.50E-04	1.45E-03	2.80E-04	5.00E-03	5.0E-03	2.9E-01			1.9E+02	7.6E-06
SWHI	INORG	Chromium (total)	7440-47-3	D		22	4	1.80E-03	2.70E-03	1.40E-03	1.00E-02	1.0E-01	2.7E-02			4.6E+02	5.9E-06
SWHI	INORG	Chromium (total)	7440-47-3	T		24	6	1.40E-03	2.50E-03	1.40E-03	1.00E-02	1.0E-01	2.5E-02			4.6E+02	5.4E-06
SWHI	INORG	Cobalt	7440-48-4	D	B1	22	5	1.30E-03	4.60E-03	1.30E-03	2.00E-02	4.0E-02	1.2E-01			2.4E+03	1.9E-06
SWHI	INORG	Cobalt	7440-48-4	T	B1	24	4	1.40E-03	4.10E-03	7.40E-04	2.00E-02	4.0E-02	1.0E-01			2.4E+03	1.7E-06
SWHI	INORG	Copper	7440-50-8	D	D	22	4	4.40E-03	6.00E-03	4.20E-03	5.00E-03	1.4E+00	4.3E-03			7.4E+03	8.1E-07
SWHI	INORG	Copper	7440-50-8	T	D	24	2	4.70E-03	4.70E-03	1.70E-03	5.00E-03	1.4E+00	3.4E-03			7.4E+03	6.4E-07
SWHI	INORG	Lead	7439-92-1	D	B2	22				2.50E-03	3.00E-03	4.0E-03					
SWHI	INORG	Lead	7439-92-1	T	B2	24	1	3.50E-03	3.50E-03	1.60E-03	3.00E-03	4.0E-03	8.8E-01				
SWHI	INORG	Manganese	7439-96-5	D	D	22	22	1.60E-03	6.17E-01			8.6E-01	7.2E-01			9.1E+03	6.8E-05
SWHI	INORG	Manganese	7439-96-5	T	D	24	24	9.30E-04	6.37E-01			8.6E-01	7.4E-01			9.1E+03	7.0E-05
SWHI	INORG	Mercury	7439-97-6	D	D	22	2	9.40E-05	1.00E-04	6.90E-05	2.00E-04	2.0E-03	5.0E-02	5.6E-02	1.8E-03	5.6E-02	1.8E-03
SWHI	INORG	Mercury	7439-97-6	T	D	24	2	7.50E-05	9.00E-05	6.90E-05	2.00E-04	2.0E-03	4.5E-02	5.6E-02	1.6E-03	5.6E-02	1.6E-03
SWHI	INORG	Nickel	7440-02-0	D	A	22	11	2.40E-03	1.08E-02	2.20E-03	2.00E-02	1.0E-01	1.1E-01			7.4E+04	1.5E-07
SWHI	INORG	Nickel	7440-02-0	T	A	24	13	2.20E-03	1.06E-02	2.20E-03	2.00E-02	1.0E-01	1.1E-01			7.4E+04	1.4E-07
SWHI	INORG	Selenium	7782-49-2	D	D	22				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
SWHI	INORG	Selenium	7782-49-2	T	D	24	2	5.10E-03	6.00E-03	4.50E-03	5.00E-03	5.0E-02	1.2E-01			9.7E+02	6.2E-06
SWHI	INORG	Silver	7440-22-4	D	D	22				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
SWHI	INORG	Silver	7440-22-4	T	D	24				9.80E-04	5.00E-03	3.4E-02				1.5E+03	
SWHI	INORG	Thallium	7440-28-0	D		22	13	3.10E-05	1.50E-02	1.80E-05	1.00E-02	2.0E-03	7.5E+00			1.3E+01	1.2E-03
SWHI	INORG	Thallium	7440-28-0	T		24	12	1.80E-05	1.59E-02	1.80E-05	1.00E-02	2.0E-03	8.0E+00			1.3E+01	1.2E-03
SWHI	INORG	Vanadium	7440-62-2	D		22	4	1.40E-03	6.50E-03	8.20E-04	1.00E-02	4.5E-03	1.4E+00			9.7E+02	6.7E-06
SWHI	INORG	Vanadium	7440-62-2	T		24	4	1.10E-03	6.40E-03	6.70E-04	1.00E-02	4.5E-03	1.4E+00			9.7E+02	6.6E-06

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL	Max QL	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWHI	INORG	Zinc	7440-66-6	D	D	22	3	1.73E-02	2.90E-02	1.20E-02	2.00E-02	2.4E+00	1.2E-02			1.1E+05	2.6E-07
SWHI	INORG	Zinc	7440-66-6	T	D	24	7	1.30E-02	3.46E-02	1.20E-02	2.00E-02	2.4E+00	1.4E-02			1.1E+05	3.1E-07
W-01	VOC	Acetone	67-64-1	T	ID	38	10	6.80E-04	3.30E-02	5.10E-04	1.00E-02	7.3E-01	4.5E-02	1.0E+06	3.3E-08	3.1E+04	1.1E-06
W-01	VOC	Benzene	71-43-2	T	A	38	17	1.60E-04	9.10E-02	1.60E-04	1.00E-03	5.0E-03	1.8E+01	3.5E+01	2.6E-03	1.1E+01	8.3E-03
W-01	VOC	Bromodichloromethane	75-27-4	T	B2	38				1.70E-04	1.00E-03	1.0E-01		3.7E+01		1.4E+01	
W-01	VOC	Bromoform	75-25-2	T	B2	38				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
W-01	VOC	Bromomethane	74-83-9	T	D	37				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
W-01	VOC	2-Butanone	78-93-3	T	ID	38	16	4.30E-04	7.30E-03	4.10E-04	1.00E-02	1.3E+01	5.6E-04	2.4E+05	3.0E-08	2.4E+05	3.0E-08
W-01	VOC	Carbon Disulfide	75-15-0	T		38	1	1.30E-03	1.30E-03	2.00E-04	1.00E-03	8.0E-01	1.6E-03	5.5E+02	2.4E-06	1.2E+03	1.1E-06
W-01	VOC	Carbon Tetrachloride	56-23-5	T	B2	38				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
W-01	VOC	Chlorobenzene	108-90-7	T	D	38				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
W-01	VOC	Chloroethane	75-00-3	T		38	11	5.30E-04	4.50E-02	2.60E-04	1.00E-03	4.3E-01	1.0E-01	5.7E+03	7.9E-06	4.4E+02	1.0E-04
W-01	VOC	Chloroform	67-66-3	T	B2	38	1	8.10E-04	8.10E-04	1.40E-04	1.00E-03	1.0E-01	8.1E-03	1.8E+02	4.5E-06	1.5E+02	5.4E-06
W-01	VOC	Chloromethane	74-87-3	T	D	38	4	1.30E-04	1.70E-04	1.30E-04	1.00E-03	2.6E-01	6.5E-04	4.5E+01	3.8E-06	4.9E+02	3.5E-07
W-01	VOC	Cumene	98-82-8	T	D	38	12	1.70E-04	8.60E-03	1.20E-04	1.00E-03	8.0E-01	1.1E-02	5.6E+01	1.5E-04	5.6E+01	1.5E-04
W-01	VOC	Cyclohexane	110-82-7	T	ID	38	11	1.70E-04	1.90E-02	1.30E-04	1.00E-03						
W-01	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	38				6.20E-04	2.10E-03	2.0E-04		1.2E+00		3.9E-01	
W-01	VOC	Dibromochloromethane	124-48-1	T	C	38				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
W-01	VOC	1,2-Dibromoethane	106-93-4	T	B2	38				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
W-01	VOC	1,2-Dichlorobenzene	95-50-1	T	D	38	4	4.80E-04	2.00E-03	1.10E-04	1.00E-03	6.0E-01	3.3E-03	1.6E+02	1.3E-05	1.6E+02	1.3E-05
W-01	VOC	1,3-Dichlorobenzene	541-73-1	T	D	38				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
W-01	VOC	1,4-Dichlorobenzene	106-46-7	T	C	38				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
W-01	VOC	Dichlorodifluoromethane	75-71-8	T		38				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
W-01	VOC	1,1-Dichloroethane	75-34-3	T	C	38	11	1.60E-04	2.30E-02	1.60E-04	1.00E-03	8.8E-01	2.6E-02	2.3E+03	1.0E-05	2.4E+03	9.6E-06
W-01	VOC	1,2-Dichloroethane	107-06-2	T	B2	38	1	4.50E-04	4.50E-04	2.10E-04	1.00E-03	5.0E-03	9.0E-02	5.9E+01	7.6E-06	1.9E+01	2.4E-05
W-01	VOC	1,1-Dichloroethene	75-35-4	T	C	38				2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
W-01	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	38	7	4.50E-04	3.90E-03	2.20E-04	5.00E-04	7.0E-02	5.6E-02	2.1E+02	1.9E-05	2.0E+02	2.0E-05
W-01	VOC	trans-1,2-Dichloroethene	156-60-5	T		38	3	1.80E-04	2.10E-03	1.50E-04	5.00E-04	1.0E-01	2.1E-02	2.0E+02	1.1E-05	2.2E+02	9.5E-06
W-01	VOC	1,2-Dichloropropane	78-87-5	T	B2	38				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
W-01	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	38				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
W-01	VOC	Ethyl Benzene	100-41-4	T	D	38	8	2.40E-04	1.90E-02	1.20E-04	1.00E-03	7.0E-01	2.7E-02	1.7E+02	1.1E-04	1.7E+02	1.1E-04
W-01	VOC	2-Hexanone	591-78-6	T		38				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
W-01	VOC	Methyl Acetate	79-20-9	T		38				4.10E-04	1.00E-02						
W-01	VOC	Methyl tert-butyl ether	1634-04-4	T		38	3	8.40E-04	7.10E-03	1.30E-04	5.00E-03	2.4E-01	3.0E-02	4.7E+04	1.5E-07	6.1E+02	1.2E-05
W-01	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	37	4	2.88E-04	1.60E-03	2.30E-04	1.00E-02	1.8E+00	8.9E-04	2.0E+04	8.0E-08	1.3E+04	1.2E-07
W-01	VOC	Methylcyclohexane	108-87-2	T		38	11	3.30E-04	7.60E-03	1.50E-04	1.00E-03						
W-01	VOC	Methylene Chloride	75-09-2	T	B2	38	5	5.00E-04	7.00E-03	2.90E-04	1.00E-03	5.0E-03	1.4E+00	1.4E+03	5.0E-06	2.2E+02	3.2E-05
W-01	VOC	Styrene	100-42-5	T		38				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-01	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	38				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-01	VOC	Tetrachloroethene	127-18-4	T	C-B2	37	3	4.30E-04	2.60E-03	2.30E-04	1.00E-03	5.0E-03	5.2E-01	1.7E+02	1.5E-05	1.2E+01	2.2E-04
W-01	VOC	Toluene	108-88-3	T	D	38	14	2.50E-04	1.50E-02	1.80E-04	1.00E-03	1.0E+00	1.5E-02	5.3E+02	2.8E-05	5.3E+02	2.8E-05
W-01	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	38	1	9.20E-04	9.20E-04	1.70E-04	1.00E-03	7.0E-02	1.3E-02	3.0E+02	3.1E-06	1.9E+01	4.8E-05
W-01	VOC	1,1,1-Trichloroethane	71-55-6	T	D	38				1.50E-04	1.00E-03	2.0E-01		1.3E+03		1.3E+03	
W-01	VOC	1,1,2-Trichloroethane	79-00-5	T	C	38				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-01	VOC	Trichloroethene	79-01-6	T	C-B2	38	6	2.40E-04	1.40E-03	1.40E-04	1.00E-03	5.0E-03	2.8E-01	9.7E+01	1.4E-05	2.2E+01	6.4E-05
W-01	VOC	Trichlorofluoromethane	75-69-4	T		38	1	6.60E-04	6.60E-04	2.80E-04	1.00E-03	2.6E+00	2.5E-04	1.1E+03	6.0E-07	1.1E+03	6.0E-07
W-01	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		38				3.20E-04	1.10E-03	1.7E+02		1.7E+02		1.7E+02	
W-01	VOC	Vinyl Chloride	75-01-4	T	A	38	9	1.80E-04	1.80E-02	1.50E-04	1.00E-03	2.0E-03	9.0E+00	1.3E+01	1.4E-03	1.0E+00	1.8E-02
W-01	VOC	Xylenes (total)	1330-20-7	T	ID	38	10	6.90E-04	2.00E-01	3.30E-04	1.00E-03	1.0E+01	2.0E-02	1.9E+02	1.1E-03	1.9E+02	1.1E-03
W-01	SVOC	Acenaphthene	83-32-9	T		38	1	2.40E-03	2.40E-03	8.00E-04	2.50E-02	1.3E+00	1.8E-03	4.2E+00	5.7E-04	4.2E+00	5.7E-04
W-01	SVOC	Acenaphthylene	208-96-8	T	D	38				7.10E-04	2.50E-02	5.2E-02		3.9E+00		3.9E+00	
W-01	SVOC	Acetophenone	98-86-2	T	D	38	1	2.70E-03	2.70E-03	2.60E-03	5.00E-02	1.5E+00	1.8E-03	6.1E+03	4.4E-07	6.1E+03	4.4E-07
W-01	SVOC	Anthracene	120-12-7	T	D	38				6.80E-04	2.50E-02	4.3E-02		4.3E-02		4.3E-02	
W-01	SVOC	Atrazine	1912-24-9	T		38				2.50E-03	2.50E-02	3.0E-03				5.4E+00	
W-01	SVOC	Benzaldehyde	100-52-7	T		38				2.80E-03	5.00E-02						
W-01	SVOC	Benzo(a)anthracene	56-55-3	T	B2	38				7.00E-04	2.50E-02	2.1E-03				9.4E-03	
W-01	SVOC	Benzo(a)pyrene	50-32-8	T	B2	38				7.30E-04	2.50E-02	5.0E-03				2.0E-03	
W-01	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	38				9.40E-04	2.50E-02	2.0E-03				2.0E-03	
W-01	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	38				8.50E-04	2.50E-02	5.0E-03				5.0E-03	
W-01	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	38				8.40E-04	2.50E-02	5.0E-03				5.0E-03	
W-01	SVOC	Biphenyl	92-52-4	T	D	38				2.60E-03	5.00E-02						
W-01	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	38				8.70E-04	2.50E-02						
W-01	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	36				9.70E-04	2.50E-02	2.0E-03		2.1E+02		5.7E+00	
W-01	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	38	2	2.70E-03	4.10E-03	2.70E-03	2.50E-02	6.0E-03	6.8E-01			3.2E-01	1.3E-02
W-01	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	38				8.80E-04	2.50E-02						
W-01	SVOC	Butylbenzylphthalate	85-68-7	T	C	38				8.80E-04	2.50E-02	1.2E+00				2.7E+00	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-01	SVOC	Caprolactam	105-60-2	T		38				2.50E-03	5.00E-02	5.8E+00				3.9E+05	
W-01	SVOC	Carbazole	86-74-8	T	B2	38	2	1.50E-03	2.80E-03	8.20E-04	5.00E-02	8.5E-02	3.3E-02			7.4E+00	3.8E-04
W-01	SVOC	4-Chloro-3-methylphenol	59-50-7	T		37				9.90E-04	2.50E-02	1.5E-01				7.9E+01	
W-01	SVOC	4-Chloroaniline	106-47-8	T		37				6.10E-04	5.00E-02						
W-01	SVOC	2-Chloronaphthalene	91-58-7	T		38				8.50E-04	2.50E-02	1.8E+00				6.7E+00	
W-01	SVOC	2-Chlorophenol	95-57-8	T		38				1.00E-03	2.50E-02	4.5E-02				9.4E+01	
W-01	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		38				7.90E-04	2.50E-02						
W-01	SVOC	Chrysene	218-01-9	T	B2	38				7.50E-04	2.50E-02	5.0E-03				5.0E-03	
W-01	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	38				7.90E-04	2.50E-02	2.0E-03				2.0E-03	
W-01	SVOC	Dibenzofuran	132-64-9	T	D	38	1	1.80E-03	1.80E-03	1.10E-03	2.50E-02						
W-01	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	36				9.30E-04	1.00E-01	1.1E-03				1.8E-01	
W-01	SVOC	2,4-Dichlorophenol	120-83-2	T		38				8.50E-04	5.00E-02	7.3E-02				4.8E+01	
W-01	SVOC	Diethylphthalate	84-66-2	T	D	38				6.50E-04	2.50E-02	5.5E+00				1.1E+03	
W-01	SVOC	2,4-Dimethylphenol	105-67-9	T		37	3	1.90E-03	1.10E-02	8.50E-04	2.50E-02	3.7E-01	3.0E-02			5.2E+02	2.1E-05
W-01	SVOC	Dimethylphthalate	131-11-3	T	D	38				7.60E-04	2.50E-02	7.3E+01				4.2E+03	
W-01	SVOC	Di-n-butylphthalate	84-74-2	T	D	38	3	1.35E-03	2.30E-03	6.70E-04	2.50E-02	8.8E-01	2.6E-03			1.1E+01	2.1E-04
W-01	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		38				1.30E-03	1.00E-01	2.0E-02				9.5E+00	
W-01	SVOC	2,4-Dinitrophenol	51-28-5	T		38				3.00E-03	1.00E-01						
W-01	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	38				7.90E-04	2.50E-02	7.7E-03				8.6E+00	
W-01	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	38				5.70E-04	2.50E-02						
W-01	SVOC	Di-n-octylphthalate	117-84-0	T		38				1.10E-03	2.50E-02	1.3E-01				4.0E-01	
W-01	SVOC	Fluoranthene	206-44-0	T	D	38	1	9.90E-04	9.90E-04	8.10E-04	2.50E-02	2.1E-01	4.7E-03	2.1E-01	4.7E-03	2.1E-01	4.7E-03
W-01	SVOC	Fluorene	86-73-7	T	D	38	1	2.20E-03	2.20E-03	1.00E-03	2.50E-02	8.8E-01	2.5E-03	2.0E+00	1.1E-03	2.0E+00	1.1E-03
W-01	SVOC	Hexachlorobenzene	118-74-1	T	B2	38				7.40E-04	2.50E-02	1.0E-03		3.0E+00		4.6E-03	
W-01	SVOC	Hexachlorobutadiene	87-68-3	T	C	36				7.30E-04	2.50E-02	1.5E-02		3.2E+00		4.0E-01	
W-01	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	35				1.10E-03	2.50E-02	5.0E-02		4.2E-01		1.6E+00	
W-01	SVOC	Hexachloroethane	67-72-1	T	C	38				7.40E-04	2.50E-02	7.3E-03		5.0E+01		1.9E+00	
W-01	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	38				6.30E-04	2.50E-02	2.0E-03				2.0E-03	
W-01	SVOC	Isophorone	78-59-1	T	C	38				6.30E-04	2.50E-02	7.7E-01				9.9E+02	
W-01	SVOC	2-Methylnaphthalene	91-57-6	T	ID	38	6	8.50E-04	6.10E-03	6.40E-04	2.50E-02	2.6E-01	2.3E-02			2.5E+01	2.4E-04
W-01	SVOC	Methylphenol (total)	1319-77-3	T		38	1	2.16E-02	2.16E-02	1.30E-03	2.50E-02	3.7E-01	5.8E-02			8.1E+02	2.7E-05
W-01	SVOC	Naphthalene	91-20-3	T	C	37	4	6.20E-03	1.30E-02	7.50E-04	2.50E-02	5.2E-01	2.5E-02	3.1E+01	4.2E-04	3.1E+01	4.2E-04
W-01	SVOC	2-Nitroaniline	88-74-4	T		38				7.00E-04	1.00E-01						
W-01	SVOC	3-Nitroaniline	99-09-2	T	C	37				7.10E-04	1.00E-01						
W-01	SVOC	4-Nitroaniline	100-01-6	T	C	37				1.30E-03	1.00E-01						
W-01	SVOC	Nitrobenzene	98-95-3	T	D	38				8.10E-04	2.50E-02	3.4E-03		5.5E+02		1.1E+01	
W-01	SVOC	2-Nitrophenol	88-75-5	T		38				2.10E-03	2.50E-02	2.0E-02				7.9E+01	
W-01	SVOC	4-Nitrophenol	100-02-7	T		38				1.90E-03	1.00E-01						
W-01	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	38				1.40E-03	2.50E-02	2.7E-01				3.5E+01	
W-01	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	38				6.70E-04	2.50E-02	5.0E-03				3.6E-01	
W-01	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	38				7.80E-04	2.50E-02						
W-01	SVOC	Pentachlorophenol	87-86-5	T	B2	38				2.40E-03	2.50E-02	1.0E-03				2.0E-01	
W-01	SVOC	Phenanthrene	85-01-8	T	D	38				8.20E-04	2.50E-02	5.2E-02		1.0E+00		1.0E+00	
W-01	SVOC	Phenol	108-95-2	T	ID	38	1	1.90E-02	1.90E-02	2.60E-03	2.50E-02	4.4E+00	4.3E-03			2.9E+04	6.6E-07
W-01	SVOC	Pyrene	129-00-0	T	D	38				1.10E-03	2.50E-02	1.4E-01		1.4E-01		1.4E-01	
W-01	SVOC	2,4,5-Trichlorophenol	95-95-4	T		38				1.20E-03	2.50E-02	7.3E-01				1.7E+02	
W-01	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	37				1.70E-03	2.50E-02	1.2E-01				1.0E+01	
W-01	P/PCB	PCBs (total)	1336-36-3	D	B2	12	1	5.22E-04	5.22E-04	8.20E-05	4.00E-04	5.0E-04	1.0E+00	4.5E-02	1.2E-02	3.3E-03	1.6E-01
W-01	P/PCB	PCBs (total)	1336-36-3	T	B2	41	8	3.67E-04	4.59E-03	8.20E-05	4.00E-04	5.0E-04	9.2E+00	4.5E-02	1.0E-01	3.3E-03	1.4E+00
W-01	INORG	Antimony	7440-36-0	D		28	4	5.80E-03	7.90E-03	2.20E-03	2.50E-02	6.0E-03	1.3E+00			6.8E+01	1.2E-04
W-01	INORG	Antimony	7440-36-0	T		38	5	2.60E-03	8.60E-03	2.20E-03	2.50E-02	6.0E-03	1.4E+00			6.8E+01	1.3E-04
W-01	INORG	Arsenic	7440-38-2	D	A	28	19	4.00E-03	2.69E-02	3.90E-03	1.00E-02	5.0E-02	5.4E-01			4.3E+00	6.3E-03
W-01	INORG	Arsenic	7440-38-2	T	A	38	26	2.10E-03	2.64E-02	2.10E-03	1.00E-02	5.0E-02	5.3E-01			4.3E+00	6.1E-03
W-01	INORG	Barium	7440-39-3	D	D	28	28	5.63E-02	4.07E+00			2.0E+00	2.0E+00			1.4E+04	2.9E-04
W-01	INORG	Barium	7440-39-3	T	D	38	38	3.50E-02	4.57E+00			2.0E+00	2.3E+00			1.4E+04	3.3E-04
W-01	INORG	Beryllium	7440-41-7	D	B1	28	1	7.50E-04	7.50E-04	5.40E-04	1.00E-03	4.0E-03	1.9E-01			2.9E+02	2.6E-06
W-01	INORG	Beryllium	7440-41-7	T	B1	38				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-01	INORG	Cadmium	7440-43-9	D	B1	28	4	3.00E-04	6.90E-04	2.80E-04	5.00E-03	5.0E-03	1.4E-01			1.9E+02	3.6E-06
W-01	INORG	Cadmium	7440-43-9	T	B1	38	7	2.20E-04	1.10E-03	2.80E-04	5.00E-03	5.0E-03	2.2E-01			1.9E+02	5.8E-06
W-01	INORG	Chromium (total)	7440-47-3	D		28	3	1.80E-03	8.50E-03	1.40E-03	1.00E-02	1.0E-01	8.5E-02			4.6E+02	1.8E-05
W-01	INORG	Chromium (total)	7440-47-3	T		38	5	1.40E-03	3.05E-02	1.40E-03	1.00E-02	1.0E-01	3.1E-01			4.6E+02	6.6E-05
W-01	INORG	Cobalt	7440-48-4	D	B1	28	9	1.30E-03	3.50E-03	1.30E-03	2.00E-02	4.0E-02	8.8E-02			2.4E+03	1.5E-06
W-01	INORG	Cobalt	7440-48-4	T	B1	38	13	7.60E-04	6.60E-03	7.40E-04	2.00E-02	4.0E-02	1.7E-01			2.4E+03	2.8E-06
W-01	INORG	Copper	7440-50-8	D	D	28	2	4.50E-03	5.60E-03	4.20E-03	5.00E-03	1.4E+00	4.0E-03			7.4E+03	7.6E-07
W-01	INORG	Copper	7440-50-8	T	D	38	7	2.30E-03	2.22E-02	1.70E-03	5.00E-03	1.4E+00	1.6E-02			7.4E+03	3.0E-06
W-01	INORG	Cyanide (total)	57-12-5	T	D	33	22	2.00E-03	1.75E-02	1.70E-03	1.00E-02	2.0E-01	8.8E-02			5.7E+01	3.1E-04

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-01	INORG	Lead	7439-92-1	D	B2	28		1.80E-03	2.71E-02	2.50E-03	3.00E-03	4.0E-03					
W-01	INORG	Lead	7439-92-1	T	B2	38	7			1.60E-03	3.00E-03	4.0E-03	6.8E+00				
W-01	INORG	Manganese	7439-96-5	D	D	28	27	4.72E-02	9.52E-01	9.00E-04	9.00E-04	8.6E-01	1.1E+00			9.1E+03	1.0E-04
W-01	INORG	Manganese	7439-96-5	T	D	38	38	1.30E-03	1.22E+00			8.6E-01	1.4E+00				1.3E-04
W-01	INORG	Mercury	7439-97-6	D	D	28	6	8.00E-05	1.30E-04	6.90E-05	2.00E-04	2.0E-03	6.5E-02	5.6E-02	2.3E-03	5.6E-02	2.3E-03
W-01	INORG	Mercury	7439-97-6	T	D	38	6	6.73E-05	1.20E-04	6.90E-05	2.00E-04	2.0E-03	6.0E-02	5.6E-02	2.1E-03	5.6E-02	2.1E-03
W-01	INORG	Nickel	7440-02-0	D	A	28	19	2.40E-03	1.59E-02	2.20E-03	2.00E-02	1.0E-01	1.6E-01			7.4E+04	2.1E-07
W-01	INORG	Nickel	7440-02-0	T	A	38	21	2.60E-03	1.94E-02	2.20E-03	2.00E-02	1.0E-01	1.9E-01			7.4E+04	2.6E-07
W-01	INORG	Selenium	7782-49-2	D	D	28				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
W-01	INORG	Selenium	7782-49-2	T	D	38	1	4.90E-03	4.90E-03	4.50E-03	5.00E-03	5.0E-02	9.8E-02			9.7E+02	5.1E-06
W-01	INORG	Silver	7440-22-4	D	D	28				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-01	INORG	Silver	7440-22-4	T	D	38	1	1.50E-03	1.50E-03	9.80E-04	5.00E-03	3.4E-02	4.4E-02			1.5E+03	1.0E-06
W-01	INORG	Thallium	7440-28-0	D		28	6	4.30E-05	9.10E-03	1.80E-05	1.00E-02	2.0E-03	4.6E+00			1.3E+01	7.0E-04
W-01	INORG	Thallium	7440-28-0	T		38	4	1.80E-05	1.02E-02	1.80E-05	1.00E-02	2.0E-03	5.1E+00			1.3E+01	7.8E-04
W-01	INORG	Vanadium	7440-62-2	D		28	4	1.00E-03	2.45E-02	8.20E-04	1.00E-02	4.5E-03	5.4E+00			9.7E+02	2.5E-05
W-01	INORG	Vanadium	7440-62-2	T		38	8	8.40E-04	4.84E-02	6.70E-04	1.00E-02	4.5E-03	1.1E+01			9.7E+02	5.0E-05
W-01	INORG	Zinc	7440-66-6	D	D	28	2	1.56E-02	2.09E-02	1.20E-02	2.00E-02	2.4E+00	8.7E-03			1.1E+05	1.9E-07
W-01	INORG	Zinc	7440-66-6	T	D	38	6	1.85E-02	3.82E-02	1.20E-02	2.00E-02	2.4E+00	1.6E-02			1.1E+05	3.5E-07
W-01	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	D	B2	4	3	1.99E-09	3.03E-09	4.57E-09	4.57E-09	3.0E-08	1.0E-01			1.0E-08	3.0E-01
W-01	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	31	15	1.63E-09	2.16E-08	2.34E-09	3.99E-08	3.0E-08	7.2E-01			1.0E-08	2.2E+00
W-05	VOC	Acetone	67-64-1	T	ID	8				5.10E-04	2.00E-02	7.3E-01		1.0E+06		3.1E+04	
W-05	VOC	Benzene	71-43-2	T	A	8	2	3.50E-04	4.90E-04	1.60E-04	2.00E-03	5.0E-03	9.8E-02		1.4E-05	1.1E+01	4.5E-05
W-05	VOC	Bromodichloromethane	75-27-4	T	B2	8	1	4.60E-04	4.60E-04	1.70E-04	2.00E-03	1.0E-01	4.6E-03		3.7E+01	1.4E+01	3.3E-05
W-05	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	2.00E-03	1.0E-01			3.1E+03	1.4E+02	
W-05	VOC	Bromomethane	74-83-9	T	D	8				2.00E-04	2.00E-03	1.0E-02		9.0E+00		7.0E+01	
W-05	VOC	2-Butanone	78-93-3	T	ID	8	2	1.78E-03	4.90E-03	4.10E-04	2.00E-02	1.3E+01	3.8E-04		2.4E+05	2.4E+05	2.0E-08
W-05	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	2.00E-03	8.0E-01		5.5E+02		1.2E+03	
W-05	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	2.00E-03	5.0E-03		2.4E+00		4.6E+00	
W-05	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	2.00E-03	1.0E-01		4.7E+02		8.6E+01	
W-05	VOC	Chloroethane	75-00-3	T		8	2	3.60E-02	5.00E-02	2.60E-04	1.43E-03	4.3E-01	1.2E-01	5.7E+03	8.8E-06	4.4E+02	1.1E-04
W-05	VOC	Chloroform	67-66-3	T	B2	8	4	5.50E-04	2.10E-03	1.40E-04	7.70E-04	1.0E-01	2.1E-02	1.8E+02	1.2E-05	1.5E+02	1.4E-05
W-05	VOC	Chloromethane	74-87-3	T	D	8	2	3.00E-04	4.75E-04	1.30E-04	2.00E-03	2.6E-01	1.8E-03	4.5E+01	1.1E-05	4.9E+02	9.7E-07
W-05	VOC	Cumene	98-82-8	T	D	8				1.20E-04	2.00E-03	8.0E-01		5.6E+01		5.6E+01	
W-05	VOC	Cyclohexane	110-82-7	T	ID	8				1.30E-04	2.00E-03						
W-05	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	4.00E-03	2.0E-04		1.2E+00		3.9E-01	
W-05	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	2.00E-03	1.0E-01		1.1E+02		1.8E+01	
W-05	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	2.00E-03	1.0E-03		1.5E+01		2.5E-02	
W-05	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	2.00E-03	6.0E-01		1.6E+02		1.6E+02	
W-05	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	2.00E-03	6.6E-03				2.0E+00	
W-05	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	2.00E-03	7.5E-02		7.4E+01		6.4E+00	
W-05	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	4.00E-03	1.7E+00		3.0E+02		3.0E+02	
W-05	VOC	1,1-Dichloroethane	75-34-3	T	C	8	2	2.00E-02	3.00E-02	1.60E-04	1.00E-03	8.8E-01	3.4E-02		2.3E+03	2.4E+03	1.3E-05
W-05	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	2.00E-03	5.0E-03		5.9E+01		1.9E+01	
W-05	VOC	1,1-Dichloroethene	75-35-4	T	C	8	1	7.80E-04	7.80E-04	2.40E-04	1.32E-03	7.0E-03	1.1E-01	1.3E+00	6.0E-04	1.1E+01	7.1E-05
W-05	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8	3	3.20E-04	1.10E-03	2.20E-04	1.21E-03	7.0E-02	1.6E-02	2.1E+02	5.2E-06	2.0E+02	5.5E-06
W-05	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	1.00E-03	1.0E-01		2.0E+02		2.2E+02	
W-05	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	2.00E-03	5.0E-03		3.6E+01		1.6E+01	
W-05	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	2.00E-03	8.5E-03		2.6E+01		5.5E+00	
W-05	VOC	Ethyl Benzene	100-41-4	T	D	8				1.20E-04	2.00E-03	7.0E-01		1.7E+02		1.7E+02	
W-05	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	2.00E-02	1.0E+00		8.7E+03		5.2E+03	
W-05	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	2.00E-02						
W-05	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	1.00E-02	2.4E-01		4.7E+04		6.1E+02	
W-05	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8	3	5.00E-04	1.60E-03	2.30E-04	2.00E-02	1.8E+00	8.9E-04	2.0E+04	8.0E-08	1.3E+04	1.2E-07
W-05	VOC	Methylcyclohexane	108-87-2	T		8				1.50E-04	2.00E-03						
W-05	VOC	Methylene Chloride	75-09-2	T	B2	8	1	7.70E-04	7.70E-04	3.40E-04	1.87E-03	5.0E-03	1.5E-01	1.4E+03	5.5E-07	2.2E+02	3.5E-06
W-05	VOC	Styrene	100-42-5	T		8				1.50E-04	2.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-05	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	2.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-05	VOC	Tetrachloroethene	127-18-4	T	C-B2	8				2.30E-04	2.00E-03	5.0E-03		1.7E+02		1.2E+01	
W-05	VOC	Toluene	108-88-3	T	D	8	3	2.60E-04	6.05E-04	1.80E-04	1.00E-03	1.0E+00	6.1E-04	5.3E+02	1.1E-06	5.3E+02	1.1E-06
W-05	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	2.00E-03	7.0E-02		3.0E+02		1.9E+01	
W-05	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8	1	5.65E-04	5.65E-04	1.50E-04	2.00E-03	2.0E-01	2.8E-03	1.3E+03	4.3E-07	1.3E+03	4.3E-07
W-05	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	2.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-05	VOC	Trichloroethene	79-01-6	T	C-B2	8				1.40E-04	2.00E-03	5.0E-03		9.7E+01		2.2E+01	
W-05	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	2.00E-03	2.6E+00		1.1E+03		1.1E+03	
W-05	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	2.00E-03	1.7E+02		1.7E+02		1.7E+02	
W-05	VOC	Vinyl Chloride	75-01-4	T	A	8	2	2.20E-04	2.70E-04	1.50E-04	2.00E-03	2.0E-03	1.4E-01	1.3E+01	2.1E-05	1.0E+00	2.7E-04

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-05	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	4.30E-04	4.30E-04	3.30E-04	2.00E-03	1.0E+01	4.3E-05	1.9E+02	2.3E-06	1.9E+02	2.3E-06
W-05	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
W-05	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
W-05	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
W-05	SVOC	Anthracene	120-12-7	T	D	8	2	1.15E-03	1.20E-03	6.80E-04	5.00E-03	4.3E-02	2.8E-02	4.3E-02	2.8E-02	4.3E-02	2.8E-02
W-05	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	6.20E-03	3.0E-03				5.4E+00	
W-05	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02						
W-05	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
W-05	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
W-05	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
W-05	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
W-05	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
W-05	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02						
W-05	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03						
W-05	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
W-05	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	6.80E-03	6.0E-03				3.2E-01	
W-05	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03						
W-05	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
W-05	SVOC	Caprolactam	105-60-2	T		8				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
W-05	SVOC	Carbazole	86-74-8	T	B2	8	2	1.30E-03	1.55E-03	8.20E-04	1.00E-02	8.5E-02	1.8E-02			7.4E+00	2.1E-04
W-05	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
W-05	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02						
W-05	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
W-05	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
W-05	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03						
W-05	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
W-05	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
W-05	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03						
W-05	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
W-05	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
W-05	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
W-05	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
W-05	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
W-05	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
W-05	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
W-05	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02						
W-05	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
W-05	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03						
W-05	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
W-05	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
W-05	SVOC	Fluorene	86-73-7	T	D	8	2	2.80E-03	6.80E-03	1.00E-03	5.00E-03	8.8E-01	7.7E-03	2.0E+00	3.4E-03	2.0E+00	3.4E-03
W-05	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
W-05	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
W-05	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	8				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
W-05	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
W-05	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
W-05	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
W-05	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
W-05	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
W-05	SVOC	Naphthalene	91-20-3	T	C	8	1	2.50E-03	2.50E-03	7.50E-04	5.00E-03	5.2E-01	4.8E-03	3.1E+01	8.1E-05	3.1E+01	8.1E-05
W-05	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02						
W-05	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02						
W-05	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02						
W-05	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
W-05	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.20E-03	2.0E-02				7.9E+01	
W-05	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02						
W-05	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
W-05	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
W-05	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03						
W-05	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	6.00E-03	1.0E-03				2.0E-01	
W-05	SVOC	Phenanthrene	85-01-8	T	D	8	1	2.30E-03	2.30E-03	8.20E-04	5.00E-03	5.2E-02	4.4E-02	1.0E+00	2.3E-03	1.0E+00	2.3E-03
W-05	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	6.50E-03	4.4E+00				2.9E+04	
W-05	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
W-05	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
W-05	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
W-05	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-05	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-05	INORG	Antimony	7440-36-0	D		8	2	8.30E-03	9.80E-03	2.20E-03	2.50E-02	6.0E-03	1.6E+00			6.8E+01	1.4E-04
W-05	INORG	Antimony	7440-36-0	T		8	2	9.25E-03	1.07E-02	2.20E-03	2.50E-02	6.0E-03	1.8E+00			6.8E+01	1.6E-04
W-05	INORG	Arsenic	7440-38-2	D	A	8	4	5.10E-03	4.73E-02	3.90E-03	1.00E-02	5.0E-02	9.5E-01			4.3E+00	1.1E-02
W-05	INORG	Arsenic	7440-38-2	T	A	8	4	5.70E-03	5.85E-02	3.90E-03	1.00E-02	5.0E-02	1.2E+00			4.3E+00	1.4E-02
W-05	INORG	Barium	7440-39-3	D	D	8	8	3.06E-02	3.00E-01			2.0E+00	1.5E-01			1.4E+04	2.1E-05
W-05	INORG	Barium	7440-39-3	T	D	8	8	3.25E-02	2.85E-01			2.0E+00	1.4E-01			1.4E+04	2.0E-05
W-05	INORG	Beryllium	7440-41-7	D	B1	8				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-05	INORG	Beryllium	7440-41-7	T	B1	8	1	5.60E-04	5.60E-04	5.40E-04	1.00E-03	4.0E-03	1.4E-01			2.9E+02	1.9E-06
W-05	INORG	Cadmium	7440-43-9	D	B1	8	3	2.20E-04	3.90E-04	2.80E-04	5.00E-03	5.0E-03	7.8E-02			1.9E+02	2.1E-06
W-05	INORG	Cadmium	7440-43-9	T	B1	8	3	2.90E-04	4.70E-04	2.80E-04	5.00E-03	5.0E-03	9.4E-02			1.9E+02	2.5E-06
W-05	INORG	Chromium (total)	7440-47-3	D		8	2	9.60E-03	1.72E-02	1.40E-03	1.00E-02	1.0E-01	1.7E-01			4.6E+02	3.7E-05
W-05	INORG	Chromium (total)	7440-47-3	T		8	2	1.04E-02	1.72E-02	1.40E-03	1.00E-02	1.0E-01	1.7E-01			4.6E+02	3.7E-05
W-05	INORG	Cobalt	7440-48-4	D	B1	8	4	3.00E-03	5.80E-03	1.30E-03	2.00E-02	4.0E-02	1.5E-01			2.4E+03	2.4E-06
W-05	INORG	Cobalt	7440-48-4	T	B1	8	4	1.70E-03	5.50E-03	1.30E-03	2.00E-02	4.0E-02	1.4E-01			2.4E+03	2.3E-06
W-05	INORG	Copper	7440-50-8	D	D	8	2	1.05E-02	4.26E-02	4.20E-03	5.00E-03	1.4E+00	3.0E-02			7.4E+03	5.8E-06
W-05	INORG	Copper	7440-50-8	T	D	8	2	1.37E-02	4.74E-02	4.20E-03	5.00E-03	1.4E+00	3.4E-02			7.4E+03	6.4E-06
W-05	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	3.00E-03	4.0E-03					
W-05	INORG	Lead	7439-92-1	T	B2	8				2.50E-03	3.00E-03	4.0E-03					
W-05	INORG	Manganese	7439-96-5	D	D	8	8	1.38E-03	8.15E-01			8.6E-01	9.5E-01			9.1E+03	9.0E-05
W-05	INORG	Manganese	7439-96-5	T	D	8	8	2.48E-03	7.66E-01			8.6E-01	8.9E-01			9.1E+03	8.4E-05
W-05	INORG	Mercury	7439-97-6	D	D	8	2	8.20E-05	2.20E-04	6.90E-05	2.00E-04	2.0E-03	1.1E-01	5.6E-02	3.9E-03	5.6E-02	3.9E-03
W-05	INORG	Mercury	7439-97-6	T	D	8	1	3.00E-04	3.00E-04	6.90E-05	2.00E-04	2.0E-03	1.5E-01	5.6E-02	5.4E-03	5.6E-02	5.4E-03
W-05	INORG	Nickel	7440-02-0	D	A	8	6	2.70E-03	1.63E-02	2.20E-03	2.00E-02	1.0E-01	1.6E-01			7.4E+04	2.2E-07
W-05	INORG	Nickel	7440-02-0	T	A	8	6	2.90E-03	1.62E-02	2.20E-03	2.00E-02	1.0E-01	1.6E-01			7.4E+04	2.2E-07
W-05	INORG	Selenium	7782-49-2	D	D	8	2	2.78E-02	4.78E-02	4.50E-03	5.00E-03	5.0E-02	9.6E-01			9.7E+02	4.9E-05
W-05	INORG	Selenium	7782-49-2	T	D	8	2	2.88E-02	4.89E-02	4.50E-03	5.00E-03	5.0E-02	9.8E-01			9.7E+02	5.0E-05
W-05	INORG	Silver	7440-22-4	D	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-05	INORG	Silver	7440-22-4	T	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-05	INORG	Thallium	7440-28-0	D		8	5	3.25E-05	9.00E-03	1.80E-05	5.00E-03	2.0E-03	4.5E+00			1.3E+01	6.9E-04
W-05	INORG	Thallium	7440-28-0	T		8	3	3.60E-05	7.10E-03	1.80E-05	1.00E-02	2.0E-03	3.6E+00			1.3E+01	5.5E-04
W-05	INORG	Vanadium	7440-62-2	D		8	3	1.00E-03	7.32E-02	8.20E-04	1.00E-02	4.5E-03	1.6E+01			9.7E+02	7.5E-05
W-05	INORG	Vanadium	7440-62-2	T		8	4	8.30E-04	7.66E-02	8.20E-04	1.00E-02	4.5E-03	1.7E+01			9.7E+02	7.9E-05
W-05	INORG	Zinc	7440-66-6	D	D	8	1	1.28E-02	1.28E-02	1.20E-02	2.00E-02	2.4E+00	5.3E-03			1.1E+05	1.2E-07
W-05	INORG	Zinc	7440-66-6	T	D	8	2	1.33E-02	1.85E-02	1.20E-02	2.00E-02	2.4E+00	7.7E-03			1.1E+05	1.7E-07
W-08	VOC	Acetone	67-64-1	T	ID	19	6	1.63E-03	1.60E-01	5.10E-04	1.10E-03	7.3E-01	2.2E-01	1.0E+06	1.6E-07	3.1E+04	5.2E-06
W-08	VOC	Benzene	71-43-2	T	A	19	7	1.80E-04	6.25E-04	1.60E-04	4.00E-03	5.0E-03	1.3E-01	3.5E+01	1.8E-05	1.1E+01	5.7E-05
W-08	VOC	Bromodichloromethane	75-27-4	T	B2	19				1.70E-04	4.00E-03	1.0E-01				1.4E+01	
W-08	VOC	Bromoforn	75-25-2	T	B2	19				1.80E-04	4.00E-03	1.0E-01				1.4E+02	
W-08	VOC	Bromomethane	74-83-9	T	D	16				1.60E-04	4.00E-03	1.0E-02				7.0E+01	
W-08	VOC	2-Butanone	78-93-3	T	ID	19	3	5.40E-04	4.40E-03	3.60E-04	4.00E-02	1.3E+01	3.4E-04	2.4E+05	1.8E-08	2.4E+05	1.8E-08
W-08	VOC	Carbon Disulfide	75-15-0	T		19	8	2.40E-04	1.10E-03	2.00E-04	4.00E-03	8.0E-01	1.4E-03	5.5E+02	2.0E-06	1.2E+03	9.2E-07
W-08	VOC	Carbon Tetrachloride	56-23-5	T	B2	19				1.20E-04	4.00E-03	5.0E-03				4.6E+00	
W-08	VOC	Chlorobenzene	108-90-7	T	D	19				1.40E-04	4.00E-03	1.0E-01				8.6E+01	
W-08	VOC	Chloroethane	75-00-3	T		19				2.20E-04	4.00E-03	4.3E-01				4.4E+02	
W-08	VOC	Chloroform	67-66-3	T	B2	19	4	1.40E-04	2.40E-04	1.40E-04	4.00E-03	1.0E-01	2.4E-03	1.8E+02	1.3E-06	1.5E+02	1.6E-06
W-08	VOC	Chloromethane	74-87-3	T	D	19	1	2.60E-04	2.60E-04	1.30E-04	4.00E-03	2.6E-01	1.0E-03	4.5E+01	5.8E-06	4.9E+02	5.3E-07
W-08	VOC	Cumene	98-82-8	T	D	19	6	1.80E-04	1.70E-03	1.20E-04	4.00E-03	8.0E-01	2.1E-03	5.6E+01	3.0E-05	5.6E+01	3.0E-05
W-08	VOC	Cyclohexane	110-82-7	T	ID	19	1	2.20E-04	2.20E-04	1.30E-04	4.00E-03						
W-08	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	19				5.30E-04	8.00E-03	2.0E-04				3.9E-01	
W-08	VOC	Dibromochloromethane	124-48-1	T	C	19				2.50E-04	4.00E-03	1.0E-01				1.1E+02	
W-08	VOC	1,2-Dibromoethane	106-93-4	T	B2	19				2.20E-04	4.00E-03	1.0E-03				2.5E-02	
W-08	VOC	1,2-Dichlorobenzene	95-50-1	T	D	19				1.10E-04	4.00E-03	6.0E-01				1.6E+02	
W-08	VOC	1,3-Dichlorobenzene	541-73-1	T	D	19				1.50E-04	4.00E-03	6.6E-03				2.0E+00	
W-08	VOC	1,4-Dichlorobenzene	106-46-7	T	C	19				1.60E-04	4.00E-03	7.5E-02				6.4E+00	
W-08	VOC	Dichlorodifluoromethane	75-71-8	T		19				2.30E-04	8.00E-03	1.7E+00				3.0E+02	
W-08	VOC	1,1-Dichloroethane	75-34-3	T	C	19	6	1.90E-04	3.00E-03	1.60E-04	4.00E-03	8.8E-01	3.4E-03	2.3E+03	1.3E-06	2.4E+03	1.3E-06
W-08	VOC	1,2-Dichloroethane	107-06-2	T	B2	19				2.10E-04	4.00E-03	5.0E-03				1.9E+01	
W-08	VOC	1,1-Dichloroethene	75-35-4	T	C	19				2.20E-04	4.00E-03	7.0E-03				1.1E+01	
W-08	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	19	2	3.00E-04	2.30E-03	2.20E-04	2.00E-03	7.0E-02	3.3E-02	2.1E+02	1.1E-05	2.0E+02	1.2E-05
W-08	VOC	trans-1,2-Dichloroethene	156-60-5	T		19	1	6.30E-04	6.30E-04	1.50E-04	2.00E-03	1.0E-01	6.3E-03	2.0E+02	3.2E-06	2.2E+02	2.9E-06
W-08	VOC	1,2-Dichloropropane	78-87-5	T	B2	19				1.70E-04	4.00E-03	5.0E-03				3.6E+01	
W-08	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	19				1.50E-04	4.00E-03	8.5E-03				5.5E+00	
W-08	VOC	Ethyl Benzene	100-41-4	T	D	19	8	1.50E-04	7.00E-04	1.20E-04	4.00E-03	7.0E-01	1.0E-03		4.1E-06	1.7E+02	4.1E-06
W-08	VOC	2-Hexanone	591-78-6	T		19				3.10E-04	4.00E-02	1.0E+00				5.2E+03	
W-08	VOC	Methyl Acetate	79-20-9	T		19				4.10E-04	4.00E-02						

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-08	VOC	Methyl tert-butyl ether	1634-04-4	T		19				1.30E-04	2.00E-02	2.4E-01		4.7E+04		6.1E+02	
W-08	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	18	8	4.30E-04	4.90E-03	2.30E-04	4.00E-02	1.8E+00	2.7E-03		2.5E-07	2.0E+04	1.3E+04
W-08	VOC	Methylcyclohexane	108-87-2	T		19	1	1.90E-04	1.90E-04	1.50E-04	4.00E-03						
W-08	VOC	Methylene Chloride	75-09-2	T	B2	18	1	5.00E-04	5.00E-04	2.80E-04	4.00E-03	5.0E-03	1.0E-01	1.4E+03	3.6E-07	2.2E+02	2.3E-06
W-08	VOC	Styrene	100-42-5	T		19				1.50E-04	4.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-08	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C					2.30E-04	4.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-08	VOC	Tetrachloroethene	127-18-4	T	C-B2	19	1	8.90E-04	8.90E-04	1.20E-04	4.00E-03	5.0E-03	1.8E-01	1.7E+02	5.2E-06	1.2E+01	7.4E-05
W-08	VOC	Toluene	108-88-3	T	D	19	9	2.00E-04	2.00E-03	1.80E-04	4.00E-03	1.0E+00	2.0E-03	5.3E+02	3.8E-06	5.3E+02	3.8E-06
W-08	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	19				1.50E-04	4.00E-03	7.0E-02		3.0E+02		1.9E+01	
W-08	VOC	1,1,1-Trichloroethane	71-55-6	T	D	19				1.50E-04	4.00E-03	2.0E-01		1.3E+03		1.3E+03	
W-08	VOC	1,1,2-Trichloroethane	79-00-5	T	C	19				2.10E-04	4.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-08	VOC	Trichloroethene	79-01-6	T	C-B2	19	2	2.00E-04	2.60E-03	1.40E-04	4.00E-03	5.0E-03	5.2E-01	9.7E+01	2.7E-05	2.2E+01	1.2E-04
W-08	VOC	Trichlorofluoromethane	75-69-4	T		19				2.50E-04	4.00E-03	2.6E+00		1.1E+03		1.1E+03	
W-08	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		19				2.30E-04	4.00E-03	1.7E+02		1.7E+02		1.7E+02	
W-08	VOC	Vinyl Chloride	75-01-4	T	A	19	1	3.10E-04	3.10E-04	1.50E-04	4.00E-03	2.0E-03	1.6E-01	1.3E+01	2.4E-05	1.0E+00	3.1E-04
W-08	VOC	Xylenes (total)	1330-20-7	T	ID	19	9	5.10E-04	2.80E-03	3.30E-04	4.00E-03	1.0E+01	2.8E-04	1.9E+02	1.5E-05	1.9E+02	1.5E-05
W-08	SVOC	Acenaphthene	83-32-9	T		19	2	2.20E-03	3.10E-03	8.00E-04	1.40E-01	1.3E+00	2.4E-03	4.2E+00	7.4E-04	4.2E+00	7.4E-04
W-08	SVOC	Acenaphthylene	208-96-8	T	D	19				7.10E-04	8.20E-02	5.2E-02		3.9E+00		3.9E+00	
W-08	SVOC	Acetophenone	98-86-2	T	D	19				2.60E-03	1.30E-01	1.5E+00		6.1E+03		6.1E+03	
W-08	SVOC	Anthracene	120-12-7	T	D	19	2	7.30E-04	7.90E-04	6.80E-04	1.20E-01	4.3E-02	1.8E-02	4.3E-02	1.8E-02	4.3E-02	1.8E-02
W-08	SVOC	Atrazine	1912-24-9	T		19				2.50E-03	7.00E-02	3.0E-03				5.4E+00	
W-08	SVOC	Benzaldehyde	100-52-7	T		19				2.80E-03	1.20E-01						
W-08	SVOC	Benzo(a)anthracene	56-55-3	T	B2	19				7.00E-04	1.40E-01	2.1E-03				9.4E-03	
W-08	SVOC	Benzo(a)pyrene	50-32-8	T	B2	19				7.30E-04	1.10E-01	5.0E-03				2.0E-03	
W-08	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	19				9.40E-04	1.40E-01	2.0E-03				2.0E-03	
W-08	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	19				8.50E-04	1.40E-01	5.0E-03				5.0E-03	
W-08	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	19				8.40E-04	1.30E-01	5.0E-03				5.0E-03	
W-08	SVOC	Biphenyl	92-52-4	T	D	19				2.60E-03	1.30E-01						
W-08	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	19				8.70E-04	2.00E-01						
W-08	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	19				9.70E-04	3.40E-01	2.0E-03		2.1E+02		5.7E+00	
W-08	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	19				2.70E-03	5.40E-02	6.0E-03				3.2E-01	
W-08	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	19				8.80E-04	1.60E-01						
W-08	SVOC	Butylbenzylphthalate	85-68-7	T	C	19				8.80E-04	4.60E-02	1.2E+00				2.7E+00	
W-08	SVOC	Caprolactam	105-60-2	T		19	1	5.50E+00	5.50E+00	2.50E-03	9.00E-02	5.8E+00	9.5E-01			3.9E+05	1.4E-05
W-08	SVOC	Carbazole	86-74-8	T	B2	19				8.20E-04	1.20E-01	8.5E-02				7.4E+00	
W-08	SVOC	4-Chloro-3-methylphenol	59-50-7	T		19				9.90E-04	1.10E-01	1.5E-01				7.9E+01	
W-08	SVOC	4-Chloroaniline	106-47-8	T		18				6.10E-04	1.80E-01						
W-08	SVOC	2-Chloronaphthalene	91-58-7	T		19				8.50E-04	1.50E-01	1.8E+00				6.7E+00	
W-08	SVOC	2-Chlorophenol	95-57-8	T		19				1.00E-03	2.60E-01	4.5E-02				9.4E+01	
W-08	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		19				7.90E-04	1.30E-01						
W-08	SVOC	Chrysene	218-01-9	T	B2	19				7.50E-04	1.30E-01	5.0E-03				5.0E-03	
W-08	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	19				7.90E-04	1.40E-01	2.0E-03				2.0E-03	
W-08	SVOC	Dibenzofuran	132-64-9	T	D	19				1.10E-03	1.30E-01						
W-08	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	17				9.30E-04	9.40E-02	1.1E-03				1.8E-01	
W-08	SVOC	2,4-Dichlorophenol	120-83-2	T		19				8.50E-04	1.40E-01	7.3E-02				4.8E+01	
W-08	SVOC	Diethylphthalate	84-66-2	T	D	19				6.50E-04	5.00E-02	5.5E+00				1.1E+03	
W-08	SVOC	2,4-Dimethylphenol	105-67-9	T		19	1	2.50E+00	2.50E+00	8.50E-04	1.70E-02	3.7E-01	6.8E+00			5.2E+02	4.8E-03
W-08	SVOC	Dimethylphthalate	131-11-3	T	D	19				7.60E-04	4.00E-02	7.3E+01				4.2E+03	
W-08	SVOC	Di-n-butylphthalate	84-74-2	T	D	19				6.70E-04	7.40E-02	8.8E-01				1.1E+01	
W-08	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		19				1.30E-03	4.20E-01	2.0E-02				9.5E+00	
W-08	SVOC	2,4-Dinitrophenol	51-28-5	T		19				3.00E-03	6.60E-01						
W-08	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	19				7.90E-04	9.20E-02	7.7E-03				8.6E+00	
W-08	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	19				5.70E-04	1.40E-01						
W-08	SVOC	Di-n-octylphthalate	117-84-0	T		19				1.10E-03	1.40E-01	1.3E-01				4.0E-01	
W-08	SVOC	Fluoranthene	206-44-0	T	D	19				8.10E-04	1.40E-01	2.1E-01		2.1E-01		2.1E-01	
W-08	SVOC	Fluorene	86-73-7	T	D	19	8	1.50E-03	2.10E-02	1.00E-03	1.50E-01	8.8E-01	2.4E-02	2.0E+00	1.1E-02	2.0E+00	1.1E-02
W-08	SVOC	Hexachlorobenzene	118-74-1	T	B2	19				7.40E-04	1.50E-01	1.0E-03		3.0E+00		4.6E-03	
W-08	SVOC	Hexachlorobutadiene	87-68-3	T	C	19				7.30E-04	3.00E-01	1.5E-02		3.2E+00		4.0E-01	
W-08	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	17				1.10E-03	2.20E-01	5.0E-02		4.2E-01		1.6E+00	
W-08	SVOC	Hexachloroethane	67-72-1	T	C	19				7.40E-04	3.20E-01	7.3E-03		5.0E+01		1.9E+00	
W-08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	19				6.30E-04	1.40E-01	2.0E-03				2.0E-03	
W-08	SVOC	Isophorone	78-59-1	T	C	19				6.30E-04	1.70E-01	7.7E-01				9.9E+02	
W-08	SVOC	2-Methylnaphthalene	91-57-6	T	ID	19	4	6.50E-04	5.10E-03	6.40E-04	1.90E-01	2.6E-01	2.0E-02			2.5E+01	2.0E-04
W-08	SVOC	Methylphenol (total)	1319-77-3	T		19	1	4.69E+00	4.69E+00	1.30E-03	2.60E-02	3.7E-01	1.3E+01			8.1E+02	5.8E-03
W-08	SVOC	Naphthalene	91-20-3	T	C	19	4	1.70E-03	2.60E-03	7.50E-04	2.60E-01	5.2E-01	5.0E-03	3.1E+01	8.4E-05	3.1E+01	8.4E-05
W-08	SVOC	2-Nitroaniline	88-74-4	T		19				7.00E-04	9.80E-02						

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-08	SVOC	3-Nitroaniline	99-09-2	T	C	18				7.10E-04	9.60E-02						
W-08	SVOC	4-Nitroaniline	100-01-6	T	C	19				1.30E-03	1.20E-01						
W-08	SVOC	Nitrobenzene	98-95-3	T	D	19				8.10E-04	2.60E-01	3.4E-03		5.5E+02		1.1E+01	
W-08	SVOC	2-Nitrophenol	88-75-5	T		19				2.10E-03	1.90E-01	2.0E-02				7.9E+01	
W-08	SVOC	4-Nitrophenol	100-02-7	T		19				1.90E-03	7.00E-01						
W-08	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	19				1.40E-03	1.30E-01	2.7E-01				3.5E+01	
W-08	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	19				6.70E-04	2.20E-01	5.0E-03				3.6E-01	
W-08	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	19				7.80E-04	3.60E-01						
W-08	SVOC	Pentachlorophenol	87-86-5	T	B2	19				2.40E-03	5.20E-01	1.0E-03				2.0E-01	
W-08	SVOC	Phenanthrene	85-01-8	T	D	19	9	1.00E-03	2.80E-02	8.20E-04	1.40E-01	5.2E-02	5.4E-01	1.0E+00	2.8E-02	1.0E+00	2.8E-02
W-08	SVOC	Phenol	108-95-2	T	ID	19	2	4.60E-02	1.20E+00	2.60E-03	5.20E-02	4.4E+00	2.7E-01			2.9E+04	4.1E-05
W-08	SVOC	Pyrene	129-00-0	T	D	19				1.10E-03	1.30E-01	1.4E-01		1.4E-01		1.4E-01	
W-08	SVOC	2,4,5-Trichlorophenol	95-95-4	T		19				1.20E-03	1.70E-01	7.3E-01				1.7E+02	
W-08	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	19				1.70E-03	1.40E-01	1.2E-01				1.0E+01	
W-08	P/PCB	PCBs (total)	1336-36-3	D	B2	5				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-08	P/PCB	PCBs (total)	1336-36-3	T	B2	19	1	7.36E-04	7.36E-04	8.20E-05	4.00E-04	5.0E-04	1.5E+00	4.5E-02	1.6E-02	3.3E-03	2.2E-01
W-08	INORG	Antimony	7440-36-0	D		14	3	2.50E-03	8.00E-03	2.20E-03	2.20E-03	6.0E-03	1.3E+00			6.8E+01	1.2E-04
W-08	INORG	Antimony	7440-36-0	T		19	3	2.80E-03	7.90E-03	2.20E-03	3.40E-03	6.0E-03	1.3E+00			6.8E+01	1.2E-04
W-08	INORG	Arsenic	7440-38-2	D	A	14	10	4.10E-03	3.41E-02	3.90E-03	1.00E-02	5.0E-02	6.8E-01			4.3E+00	7.9E-03
W-08	INORG	Arsenic	7440-38-2	T	A	19	15	4.10E-03	8.49E-02	3.90E-03	1.00E-02	5.0E-02	1.7E+00			4.3E+00	2.0E-02
W-08	INORG	Barium	7440-39-3	D	D	14	14	2.60E-02	3.01E-01			2.0E+00	1.5E-01			1.4E+04	2.2E-05
W-08	INORG	Barium	7440-39-3	T	D	19	18	2.65E-02	1.03E+00	8.20E-04	8.20E-04	2.0E+00	5.2E-01			1.4E+04	7.4E-05
W-08	INORG	Beryllium	7440-41-7	D	B1	14				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-08	INORG	Beryllium	7440-41-7	T	B1	19	2	6.20E-04	5.40E-03	4.70E-04	1.00E-03	4.0E-03	1.4E+00			2.9E+02	1.9E-05
W-08	INORG	Cadmium	7440-43-9	D	B1	14	3	2.80E-04	5.50E-04	2.80E-04	2.80E-04	5.0E-03	1.1E-01			1.9E+02	2.9E-06
W-08	INORG	Cadmium	7440-43-9	T	B1	19	7	2.90E-04	3.90E-03	2.80E-04	3.60E-04	5.0E-03	7.8E-01			1.9E+02	2.1E-05
W-08	INORG	Chromium (total)	7440-47-3	D		14	2	5.00E-03	4.76E-02	1.40E-03	1.00E-02	1.0E-01	4.8E-01			4.6E+02	1.0E-04
W-08	INORG	Chromium (total)	7440-47-3	T		19	6	1.15E-03	2.95E-01	1.00E-03	1.00E-02	1.0E-01	3.0E+00			4.6E+02	6.4E-04
W-08	INORG	Cobalt	7440-48-4	D	B1	14	5	1.40E-03	9.30E-03	1.30E-03	2.00E-02	4.0E-02	2.3E-01			2.4E+03	3.9E-06
W-08	INORG	Cobalt	7440-48-4	T	B1	19	6	1.90E-03	8.79E-02	7.40E-04	2.00E-02	4.0E-02	2.2E+00			2.4E+03	3.7E-05
W-08	INORG	Copper	7440-50-8	D	D	14	2	4.40E-03	5.20E-03	4.20E-03	5.00E-03	1.4E+00	3.7E-03			7.4E+03	7.0E-07
W-08	INORG	Copper	7440-50-8	T	D	19	3	6.60E-03	2.14E-01	1.70E-03	5.00E-03	1.4E+00	1.5E-01			7.4E+03	2.9E-05
W-08	INORG	Lead	7439-92-1	D	B2	14				2.50E-03	3.00E-03	4.0E-03					
W-08	INORG	Lead	7439-92-1	T	B2	19	3	5.70E-03	1.22E-01	1.60E-03	3.00E-03	4.0E-03	3.1E+01				
W-08	INORG	Manganese	7439-96-5	D	D	14	14	2.10E-03	3.24E+00			8.6E-01	3.8E+00			9.1E+03	3.6E-04
W-08	INORG	Manganese	7439-96-5	T	D	19	19	3.50E-03	5.41E+00			8.6E-01	6.3E+00			9.1E+03	5.9E-04
W-08	INORG	Mercury	7439-97-6	D	D	14	2	1.10E-04	1.90E-04	6.90E-05	2.00E-04	2.0E-03	9.5E-02	5.6E-02	3.4E-03	5.6E-02	3.4E-03
W-08	INORG	Mercury	7439-97-6	T	D	19	5	7.00E-05	2.60E-04	6.90E-05	2.00E-04	2.0E-03	1.3E-01	5.6E-02	4.6E-03	5.6E-02	4.6E-03
W-08	INORG	Nickel	7440-02-0	D	A	14	11	2.30E-03	1.56E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.1E-07
W-08	INORG	Nickel	7440-02-0	T	A	19	14	3.40E-03	3.07E-01	2.20E-03	2.00E-02	1.0E-01	3.1E+00			7.4E+04	4.1E-06
W-08	INORG	Selenium	7782-49-2	D	D	14				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
W-08	INORG	Selenium	7782-49-2	T	D	19				3.90E-03	5.00E-03	5.0E-02				9.7E+02	
W-08	INORG	Silver	7440-22-4	D	D	14				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-08	INORG	Silver	7440-22-4	T	D	19				9.80E-04	5.00E-03	3.4E-02				1.5E+03	
W-08	INORG	Thallium	7440-28-0	D		14	3	2.10E-05	7.40E-03	1.80E-05	5.00E-03	2.0E-03	3.7E+00			1.3E+01	5.7E-04
W-08	INORG	Thallium	7440-28-0	T		19	3	1.00E-03	6.10E-03	1.50E-05	1.00E-02	2.0E-03	3.1E+00			1.3E+01	4.7E-04
W-08	INORG	Vanadium	7440-62-2	D		14	4	6.40E-04	3.80E-03	8.20E-04	1.00E-02	4.5E-03	8.4E-01			9.7E+02	3.9E-06
W-08	INORG	Vanadium	7440-62-2	T		19	8	6.70E-04	2.39E-01	6.70E-04	1.00E-02	4.5E-03	5.3E+01			9.7E+02	2.5E-04
W-08	INORG	Zinc	7440-66-6	D	D	14	2	2.25E-02	3.21E-02	1.20E-02	2.00E-02	2.4E+00	1.3E-02			1.1E+05	2.9E-07
W-08	INORG	Zinc	7440-66-6	T	D	19	3	3.38E-02	6.31E-01	1.20E-02	2.00E-02	2.4E+00	2.6E-01			1.1E+05	5.7E-06
W-08	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	4	4	1.95E-09	1.97E-08			3.0E-08	6.6E-01			1.0E-08	2.0E+00
W-09	VOC	Acetone	67-64-1	T	ID	6	2	1.50E-02	3.50E-02	5.10E-04	6.60E-04	7.3E-01	4.8E-02	1.0E+06	3.5E-08	3.1E+04	1.1E-06
W-09	VOC	Benzene	71-43-2	T	A	6	1	2.85E-04	2.85E-04	1.60E-04	1.00E-03	5.0E-03	5.7E-02			1.1E+01	2.6E-05
W-09	VOC	Bromodichloromethane	75-27-4	T	B2	6				1.70E-04	1.00E-03	1.0E-01				1.4E+01	
W-09	VOC	Bromofrom	75-25-2	T	B2	6				1.80E-04	1.00E-03	1.0E-01				1.4E+02	
W-09	VOC	Bromomethane	74-83-9	T	D	6				1.60E-04	1.00E-03	1.0E-02				7.0E+01	
W-09	VOC	2-Butanone	78-93-3	T	ID	6	1	2.05E-03	2.05E-03	3.60E-04	1.00E-02	1.3E+01	1.6E-04	2.4E+05	8.5E-09	2.4E+05	8.5E-09
W-09	VOC	Carbon Disulfide	75-15-0	T		6	1	1.40E-03	1.40E-03	2.00E-04	1.00E-03	8.0E-01	1.8E-03	5.5E+02	2.5E-06	1.2E+03	1.2E-06
W-09	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	1.00E-03	5.0E-03				4.6E+00	
W-09	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	1.00E-03	1.0E-01				8.6E+01	
W-09	VOC	Chloroethane	75-00-3	T		6				2.20E-04	1.00E-03	4.3E-01				4.4E+02	
W-09	VOC	Chloroform	67-66-3	T	B2	6				1.40E-04	1.00E-03	1.0E-01				1.5E+02	
W-09	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	1.00E-03	2.6E-01				4.9E+02	
W-09	VOC	Cumene	98-82-8	T	D	6	1	2.55E-04	2.55E-04	1.20E-04	1.00E-03	8.0E-01	3.2E-04	5.6E+01	4.6E-06	5.6E+01	4.6E-06
W-09	VOC	Cyclohexane	110-82-7	T	ID	6	1	7.90E-04	7.90E-04	1.30E-04	1.00E-03						
W-09	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				5.30E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-09	VOC	Dibromochloromethane	124-48-1	T	C	6				2.50E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
W-09	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
W-09	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
W-09	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
W-09	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.60E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
W-09	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.30E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
W-09	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03	
W-09	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
W-09	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.20E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
W-09	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
W-09	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
W-09	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
W-09	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				1.50E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
W-09	VOC	Ethyl Benzene	100-41-4	T	D	6				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
W-09	VOC	2-Hexanone	591-78-6	T		6				3.10E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
W-09	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	1.00E-02						
W-09	VOC	Methyl tert-butyl ether	1634-04-4	T		6				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
W-09	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4	1	2.55E-03	2.55E-03	2.30E-04	1.00E-02	1.8E+00	1.4E-03	2.0E+04	1.3E-07	1.3E+04	2.0E-07
W-09	VOC	Methylcyclohexane	108-87-2	T		6	1	8.55E-04	8.55E-04	1.50E-04	1.00E-03						
W-09	VOC	Methylene Chloride	75-09-2	T	B2	6				2.80E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
W-09	VOC	Styrene	100-42-5	T		6				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-09	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.30E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-09	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				1.20E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01	
W-09	VOC	Toluene	108-88-3	T	D	6	1	2.75E-04	2.75E-04	1.70E-04	1.00E-03	1.0E+00	2.8E-04	5.3E+02	5.2E-07	5.3E+02	5.2E-07
W-09	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.50E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
W-09	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6	1	2.50E-04	2.50E-04	1.80E-04	1.00E-03	2.0E-01	1.3E-03	1.3E+03	1.9E-07	1.3E+03	1.9E-07
W-09	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				2.10E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-09	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
W-09	VOC	Trichlorofluoromethane	75-69-4	T		6	2	9.50E-04	2.20E-03	2.50E-04	2.50E-04	2.6E+00	8.5E-04	1.1E+03	2.0E-06	1.1E+03	2.0E-06
W-09	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				2.30E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
W-09	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
W-09	VOC	Xylenes (total)	1330-20-7	T	ID	6	1	1.25E-03	1.25E-03	3.30E-04	1.00E-03	1.0E+01	1.3E-04	1.9E+02	6.6E-06	1.9E+02	6.6E-06
W-09	SVOC	Acenaphthene	83-32-9	T		6				6.90E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
W-09	SVOC	Acenaphthylene	208-96-8	T	D	6				4.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
W-09	SVOC	Acetophenone	98-86-2	T	D	6				6.50E-04	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
W-09	SVOC	Anthracene	120-12-7	T	D	6				5.90E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
W-09	SVOC	Atrazine	1912-24-9	T		6				3.50E-04	5.00E-03	3.0E-03				5.4E+00	
W-09	SVOC	Benzaldehyde	100-52-7	T		6				5.90E-04	1.00E-02						
W-09	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				6.80E-04	5.00E-03	2.1E-03				9.4E-03	
W-09	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				5.30E-04	5.00E-03	5.0E-03				2.0E-03	
W-09	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				7.00E-04	5.00E-03	2.0E-03				2.0E-03	
W-09	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				7.00E-04	5.00E-03	5.0E-03				5.0E-03	
W-09	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				6.40E-04	5.00E-03	5.0E-03				5.0E-03	
W-09	SVOC	Biphenyl	92-52-4	T	D	6				6.50E-04	1.00E-02						
W-09	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	5.00E-03						
W-09	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6				9.70E-04	8.50E-03	2.0E-03		2.1E+02		5.7E+00	
W-09	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6	1	5.80E-04	5.80E-04	2.00E-04	5.00E-03	6.0E-03	9.7E-02			3.2E-01	1.8E-03
W-09	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				7.80E-04	5.00E-03						
W-09	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				2.30E-04	5.00E-03	1.2E+00				2.7E+00	
W-09	SVOC	Caprolactam	105-60-2	T		6				4.50E-04	1.00E-02	5.8E+00				3.9E+05	
W-09	SVOC	Carbazole	86-74-8	T	B2	6				6.10E-04	1.00E-02	8.5E-02				7.4E+00	
W-09	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				5.50E-04	5.00E-03	1.5E-01				7.9E+01	
W-09	SVOC	4-Chloroaniline	106-47-8	T		5				9.00E-04	1.00E-02						
W-09	SVOC	2-Chloronaphthalene	91-58-7	T		6				7.30E-04	5.00E-03	1.8E+00				6.7E+00	
W-09	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	6.50E-03	4.5E-02				9.4E+01	
W-09	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				6.60E-04	5.00E-03						
W-09	SVOC	Chrysene	218-01-9	T	B2	6				6.70E-04	5.00E-03	5.0E-03				5.0E-03	
W-09	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				6.80E-04	5.00E-03	2.0E-03				2.0E-03	
W-09	SVOC	Dibenzofuran	132-64-9	T	D	6				6.60E-04	5.00E-03						
W-09	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	5				4.70E-04	2.00E-02	1.1E-03				1.8E-01	
W-09	SVOC	2,4-Dichlorophenol	120-83-2	T		6				7.00E-04	1.00E-02	7.3E-02				4.8E+01	
W-09	SVOC	Diethylphthalate	84-66-2	T	D	6				2.50E-04	5.00E-03	5.5E+00				1.1E+03	
W-09	SVOC	2,4-Dimethylphenol	105-67-9	T		6	1	1.04E-02	1.04E-02	8.50E-04	5.00E-03	3.7E-01	2.8E-02			5.2E+02	2.0E-05
W-09	SVOC	Dimethylphthalate	131-11-3	T	D	6				2.00E-04	5.00E-03	7.3E+01				4.2E+03	
W-09	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				3.70E-04	5.00E-03	8.8E-01				1.1E+01	
W-09	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	2.00E-02	2.0E-02				9.5E+00	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-09	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	2.00E-02						
W-09	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				4.60E-04	5.00E-03	7.7E-03				8.6E+00	
W-09	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.00E-03						
W-09	SVOC	Di-n-octylphthalate	117-84-0	T		6				6.90E-04	5.00E-03	1.3E-01				4.0E-01	
W-09	SVOC	Fluoranthene	206-44-0	T	D	6				7.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
W-09	SVOC	Fluorene	86-73-7	T	D	6				7.50E-04	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
W-09	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
W-09	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				7.30E-04	7.50E-03	1.5E-02		3.2E+00		4.0E-01	
W-09	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	5.50E-03	5.0E-02		4.2E-01		1.6E+00	
W-09	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	8.00E-03	7.3E-03		5.0E+01		1.9E+00	
W-09	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
W-09	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
W-09	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
W-09	SVOC	Methylphenol (total)	1319-77-3	T		6				9.00E-04	5.00E-03	3.7E-01				8.1E+02	
W-09	SVOC	Naphthalene	91-20-3	T	C	6				7.50E-04	6.50E-03	5.2E-01		3.1E+01		3.1E+01	
W-09	SVOC	2-Nitroaniline	88-74-4	T		6				4.90E-04	2.00E-02						
W-09	SVOC	3-Nitroaniline	99-09-2	T	C	5				4.80E-04	2.00E-02						
W-09	SVOC	4-Nitroaniline	100-01-6	T	C	6				5.90E-04	2.00E-02						
W-09	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	6.50E-03	3.4E-03		5.5E+02		1.1E+01	
W-09	SVOC	2-Nitrophenol	88-75-5	T		6				9.50E-04	5.00E-03	2.0E-02				7.9E+01	
W-09	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	2.00E-02						
W-09	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				6.40E-04	5.00E-03	2.7E-01				3.5E+01	
W-09	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	5.50E-03	5.0E-03				3.6E-01	
W-09	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	9.00E-03						
W-09	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	1.30E-02	1.0E-03				2.0E-01	
W-09	SVOC	Phenanthrene	85-01-8	T	D	6				6.80E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
W-09	SVOC	Phenol	108-95-2	T	ID	6				1.30E-03	6.50E-03	4.4E+00				2.9E+04	
W-09	SVOC	Pyrene	129-00-0	T	D	6				6.30E-04	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
W-09	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				8.60E-04	5.00E-03	7.3E-01				1.7E+02	
W-09	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				7.10E-04	5.00E-03	1.2E-01				1.0E+01	
W-09	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-09	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-09	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
W-09	INORG	Antimony	7440-36-0	T		6				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
W-09	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
W-09	INORG	Arsenic	7440-38-2	T	A	6	3	3.70E-03	1.54E-02	2.90E-03	1.00E-02	5.0E-02	3.1E-01			4.3E+00	3.6E-03
W-09	INORG	Barium	7440-39-3	D	D	2	2	5.40E-02	1.47E-01			2.0E+00	7.4E-02			1.4E+04	1.1E-05
W-09	INORG	Barium	7440-39-3	T	D	6	6	1.73E-02	4.20E-01			2.0E+00	2.1E-01			1.4E+04	3.0E-05
W-09	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-09	INORG	Beryllium	7440-41-7	T	B1	6				4.70E-04	1.00E-03	4.0E-03				2.9E+02	
W-09	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
W-09	INORG	Cadmium	7440-43-9	T	B1	6				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
W-09	INORG	Chromium (total)	7440-47-3	D		2	1	1.04E-02	1.04E-02	1.00E-02	1.00E-02	1.0E-01	1.0E-01			4.6E+02	2.3E-05
W-09	INORG	Chromium (total)	7440-47-3	T		6	2	1.12E-02	5.68E-02	1.00E-03	1.00E-02	1.0E-01	5.7E-01			4.6E+02	1.2E-04
W-09	INORG	Cobalt	7440-48-4	D	B1	2	1	1.40E-03	1.40E-03	1.30E-03	1.30E-03	4.0E-02	3.5E-02			2.4E+03	5.8E-07
W-09	INORG	Cobalt	7440-48-4	T	B1	6	3	2.35E-03	2.90E-03	1.10E-03	1.30E-03	4.0E-02	7.3E-02			2.4E+03	1.2E-06
W-09	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
W-09	INORG	Copper	7440-50-8	T	D	6	1	2.80E-03	2.80E-03	1.80E-03	5.00E-03	1.4E+00	2.0E-03			7.4E+03	3.8E-07
W-09	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03	4.0E-03					
W-09	INORG	Lead	7439-92-1	T	B2	6	1	3.91E-02	3.91E-02	2.30E-03	3.00E-03	4.0E-03	9.8E+00				
W-09	INORG	Manganese	7439-96-5	D	D	2	2	1.98E-02	2.42E-01			8.6E-01	2.8E-01			9.1E+03	2.7E-05
W-09	INORG	Manganese	7439-96-5	T	D	6	6	1.65E-02	6.70E-01			8.6E-01	7.8E-01			9.1E+03	7.4E-05
W-09	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
W-09	INORG	Mercury	7439-97-6	T	D	6	1	8.60E-05	8.60E-05	6.70E-05	2.00E-04	2.0E-03	4.3E-02	5.6E-02	1.5E-03	5.6E-02	1.5E-03
W-09	INORG	Nickel	7440-02-0	D	A	2	1	2.20E-03	2.20E-03	2.20E-03	2.20E-03	1.0E-01	2.2E-02			7.4E+04	3.0E-08
W-09	INORG	Nickel	7440-02-0	T	A	6	3	3.80E-03	3.85E-02	2.10E-03	2.20E-03	1.0E-01	3.9E-01			7.4E+04	5.2E-07
W-09	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
W-09	INORG	Selenium	7782-49-2	T	D	6				3.90E-03	5.00E-03	5.0E-02				9.7E+02	
W-09	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-09	INORG	Silver	7440-22-4	T	D	6				1.10E-03	5.00E-03	3.4E-02				1.5E+03	
W-09	INORG	Thallium	7440-28-0	D		2	2	3.80E-05	5.30E-03			2.0E-03	2.7E+00			1.3E+01	4.1E-04
W-09	INORG	Thallium	7440-28-0	T		6	1	1.24E-02	1.24E-02	1.50E-05	1.80E-05	2.0E-03	6.2E+00			1.3E+01	9.5E-04
W-09	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
W-09	INORG	Vanadium	7440-62-2	T		6	2	1.90E-03	4.50E-03	8.20E-04	1.00E-02	4.5E-03	1.0E+00			9.7E+02	4.6E-06
W-09	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
W-09	INORG	Zinc	7440-66-6	T	D	6	1	5.44E-02	5.44E-02	1.20E-02	2.00E-02	2.4E+00	2.3E-02			1.1E+05	4.9E-07

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-10	VOC	Acetone	67-64-1	T	ID	10	1	3.10E-03	3.10E-03	5.10E-04	1.10E-03	7.3E-01	4.2E-03	1.0E+06	3.1E-09	3.1E+04	1.0E-07
W-10	VOC	Benzene	71-43-2	T	A	10	3	1.90E-04	5.80E-04	1.60E-04	3.70E-04	5.0E-03	1.2E-01	3.5E+01	1.7E-05	1.1E+01	5.3E-05
W-10	VOC	Bromodichloromethane	75-27-4	T	B2	10	1	3.00E-04	3.00E-04	1.70E-04	3.20E-04	1.0E-01	3.0E-03	3.7E+01	8.1E-06	1.4E+01	2.1E-05
W-10	VOC	Bromoform	75-25-2	T	B2	10				1.80E-04	3.70E-04	1.0E-01			3.1E+03	1.4E+02	
W-10	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	3.00E-04	1.0E-02		9.0E+00		7.0E+01	
W-10	VOC	2-Butanone	78-93-3	T	ID	10	1	1.00E-03	1.00E-03	4.10E-04	5.90E-04	1.3E+01	7.7E-05	2.4E+05	4.2E-09	2.4E+05	4.2E-09
W-10	VOC	Carbon Disulfide	75-15-0	T		10	1	2.00E-04	2.00E-04	2.00E-04	2.40E-04	8.0E-01	2.5E-04	5.5E+02	3.6E-07	1.2E+03	1.7E-07
W-10	VOC	Carbon Tetrachloride	56-23-5	T	B2	10				1.20E-04	3.70E-04	5.0E-03		2.4E+00		4.6E+00	
W-10	VOC	Chlorobenzene	108-90-7	T	D	10				1.40E-04	3.80E-04	1.0E-01		4.7E+02		8.6E+01	
W-10	VOC	Chloroethane	75-00-3	T		10				2.60E-04	2.90E-04	4.3E-01		5.7E+03		4.4E+02	
W-10	VOC	Chloroform	67-66-3	T	B2	10	3	2.00E-04	5.70E-04	1.40E-04	3.50E-04	1.0E-01	5.7E-03	1.8E+02	3.2E-06	1.5E+02	3.8E-06
W-10	VOC	Chloromethane	74-87-3	T	D	10				1.30E-04	4.90E-04	2.6E-01		4.5E+01		4.9E+02	
W-10	VOC	Cumene	98-82-8	T	D	10	1	3.00E-04	3.00E-04	1.20E-04	3.90E-04	8.0E-01	3.8E-04	5.6E+01	5.4E-06	5.6E+01	5.4E-06
W-10	VOC	Cyclohexane	110-82-7	T	ID	10				1.30E-04	3.30E-04						
W-10	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	10				6.20E-04	8.20E-04	2.0E-04		1.2E+00		3.9E-01	
W-10	VOC	Dibromochloromethane	124-48-1	T	C	10				2.60E-04	3.70E-04	1.0E-01		1.1E+02		1.8E+01	
W-10	VOC	1,2-Dibromoethane	106-93-4	T	B2	10				2.20E-04	3.40E-04	1.0E-03		1.5E+01		2.5E-02	
W-10	VOC	1,2-Dichlorobenzene	95-50-1	T	D	10				1.10E-04	3.80E-04	6.0E-01		1.6E+02		1.6E+02	
W-10	VOC	1,3-Dichlorobenzene	541-73-1	T	D	10				1.50E-04	3.80E-04	6.6E-03				2.0E+00	
W-10	VOC	1,4-Dichlorobenzene	106-46-7	T	C	10				1.70E-04	3.80E-04	7.5E-02		7.4E+01		6.4E+00	
W-10	VOC	Dichlorodifluoromethane	75-71-8	T		10				2.60E-04	4.90E-04	1.7E+00		3.0E+02		3.0E+02	
W-10	VOC	1,1-Dichloroethane	75-34-3	T	C	10	3	7.30E-04	1.20E-03	1.60E-04	3.00E-04	8.8E-01	1.4E-03	2.3E+03	5.2E-07	2.4E+03	5.0E-07
W-10	VOC	1,2-Dichloroethane	107-06-2	T	B2	10				2.10E-04	2.80E-04	5.0E-03		5.9E+01		1.9E+01	
W-10	VOC	1,1-Dichloroethene	75-35-4	T	C	10				2.40E-04	3.10E-04	7.0E-03		1.3E+00		1.1E+01	
W-10	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				2.20E-04	3.50E-04	7.0E-02		2.1E+02		2.0E+02	
W-10	VOC	trans-1,2-Dichloroethene	156-60-5	T		10				1.50E-04	3.30E-04	1.0E-01		2.0E+02		2.2E+02	
W-10	VOC	1,2-Dichloropropane	78-87-5	T	B2	10				1.70E-04	4.10E-04	5.0E-03		3.6E+01		1.6E+01	
W-10	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				2.70E-04	3.50E-04	8.5E-03		2.6E+01		5.5E+00	
W-10	VOC	Ethyl Benzene	100-41-4	T	D	10	4	1.50E-04	1.00E-03	1.20E-04	4.10E-04	7.0E-01	1.4E-03	1.7E+02	5.9E-06	1.7E+02	5.9E-06
W-10	VOC	2-Hexanone	591-78-6	T		10				4.60E-04	5.80E-04	1.0E+00		8.7E+03		5.2E+03	
W-10	VOC	Methyl Acetate	79-20-9	T		10				4.10E-04	5.40E-04						
W-10	VOC	Methyl tert-butyl ether	1634-04-4	T		10	4	6.70E-04	2.00E-02	1.30E-04	2.70E-04	2.4E-01	8.3E-02	4.7E+04	4.3E-07	6.1E+02	3.3E-05
W-10	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	10	1	2.40E-04	2.40E-04	2.30E-04	2.60E-04	1.8E+00	1.3E-04	2.0E+04	1.2E-08	1.3E+04	1.8E-08
W-10	VOC	Methylcyclohexane	108-87-2	T		10				1.50E-04	4.20E-04						
W-10	VOC	Methylene Chloride	75-09-2	T	B2	6				2.90E-04	3.40E-04	5.0E-03		1.4E+03		2.2E+02	
W-10	VOC	Styrene	100-42-5	T		10				1.50E-04	3.50E-04	1.0E-01		3.1E+02		9.7E+00	
W-10	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	10				2.50E-04	3.60E-04	8.5E-03		7.7E+01		4.7E+00	
W-10	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				2.30E-04	4.20E-04	5.0E-03		1.7E+02		1.2E+01	
W-10	VOC	Toluene	108-88-3	T	D	10	4	5.90E-04	1.90E-03	1.80E-04	3.90E-04	1.0E+00	1.9E-03	5.3E+02	3.6E-06	5.3E+02	3.6E-06
W-10	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	10				1.70E-04	4.00E-04	7.0E-02		3.0E+02		1.9E+01	
W-10	VOC	1,1,1-Trichloroethane	71-55-6	T	D	10	2	4.10E-04	6.20E-04	1.50E-04	3.90E-04	2.0E-01	3.1E-03	1.3E+03	4.8E-07	1.3E+03	4.8E-07
W-10	VOC	1,1,2-Trichloroethane	79-00-5	T	C	10				3.00E-04	3.60E-04	5.0E-03		1.1E+02		2.1E+01	
W-10	VOC	Trichloroethene	79-01-6	T	C-B2	10				1.40E-04	4.20E-04	5.0E-03		9.7E+01		2.2E+01	
W-10	VOC	Trichlorofluoromethane	75-69-4	T		10				2.80E-04	5.40E-04	2.6E+00		1.1E+03		1.1E+03	
W-10	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		10				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
W-10	VOC	Vinyl Chloride	75-01-4	T	A	10				1.50E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
W-10	VOC	Xylenes (total)	1330-20-7	T	ID	10	4	5.80E-04	7.80E-03	3.30E-04	4.40E-04	1.0E+01	7.8E-04	1.9E+02	4.1E-05	1.9E+02	4.1E-05
W-10	SVOC	Acenaphthene	83-32-9	T		10				8.00E-04	3.20E-03	1.3E+00		4.2E+00		4.2E+00	
W-10	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	2.80E-03	5.2E-02		3.9E+00		3.9E+00	
W-10	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
W-10	SVOC	Anthracene	120-12-7	T	D	10				6.80E-04	2.70E-03	4.3E-02		4.3E-02		4.3E-02	
W-10	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	1.00E-02	3.0E-03				5.4E+00	
W-10	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	1.10E-02						
W-10	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	2.80E-03	2.1E-03				9.4E-03	
W-10	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	2.90E-03	5.0E-03				2.0E-03	
W-10	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	3.80E-03	2.0E-03				2.0E-03	
W-10	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	3.40E-03	5.0E-03				5.0E-03	
W-10	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	3.40E-03	5.0E-03				5.0E-03	
W-10	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	1.00E-02						
W-10	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	3.50E-03						
W-10	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	3.90E-03	2.0E-03		2.1E+02		5.7E+00	
W-10	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10	1	1.50E-01	1.50E-01	2.70E-03	1.10E-02	6.0E-03	2.5E+01			3.2E-01	4.7E-01
W-10	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	3.50E-03						
W-10	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	3.50E-03	1.2E+00				2.7E+00	
W-10	SVOC	Caprolactam	105-60-2	T		10				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
W-10	SVOC	Carbazole	86-74-8	T	B2	10				8.20E-04	3.30E-03	8.5E-02				7.4E+00	

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-10	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	4.00E-03	1.5E-01				7.9E+01	
W-10	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	2.40E-03						
W-10	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	3.40E-03	1.8E+00				6.7E+00	
W-10	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	4.00E-03	4.5E-02				9.4E+01	
W-10	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	3.20E-03						
W-10	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	3.00E-03	5.0E-03				5.0E-03	
W-10	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	3.20E-03	2.0E-03				2.0E-03	
W-10	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	4.40E-03						
W-10	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	3.70E-03	1.1E-03				1.8E-01	
W-10	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	3.40E-03	7.3E-02				4.8E+01	
W-10	SVOC	Diethylphthalate	84-66-2	T	D	10				6.50E-04	2.60E-03	5.5E+00				1.1E+03	
W-10	SVOC	2,4-Dimethylphenol	105-67-9	T		10				8.50E-04	3.40E-03	3.7E-01				5.2E+02	
W-10	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	3.00E-03	7.3E+01				4.2E+03	
W-10	SVOC	Di-n-butylphthalate	84-74-2	T	D	10				6.70E-04	2.70E-03	8.8E-01				1.1E+01	
W-10	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	5.20E-03	2.0E-02				9.5E+00	
W-10	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	1.20E-02						
W-10	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	3.20E-03	7.7E-03				8.6E+00	
W-10	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	2.30E-03						
W-10	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	4.40E-03	1.3E-01				4.0E-01	
W-10	SVOC	Fluoranthene	206-44-0	T	D	10	1	8.20E-04	8.20E-04	8.10E-04	3.20E-03	2.1E-01	3.9E-03	2.1E-01	3.9E-03	2.1E-01	3.9E-03
W-10	SVOC	Fluorene	86-73-7	T	D	10	1	1.90E-03	1.90E-03	1.00E-03	4.00E-03	8.8E-01	2.2E-03	2.0E+00	9.5E-04	2.0E+00	9.5E-04
W-10	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	3.00E-03	1.0E-03		3.0E+00		4.6E-03	
W-10	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	2.90E-03	1.5E-02		3.2E+00		4.0E-01	
W-10	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	4.40E-03	5.0E-02		4.2E-01		1.6E+00	
W-10	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	3.00E-03	7.3E-03		5.0E+01		1.9E+00	
W-10	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	2.50E-03	2.0E-03				2.0E-03	
W-10	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	2.50E-03	7.7E-01				9.9E+02	
W-10	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	1	7.50E-03	7.50E-03	6.40E-04	6.40E-04	2.6E-01	2.9E-02			2.5E+01	3.0E-04
W-10	SVOC	Methylphenol (total)	1319-77-3	T		10				1.30E-03	5.20E-03	3.7E-01				8.1E+02	
W-10	SVOC	Naphthalene	91-20-3	T	C	10	1	6.90E-03	6.90E-03	7.50E-04	7.50E-04	5.2E-01	1.3E-02	3.1E+01	2.2E-04	3.1E+01	2.2E-04
W-10	SVOC	2-Nitroaniline	88-74-4	T		10				7.00E-04	2.80E-03						
W-10	SVOC	3-Nitroaniline	99-09-2	T	C	10				7.10E-04	2.80E-03						
W-10	SVOC	4-Nitroaniline	100-01-6	T	C	10				1.30E-03	5.20E-03						
W-10	SVOC	Nitrobenzene	98-95-3	T	D	10				8.10E-04	3.20E-03	3.4E-03		5.5E+02		1.1E+01	
W-10	SVOC	2-Nitrophenol	88-75-5	T		10				2.10E-03	8.40E-03	2.0E-02				7.9E+01	
W-10	SVOC	4-Nitrophenol	100-02-7	T		10				1.90E-03	7.60E-03						
W-10	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10				1.40E-03	5.60E-03	2.7E-01				3.5E+01	
W-10	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10				6.70E-04	2.70E-03	5.0E-03				3.6E-01	
W-10	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10				7.80E-04	3.10E-03						
W-10	SVOC	Pentachlorophenol	87-86-5	T	B2	10				2.40E-03	9.60E-03	1.0E-03				2.0E-01	
W-10	SVOC	Phenanthrene	85-01-8	T	D	10				8.20E-04	3.30E-03	5.2E-02		1.0E+00		1.0E+00	
W-10	SVOC	Phenol	108-95-2	T	ID	10				2.60E-03	1.00E-02	4.4E+00				2.9E+04	
W-10	SVOC	Pyrene	129-00-0	T	D	10				1.10E-03	4.40E-03	1.4E-01		1.4E-01		1.4E-01	
W-10	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10				1.20E-03	4.80E-03	7.3E-01				1.7E+02	
W-10	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10				1.70E-03	6.80E-03	1.2E-01				1.0E+01	
W-10	P/PCB	PCBs (total)	1336-36-3	D	B2	1				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
W-10	P/PCB	PCBs (total)	1336-36-3	T	B2	10	2	4.09E-04	8.31E-04	8.20E-05	8.20E-05	5.0E-04	1.7E+00	4.5E-02	1.8E-02	3.3E-03	2.5E-01
W-10	INORG	Antimony	7440-36-0	D		5				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
W-10	INORG	Antimony	7440-36-0	T		10	1	2.30E-03	2.30E-03	2.20E-03	3.40E-03	6.0E-03	3.8E-01			6.8E+01	3.4E-05
W-10	INORG	Arsenic	7440-38-2	D	A	5	2	5.00E-03	5.91E-02	3.90E-03	3.90E-03	5.0E-02	1.2E+00			4.3E+00	1.4E-02
W-10	INORG	Arsenic	7440-38-2	T	A	10	4	4.90E-03	6.33E-02	2.10E-03	3.90E-03	5.0E-02	1.3E+00			4.3E+00	1.5E-02
W-10	INORG	Barium	7440-39-3	D	D	5	5	1.05E-02	1.09E-01			2.0E+00	5.5E-02			1.4E+04	7.8E-06
W-10	INORG	Barium	7440-39-3	T	D	10	10	1.16E-02	2.19E-01			2.0E+00	1.1E-01			1.4E+04	1.6E-05
W-10	INORG	Beryllium	7440-41-7	D	B1	5				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
W-10	INORG	Beryllium	7440-41-7	T	B1	10				5.40E-04	6.00E-04	4.0E-03				2.9E+02	
W-10	INORG	Cadmium	7440-43-9	D	B1	5				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
W-10	INORG	Cadmium	7440-43-9	T	B1	10				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
W-10	INORG	Chromium (total)	7440-47-3	D		5	2	5.30E-03	6.50E-03	1.40E-03	1.40E-03	1.0E-01	6.5E-02			4.6E+02	1.4E-05
W-10	INORG	Chromium (total)	7440-47-3	T		10	3	5.60E-03	1.84E-02	1.40E-03	1.50E-03	1.0E-01	1.8E-01			4.6E+02	4.0E-05
W-10	INORG	Cobalt	7440-48-4	D	B1	5	2	2.50E-03	1.11E-02	1.30E-03	1.30E-03	4.0E-02	2.8E-01			2.4E+03	4.6E-06
W-10	INORG	Cobalt	7440-48-4	T	B1	10	4	1.30E-03	1.14E-02	7.40E-04	1.30E-03	4.0E-02	2.9E-01			2.4E+03	4.8E-06
W-10	INORG	Copper	7440-50-8	D	D	5	1	4.60E-03	4.60E-03	4.20E-03	4.20E-03	1.4E+00	3.3E-03			7.4E+03	6.2E-07
W-10	INORG	Copper	7440-50-8	T	D	10	1	4.30E-03	4.30E-03	1.70E-03	4.20E-03	1.4E+00	3.1E-03			7.4E+03	5.8E-07
W-10	INORG	Lead	7439-92-1	D	B2	5				2.50E-03	2.50E-03	4.0E-03					
W-10	INORG	Lead	7439-92-1	T	B2	10				1.60E-03	2.50E-03	4.0E-03					
W-10	INORG	Manganese	7439-96-5	D	D	5	5	1.09E-02	4.83E-01			8.6E-01	5.6E-01			9.1E+03	5.3E-05

Table 8.4: Shallow Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-10	INORG	Manganese	7439-96-5	T	D	10	10	9.90E-03	5.11E-01			8.6E-01	5.9E-01			9.1E+03	5.6E-05
W-10	INORG	Mercury	7439-97-6	D	D	5				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
W-10	INORG	Mercury	7439-97-6	T	D	10	2	7.50E-05	9.10E-05	6.90E-05	8.70E-05	2.0E-03	4.6E-02	5.6E-02	1.6E-03	5.6E-02	1.6E-03
W-10	INORG	Nickel	7440-02-0	D	A	5	3	3.10E-03	2.42E-02	2.20E-03	2.20E-03	1.0E-01	2.4E-01			7.4E+04	3.3E-07
W-10	INORG	Nickel	7440-02-0	T	A	10	5	3.50E-03	2.47E-02	2.20E-03	2.90E-03	1.0E-01	2.5E-01			7.4E+04	3.3E-07
W-10	INORG	Selenium	7782-49-2	D	D	5				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
W-10	INORG	Selenium	7782-49-2	T	D	10	1	4.90E-03	4.90E-03	4.50E-03	4.70E-03	5.0E-02	9.8E-02			9.7E+02	5.1E-06
W-10	INORG	Silver	7440-22-4	D	D	5				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
W-10	INORG	Silver	7440-22-4	T	D	10				9.80E-04	1.50E-03	3.4E-02				1.5E+03	
W-10	INORG	Thallium	7440-28-0	D		5	2	2.80E-05	5.50E-03	1.80E-05	1.80E-05	2.0E-03	2.8E+00			1.3E+01	4.2E-04
W-10	INORG	Thallium	7440-28-0	T		10	1	6.80E-03	6.80E-03	1.80E-05	3.30E-05	2.0E-03	3.4E+00			1.3E+01	5.2E-04
W-10	INORG	Vanadium	7440-62-2	D		5	2	1.70E-03	2.40E-03	8.20E-04	8.20E-04	4.5E-03	5.3E-01			9.7E+02	2.5E-06
W-10	INORG	Vanadium	7440-62-2	T		10	3	1.20E-03	3.00E-03	6.70E-04	8.20E-04	4.5E-03	6.7E-01			9.7E+02	3.1E-06
W-10	INORG	Zinc	7440-66-6	D	D	5				1.20E-02	1.20E-02	2.4E+00				1.1E+05	
W-10	INORG	Zinc	7440-66-6	T	D	10	1	1.46E-02	1.46E-02	1.20E-02	1.40E-02	2.4E+00	6.1E-03			1.1E+05	1.3E-07
W-10	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	9	3	1.74E-09	4.88E-09	2.71E-09	3.99E-08	3.0E-08	1.6E-01			1.0E-08	4.9E-01
Notes:																	
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.																	
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.																	
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).																	
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.																	
The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.																	
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.																	
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.																	
The MDEQ Drinking Water Criteria for Chromium III was calculated by ENVIRON to be account for valence specific toxicity.																	
Chem Group - Chemical Group																	
Meas Basis - Measured Basis; T = Total, D = Dissolved																	
Carc Class - EPA Weight-of-Evidence Cancer Classification																	
Min QL - Minimum Quantitation Limit																	
Max QL - Maximum Quantitation Limit																	
The evaluation of shallow groundwater is from the Supplemental RFI Report (ENCORE 2003).																	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Deep	VOC	Acetone	67-64-1	T	ID	12	2.40E-02	7.10E+00	5.10E-04	3.40E-03	7.3E-01	9.7E+00	2.1E+00	3.4E+00
SWHI	Deep	VOC	Benzene	71-43-2	T	A	12	2.60E-04	1.60E-03	1.60E-04	8.30E-02	5.0E-03	3.2E-01	5.0E-03	3.2E-01
SWHI	Deep	VOC	Bromodichloromethane	75-27-4	T	B2	12			1.70E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	Bromoform	75-25-2	T	B2	12			1.80E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	Bromomethane	74-83-9	T	D	12			2.00E-04	8.30E-02	1.0E-02		2.9E-02	
SWHI	Deep	VOC	2-Butanone	78-93-3	T	ID	12			4.10E-04	8.30E-01	1.3E+01		3.8E+01	
SWHI	Deep	VOC	Carbon Disulfide	75-15-0	T		12			2.00E-04	8.30E-02	8.0E-01		2.3E+00	
SWHI	Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	12			1.20E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Chlorobenzene	108-90-7	T	D	12			1.40E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	Chloroethane	75-00-3	T		12			2.60E-04	8.30E-02	4.3E-01		1.7E+00	
SWHI	Deep	VOC	Chloroform	67-66-3	T	B2	12	3.55E-04	3.55E-04	1.40E-04	8.30E-02	1.0E-01	3.6E-03	1.0E-01	3.6E-03
SWHI	Deep	VOC	Chloromethane	74-87-3	T	D	12			1.30E-04	8.30E-02	2.6E-01		1.1E+00	
SWHI	Deep	VOC	Cumene	98-82-8	T	D	12			1.20E-04	8.30E-02	8.0E-01		2.3E+00	
SWHI	Deep	VOC	Cyclohexane	110-82-7	T	ID	12			1.30E-04	8.30E-02				
SWHI	Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	12			6.20E-04	1.70E-01	2.0E-04		2.0E-04	
SWHI	Deep	VOC	Dibromochloromethane	124-48-1	T	C	12			2.60E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	12			2.20E-04	8.30E-02	1.0E-03		1.0E-03	
SWHI	Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	12			1.10E-04	8.30E-02	6.0E-01		6.0E-01	
SWHI	Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	12			1.50E-04	8.30E-02	6.6E-03		1.9E-02	
SWHI	Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	12			1.70E-04	8.30E-02	7.5E-02		7.5E-02	
SWHI	Deep	VOC	Dichlorodifluoromethane	75-71-8	T		12			2.60E-04	1.70E-01	1.7E+00		4.8E+00	
SWHI	Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	12			1.60E-04	8.30E-02	8.8E-01		2.5E+00	
SWHI	Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	12			2.10E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	12			2.40E-04	8.30E-02	7.0E-03		7.0E-03	
SWHI	Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	12			2.20E-04	4.20E-02	7.0E-02		7.0E-02	
SWHI	Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		12			1.50E-04	4.20E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	12			1.70E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	12			2.70E-04	8.30E-02	8.5E-03		3.5E-02	
SWHI	Deep	VOC	Ethyl Benzene	100-41-4	T	D	12			1.20E-04	8.30E-02	7.0E-01		7.0E-01	
SWHI	Deep	VOC	2-Hexanone	591-78-6	T		12			4.60E-04	8.30E-01	1.0E+00		2.9E+00	
SWHI	Deep	VOC	Methyl Acetate	79-20-9	T		12			4.10E-04	8.30E-01				
SWHI	Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		12			1.30E-04	4.20E-01	2.4E-01		6.9E-01	
SWHI	Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	12			2.30E-04	8.30E-01	1.8E+00		5.2E+00	
SWHI	Deep	VOC	Methylcyclohexane	108-87-2	T		12			1.50E-04	8.30E-02				
SWHI	Deep	VOC	Methylene Chloride	75-09-2	T	B2	12			2.90E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Styrene	100-42-5	T		12			1.50E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	12			2.50E-04	8.30E-02	8.5E-03		3.5E-02	
SWHI	Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	12			2.30E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Toluene	108-88-3	T	D	12	4.30E-04	1.00E-03	1.80E-04	8.30E-02	1.0E+00	1.0E-03	1.0E+00	1.0E-03
SWHI	Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	12			1.70E-04	8.30E-02	7.0E-02		7.0E-02	
SWHI	Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	12			1.50E-04	8.30E-02	2.0E-01		2.0E-01	
SWHI	Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	12			3.00E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Trichloroethene	79-01-6	T	C-B2	12			1.40E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Trichlorofluoromethane	75-69-4	T		12			2.80E-04	8.30E-02	2.6E+00		7.3E+00	
SWHI	Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		12			3.20E-04	8.30E-02	1.7E+02		1.7E+02	
SWHI	Deep	VOC	Vinyl Chloride	75-01-4	T	A	12			1.50E-04	8.30E-02	2.0E-03		2.0E-03	
SWHI	Deep	VOC	Xylenes (total)	1330-20-7	T	ID	12	3.50E-04	6.10E-04	3.30E-04	8.30E-02	1.0E+01	6.1E-05	1.0E+01	6.1E-05
SWHI	Deep	SVOC	Acenaphthene	83-32-9	T		12			8.00E-04	5.00E-03	1.3E+00		3.8E+00	
SWHI	Deep	SVOC	Acenaphthylene	208-96-8	T	D	12			7.10E-04	5.00E-03	5.2E-02		1.5E-01	
SWHI	Deep	SVOC	Acetophenone	98-86-2	T	D	12			2.60E-03	1.00E-02	1.5E+00		4.4E+00	
SWHI	Deep	SVOC	Anthracene	120-12-7	T	D	12			6.80E-04	5.00E-03	4.3E-02		4.3E-02	
SWHI	Deep	SVOC	Atrazine	1912-24-9	T		12			2.50E-03	5.00E-03	3.0E-03		3.0E-03	
SWHI	Deep	SVOC	Benzaldehyde	100-52-7	T		12			2.80E-03	1.00E-02				
SWHI	Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	12			7.00E-04	5.00E-03	2.1E-03		8.5E-03	
SWHI	Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	12			7.30E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	12			9.40E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	12			8.50E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	12			8.40E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Biphenyl	92-52-4	T	D	12			2.60E-03	1.00E-02				
SWHI	Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	12			8.70E-04	5.00E-03				
SWHI	Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	12			9.70E-04	5.00E-03	2.0E-03		8.3E-03	
SWHI	Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	12	3.90E-03	3.90E-03	2.70E-03	5.00E-03	6.0E-03	6.5E-01	6.0E-03	6.5E-01
SWHI	Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	12			8.80E-04	5.00E-03				
SWHI	Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	12			8.80E-04	5.00E-03	1.2E+00		2.7E+00	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Deep	SVOC	Caprolactam	105-60-2	T		12	5	9.70E-03	5.40E-01	2.50E-03	1.00E-02	5.8E+00	9.3E-02	1.7E+01	3.2E-02
SWHI	Deep	SVOC	Carbazole	86-74-8	T	B2	12				8.20E-04	1.00E-02	8.5E-02		3.5E-01	
SWHI	Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		12				9.90E-04	5.00E-03	1.5E-01		4.2E-01	
SWHI	Deep	SVOC	4-Chloroaniline	106-47-8	T		12				6.10E-04	1.00E-02				
SWHI	Deep	SVOC	2-Chloronaphthalene	91-58-7	T		12				8.50E-04	5.00E-03	1.8E+00		5.2E+00	
SWHI	Deep	SVOC	2-Chlorophenol	95-57-8	T		12				1.00E-03	5.00E-03	4.5E-02		1.3E-01	
SWHI	Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		12				7.90E-04	5.00E-03				
SWHI	Deep	SVOC	Chrysene	218-01-9	T	B2	12				7.50E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	12				7.90E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Deep	SVOC	Dibenzofuran	132-64-9	T	D	12				1.10E-03	5.00E-03				
SWHI	Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	12				9.30E-04	2.00E-02	1.1E-03		4.3E-03	
SWHI	Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		12				8.50E-04	1.00E-02	7.3E-02		2.1E-01	
SWHI	Deep	SVOC	Diethylphthalate	84-66-2	T	D	12				6.50E-04	5.00E-03	5.5E+00		1.6E+01	
SWHI	Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		12				8.50E-04	5.00E-03	3.7E-01		1.0E+00	
SWHI	Deep	SVOC	Dimethylphthalate	131-11-3	T	D	12				7.60E-04	5.00E-03	7.3E+01		2.1E+02	
SWHI	Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	12				6.70E-04	5.00E-03	8.8E-01		2.5E+00	
SWHI	Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		12				1.30E-03	2.00E-02	2.0E-02		2.0E-02	
SWHI	Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		12				3.00E-03	2.00E-02				
SWHI	Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	12				7.90E-04	5.00E-03	7.7E-03		3.2E-02	
SWHI	Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	12				5.70E-04	5.00E-03				
SWHI	Deep	SVOC	Di-n-octylphthalate	117-84-0	T		12				1.10E-03	5.00E-03	1.3E-01		3.8E-01	
SWHI	Deep	SVOC	Fluoranthene	206-44-0	T	D	12				8.10E-04	5.00E-03	2.1E-01		2.1E-01	
SWHI	Deep	SVOC	Fluorene	86-73-7	T	D	12				1.00E-03	5.00E-03	8.8E-01		2.0E+00	
SWHI	Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	12				7.40E-04	5.00E-03	1.0E-03		1.0E-03	
SWHI	Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	12				7.30E-04	5.00E-03	1.5E-02		4.2E-02	
SWHI	Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	12				1.10E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Deep	SVOC	Hexachloroethane	67-72-1	T	C	12				7.40E-04	5.00E-03	7.3E-03		2.1E-02	
SWHI	Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	12				6.30E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Deep	SVOC	Isophorone	78-59-1	T	C	12	1	2.65E-03	2.65E-03	6.30E-04	5.00E-03	7.7E-01	3.4E-03	3.1E+00	8.5E-04
SWHI	Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	12				6.40E-04	5.00E-03	2.6E-01		7.5E-01	
SWHI	Deep	SVOC	Methylphenol (total)	1319-77-3	T		12				1.30E-03	5.00E-03	3.7E-01		1.0E+00	
SWHI	Deep	SVOC	Naphthalene	91-20-3	T	C	12				7.50E-04	5.00E-03	5.2E-01		1.5E+00	
SWHI	Deep	SVOC	2-Nitroaniline	88-74-4	T		12				7.00E-04	2.00E-02				
SWHI	Deep	SVOC	3-Nitroaniline	99-09-2	T	C	12				7.10E-04	2.00E-02				
SWHI	Deep	SVOC	4-Nitroaniline	100-01-6	T	C	12				1.30E-03	2.00E-02				
SWHI	Deep	SVOC	Nitrobenzene	98-95-3	T	D	12				8.10E-04	5.00E-03	3.4E-03		9.6E-03	
SWHI	Deep	SVOC	2-Nitrophenol	88-75-5	T		12				2.10E-03	5.00E-03	2.0E-02		5.8E-02	
SWHI	Deep	SVOC	4-Nitrophenol	100-02-7	T		12				1.90E-03	2.00E-02				
SWHI	Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	12				1.40E-03	5.00E-03	2.7E-01		1.1E+00	
SWHI	Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	12				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	12				7.80E-04	5.00E-03				
SWHI	Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	12				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
SWHI	Deep	SVOC	Phenanthrene	85-01-8	T	D	12				8.20E-04	5.00E-03	5.2E-02		1.5E-01	
SWHI	Deep	SVOC	Phenol	108-95-2	T	ID	12				2.60E-03	5.00E-03	4.4E+00		1.3E+01	
SWHI	Deep	SVOC	Pyrene	129-00-0	T	D	12				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
SWHI	Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		12				1.20E-03	5.00E-03	7.3E-01		2.1E+00	
SWHI	Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	12				1.70E-03	5.00E-03	1.2E-01		4.7E-01	
SWHI	Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
SWHI	Deep	INORG	Antimony	7440-36-0	D		10				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Deep	INORG	Antimony	7440-36-0	T		12				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Deep	INORG	Arsenic	7440-38-2	D	A	10	6	6.90E-03	1.88E-02	3.90E-03	1.00E-02	5.0E-02	3.8E-01	5.0E-02	3.8E-01
SWHI	Deep	INORG	Arsenic	7440-38-2	T	A	12	8	4.70E-03	3.19E-02	3.90E-03	1.00E-02	5.0E-02	6.4E-01	5.0E-02	6.4E-01
SWHI	Deep	INORG	Barium	7440-39-3	D	D	10	10	6.46E-02	3.24E-01			2.0E+00	1.6E-01	2.0E+00	1.6E-01
SWHI	Deep	INORG	Barium	7440-39-3	T	D	12	12	4.88E-02	3.31E-01			2.0E+00	1.7E-01	2.0E+00	1.7E-01
SWHI	Deep	INORG	Beryllium	7440-41-7	D	B1	10				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Beryllium	7440-41-7	T	B1	12				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Cadmium	7440-43-9	D	B1	10				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	INORG	Cadmium	7440-43-9	T	B1	12	2	3.10E-04	3.30E-04	2.80E-04	5.00E-03	5.0E-03	6.6E-02	5.0E-03	6.6E-02
SWHI	Deep	INORG	Chromium (total)	7440-47-3	D		10	1	1.50E-03	1.50E-03	1.40E-03	1.00E-02	1.0E-01	1.5E-02	1.0E-01	1.5E-02
SWHI	Deep	INORG	Chromium (total)	7440-47-3	T		12	7	3.60E-03	1.13E-02	1.40E-03	1.00E-02	1.0E-01	1.1E-01	1.0E-01	1.1E-01
SWHI	Deep	INORG	Cobalt	7440-48-4	D	B1	10				1.30E-03	2.00E-02	4.0E-02		1.0E-01	
SWHI	Deep	INORG	Cobalt	7440-48-4	T	B1	12	2	1.30E-03	4.80E-03	7.40E-04	2.00E-02	4.0E-02	1.2E-01	1.0E-01	4.8E-02
SWHI	Deep	INORG	Copper	7440-50-8	D	D	10				4.20E-03	5.00E-03	1.4E+00		4.0E+00	
SWHI	Deep	INORG	Copper	7440-50-8	T	D	12	1	3.60E-03	3.60E-03	1.70E-03	5.00E-03	1.4E+00	2.6E-03	4.0E+00	9.0E-04

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Deep	INORG	Lead	7439-92-1	D	B2	10			2.50E-03	3.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Lead	7439-92-1	T	B2	12			1.60E-03	3.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Manganese	7439-96-5	D	D	10	3.11E-02	2.32E-01			8.6E-01	2.7E-01	2.5E+00	9.3E-02
SWHI	Deep	INORG	Manganese	7439-96-5	T	D	12	3.44E-02	2.52E-01			8.6E-01	2.9E-01	2.5E+00	1.0E-01
SWHI	Deep	INORG	Mercury	7439-97-6	D	D	10			6.90E-05	2.00E-04	2.0E-03		2.0E-03	
SWHI	Deep	INORG	Mercury	7439-97-6	T	D	12	8.80E-05	8.80E-05	6.90E-05	2.00E-04	2.0E-03	4.4E-02	2.0E-03	4.4E-02
SWHI	Deep	INORG	Nickel	7440-02-0	D	A	10	2.40E-03	5.60E-03	2.20E-03	2.00E-02	1.0E-01	5.6E-02	1.0E-01	5.6E-02
SWHI	Deep	INORG	Nickel	7440-02-0	T	A	12	2.90E-03	7.40E-03	2.20E-03	2.00E-02	1.0E-01	7.4E-02	1.0E-01	7.4E-02
SWHI	Deep	INORG	Selenium	7782-49-2	D	D	10			4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Deep	INORG	Selenium	7782-49-2	T	D	12			4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Deep	INORG	Silver	7440-22-4	D	D	10			1.50E-03	5.00E-03	3.4E-02		9.8E-02	
SWHI	Deep	INORG	Silver	7440-22-4	T	D	12			9.80E-04	5.00E-03	3.4E-02		9.8E-02	
SWHI	Deep	INORG	Thallium	7440-28-0	D		11			1.80E-05	1.00E-02	2.0E-03		2.0E-03	
SWHI	Deep	INORG	Thallium	7440-28-0	T		13			1.80E-05	1.00E-02	2.0E-03		2.0E-03	
SWHI	Deep	INORG	Vanadium	7440-62-2	D		10			8.20E-04	1.00E-02	4.5E-03		6.2E-02	
SWHI	Deep	INORG	Vanadium	7440-62-2	T		12			6.70E-04	1.00E-02	4.5E-03		6.2E-02	
SWHI	Deep	INORG	Zinc	7440-66-6	D	D	10			1.20E-02	2.00E-02	2.4E+00		5.0E+00	
SWHI	Deep	INORG	Zinc	7440-66-6	T	D	12	1.28E-02	2.76E-02	1.20E-02	2.00E-02	2.4E+00	1.2E-02	5.0E+00	5.5E-03
SWHI	Intermediate	VOC	Acetone	67-64-1	T	ID	8	6.50E-01	1.30E+01	1.10E-03	3.60E-02	7.3E-01	1.8E+01	2.1E+00	6.2E+00
SWHI	Intermediate	VOC	Benzene	71-43-2	T	A	8			3.70E-04	4.00E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Bromodichloromethane	75-27-4	T	B2	8			3.20E-04	4.20E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Bromoform	75-25-2	T	B2	8			3.70E-04	4.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Bromomethane	74-83-9	T	D	7			3.00E-04	5.00E-02	1.0E-02		2.9E-02	
SWHI	Intermediate	VOC	2-Butanone	78-93-3	T	ID	8			5.90E-04	1.40E-01	1.3E+01		3.8E+01	
SWHI	Intermediate	VOC	Carbon Disulfide	75-15-0	T		8			2.40E-04	5.00E-02	8.0E-01		2.3E+00	
SWHI	Intermediate	VOC	Carbon Tetrachloride	56-23-5	T	B2	8			3.70E-04	3.00E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Chlorobenzene	108-90-7	T	D	8			3.80E-04	3.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Chloroethane	75-00-3	T		8			2.90E-04	6.50E-02	4.3E-01		1.7E+00	
SWHI	Intermediate	VOC	Chloroform	67-66-3	T	B2	8			3.50E-04	3.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Chloromethane	74-87-3	T	D	8			4.90E-04	3.20E-02	2.6E-01		1.1E+00	
SWHI	Intermediate	VOC	Cumene	98-82-8	T	D	8			3.90E-04	3.00E-02	8.0E-01		2.3E+00	
SWHI	Intermediate	VOC	Cyclohexane	110-82-7	T	ID	8			3.30E-04	3.20E-02				
SWHI	Intermediate	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8			8.20E-04	1.60E-01	2.0E-04		2.0E-04	
SWHI	Intermediate	VOC	Dibromochloromethane	124-48-1	T	C	8			3.70E-04	6.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	1,2-Dibromoethane	106-93-4	T	B2	8			3.40E-04	5.50E-02	1.0E-03		1.0E-03	
SWHI	Intermediate	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8			3.80E-04	2.80E-02	6.0E-01		6.0E-01	
SWHI	Intermediate	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8			3.80E-04	3.80E-02	6.6E-03		1.9E-02	
SWHI	Intermediate	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8			3.80E-04	4.20E-02	7.5E-02		7.5E-02	
SWHI	Intermediate	VOC	Dichlorodifluoromethane	75-71-8	T		8			4.90E-04	6.50E-02	1.7E+00		4.8E+00	
SWHI	Intermediate	VOC	1,1-Dichloroethane	75-34-3	T	C	8			3.00E-04	4.00E-02	8.8E-01		2.5E+00	
SWHI	Intermediate	VOC	1,2-Dichloroethane	107-06-2	T	B2	8			2.80E-04	5.20E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	1,1-Dichloroethene	75-35-4	T	C	8			3.10E-04	6.00E-02	7.0E-03		7.0E-03	
SWHI	Intermediate	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8			3.50E-04	5.50E-02	7.0E-02		7.0E-02	
SWHI	Intermediate	VOC	trans-1,2-Dichloroethene	156-60-5	T		8			3.30E-04	3.80E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	1,2-Dichloropropane	78-87-5	T	B2	8			4.10E-04	4.20E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8			3.50E-04	6.80E-02	8.5E-03		3.5E-02	
SWHI	Intermediate	VOC	Ethyl Benzene	100-41-4	T	D	8	6.50E-03	6.50E-03	4.10E-04	3.00E-02	7.0E-01	9.3E-03	7.0E-01	9.3E-03
SWHI	Intermediate	VOC	2-Hexanone	591-78-6	T		8			5.80E-04	1.40E-01	1.0E+00		2.9E+00	
SWHI	Intermediate	VOC	Methyl Acetate	79-20-9	T		8			5.40E-04	1.40E-01				
SWHI	Intermediate	VOC	Methyl tert-butyl ether	1634-04-4	T		8			2.70E-04	7.10E-02	2.4E-01		6.9E-01	
SWHI	Intermediate	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	7	8.50E-03	8.50E-03	2.60E-04	1.40E-01	1.8E+00	4.7E-03	5.2E+00	1.6E-03
SWHI	Intermediate	VOC	Methylcyclohexane	108-87-2	T		8			4.20E-04	3.80E-02				
SWHI	Intermediate	VOC	Methylene Chloride	75-09-2	T	B2	8			2.90E-04	8.50E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Styrene	100-42-5	T		8			3.50E-04	3.80E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8			3.60E-04	6.20E-02	8.5E-03		3.5E-02	
SWHI	Intermediate	VOC	Tetrachloroethene	127-18-4	T	C-B2	8			4.20E-04	5.80E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Toluene	108-88-3	T	D	8	1.90E-02	1.90E-02	3.90E-04	4.50E-02	1.0E+00	1.9E-02	1.0E+00	1.9E-02
SWHI	Intermediate	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8			4.00E-04	4.20E-02	7.0E-02		7.0E-02	
SWHI	Intermediate	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8			3.90E-04	3.80E-02	2.0E-01		2.0E-01	
SWHI	Intermediate	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8			3.60E-04	7.50E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Trichloroethene	79-01-6	T	C-B2	8			4.20E-04	3.50E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Trichlorofluoromethane	75-69-4	T		8			5.40E-04	7.00E-02	2.6E+00		7.3E+00	
SWHI	Intermediate	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8			3.20E-04	8.00E-02	1.7E+02		1.7E+02	
SWHI	Intermediate	VOC	Vinyl Chloride	75-01-4	T	A	8			3.60E-04	3.80E-02	2.0E-03		2.0E-03	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Intermediate	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	2.50E-02	2.50E-02	4.40E-04	8.20E-02	1.0E+01	1.0E+01	2.5E-03
SWHI	Intermediate	VOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	1.3E+00	3.8E+00	
SWHI	Intermediate	VOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	5.2E-02	1.5E-01	
SWHI	Intermediate	VOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	1.5E+00	4.4E+00	
SWHI	Intermediate	VOC	Anthracene	120-12-7	T	D	8				6.80E-04	5.00E-03	4.3E-02	4.3E-02	
SWHI	Intermediate	VOC	Atrazine	1912-24-9	T		8				2.50E-03	5.00E-03	3.0E-03	3.0E-03	
SWHI	Intermediate	VOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02			
SWHI	Intermediate	VOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03	2.1E-03	8.5E-03	
SWHI	Intermediate	VOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03	5.0E-03	5.0E-03	
SWHI	Intermediate	VOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03	2.0E-03	2.0E-03	
SWHI	Intermediate	VOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03	5.0E-03	5.0E-03	
SWHI	Intermediate	VOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03	5.0E-03	5.0E-03	
SWHI	Intermediate	VOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02			
SWHI	Intermediate	VOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03			
SWHI	Intermediate	VOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.0E-03	8.3E-03	
SWHI	Intermediate	VOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	5.00E-03	6.0E-03	6.0E-03	
SWHI	Intermediate	VOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03			
SWHI	Intermediate	VOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03	1.2E+00	2.7E+00	
SWHI	Intermediate	VOC	Caprolactam	105-60-2	T		8	5	3.30E-03	8.20E-01	2.50E-03	2.50E-03	5.8E+00	1.4E-01	4.8E-02
SWHI	Intermediate	VOC	Carbazole	86-74-8	T	B2	8				8.20E-04	1.00E-02	8.5E-02	3.5E-01	
SWHI	Intermediate	VOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03	1.5E-01	4.2E-01	
SWHI	Intermediate	VOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02			
SWHI	Intermediate	VOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03	1.8E+00	5.2E+00	
SWHI	Intermediate	VOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03	4.5E-02	1.3E-01	
SWHI	Intermediate	VOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03			
SWHI	Intermediate	VOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03	5.0E-03	5.0E-03	
SWHI	Intermediate	VOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03	2.0E-03	2.0E-03	
SWHI	Intermediate	VOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03			
SWHI	Intermediate	VOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02	1.1E-03	4.3E-03	
SWHI	Intermediate	VOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02	7.3E-02	2.1E-01	
SWHI	Intermediate	VOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03	5.5E+00	1.6E+01	
SWHI	Intermediate	VOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03	3.7E-01	1.0E+00	
SWHI	Intermediate	VOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03	7.3E+01	2.1E+02	
SWHI	Intermediate	VOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03	8.8E-01	2.5E+00	
SWHI	Intermediate	VOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02	2.0E-02	2.0E-02	
SWHI	Intermediate	VOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02			
SWHI	Intermediate	VOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03	7.7E-03	3.2E-02	
SWHI	Intermediate	VOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03			
SWHI	Intermediate	VOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03	1.3E-01	3.8E-01	
SWHI	Intermediate	VOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01	2.1E-01	
SWHI	Intermediate	VOC	Fluorene	86-73-7	T	D	8				1.00E-03	5.00E-03	8.8E-01	2.0E+00	
SWHI	Intermediate	VOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	1.0E-03	1.0E-03	
SWHI	Intermediate	VOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	1.5E-02	4.2E-02	
SWHI	Intermediate	VOC	Hexachlorocyclopentadiene	77-47-4	T	E	7				1.10E-03	5.00E-03	5.0E-02	5.0E-02	
SWHI	Intermediate	VOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	7.3E-03	2.1E-02	
SWHI	Intermediate	VOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03	2.0E-03	2.0E-03	
SWHI	Intermediate	VOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03	7.7E-01	3.1E+00	
SWHI	Intermediate	VOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03	2.6E-01	7.5E-01	
SWHI	Intermediate	VOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03	3.7E-01	1.0E+00	
SWHI	Intermediate	VOC	Naphthalene	91-20-3	T	C	8				7.50E-04	5.00E-03	5.2E-01	1.5E+00	
SWHI	Intermediate	VOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02			
SWHI	Intermediate	VOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02			
SWHI	Intermediate	VOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02			
SWHI	Intermediate	VOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	3.4E-03	9.6E-03	
SWHI	Intermediate	VOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.00E-03	2.0E-02	5.8E-02	
SWHI	Intermediate	VOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02			
SWHI	Intermediate	VOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03	2.7E-01	1.1E+00	
SWHI	Intermediate	VOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03	5.0E-03	5.0E-03	
SWHI	Intermediate	VOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03			
SWHI	Intermediate	VOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	5.00E-03	1.0E-03	1.0E-03	
SWHI	Intermediate	VOC	Phenanthrene	85-01-8	T	D	8				8.20E-04	5.00E-03	5.2E-02	1.5E-01	
SWHI	Intermediate	VOC	Phenol	108-95-2	T	ID	8				2.60E-03	5.00E-03	4.4E+00	1.3E+01	
SWHI	Intermediate	VOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01	1.4E-01	
SWHI	Intermediate	VOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03	7.3E-01	2.1E+00	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Intermediate	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8			1.70E-03	5.00E-03	1.2E-01		4.7E-01	
SWHI	Intermediate	P/PCB	PCBs (total)	1336-36-3	T	B2	1			8.20E-05	8.20E-05	5.0E-04		5.0E-04	
SWHI	Intermediate	INORG	Antimony	7440-36-0	D		6			2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Intermediate	INORG	Antimony	7440-36-0	T		8			2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Intermediate	INORG	Arsenic	7440-38-2	D	A	6	6.10E-03	2.74E-02	3.90E-03	3.90E-03	5.0E-02	5.5E-01	5.0E-02	5.5E-01
SWHI	Intermediate	INORG	Arsenic	7440-38-2	T	A	8	7.40E-03	2.66E-02	2.10E-03	3.90E-03	5.0E-02	5.3E-01	5.0E-02	5.3E-01
SWHI	Intermediate	INORG	Barium	7440-39-3	D	D	6	8.18E-02	3.04E-01			2.0E+00	1.5E-01	2.0E+00	1.5E-01
SWHI	Intermediate	INORG	Barium	7440-39-3	T	D	8	1.01E-01	2.88E-01			2.0E+00	1.4E-01	2.0E+00	1.4E-01
SWHI	Intermediate	INORG	Beryllium	7440-41-7	D	B1	6			5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Intermediate	INORG	Beryllium	7440-41-7	T	B1	8			5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Intermediate	INORG	Cadmium	7440-43-9	D	B1	6			2.80E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Intermediate	INORG	Cadmium	7440-43-9	T	B1	8	3.30E-04	3.30E-04	2.80E-04	5.00E-03	5.0E-03	6.6E-02	5.0E-03	6.6E-02
SWHI	Intermediate	INORG	Chromium (total)	7440-47-3	D		6			1.40E-03	1.00E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	INORG	Chromium (total)	7440-47-3	T		8	1.90E-03	6.05E-02	1.40E-03	1.00E-02	1.0E-01	6.1E-01	1.0E-01	6.1E-01
SWHI	Intermediate	INORG	Cobalt	7440-48-4	D	B1	6	1.90E-03	2.10E-03	1.30E-03	2.00E-02	4.0E-02	5.3E-02	1.0E-01	2.1E-02
SWHI	Intermediate	INORG	Cobalt	7440-48-4	T	B1	8	1.80E-03	6.20E-03	1.30E-03	2.00E-02	4.0E-02	1.6E-01	1.0E-01	6.2E-02
SWHI	Intermediate	INORG	Copper	7440-50-8	D	D	6			4.20E-03	5.00E-03	1.4E+00		4.0E+00	
SWHI	Intermediate	INORG	Copper	7440-50-8	T	D	8	5.60E-03	9.90E-03	1.70E-03	4.20E-03	1.4E+00	7.1E-03	4.0E+00	2.5E-03
SWHI	Intermediate	INORG	Lead	7439-92-1	D	B2	6			2.50E-03	3.00E-03	4.0E-03		4.0E-03	
SWHI	Intermediate	INORG	Lead	7439-92-1	T	B2	8	2.80E-03	2.80E-03	1.60E-03	3.00E-03	4.0E-03	7.0E-01	4.0E-03	7.0E-01
SWHI	Intermediate	INORG	Manganese	7439-96-5	D	D	6	3.49E-02	2.19E-01			8.6E-01	2.5E-01	2.5E+00	8.8E-02
SWHI	Intermediate	INORG	Manganese	7439-96-5	T	D	8	3.75E-02	3.52E-01			8.6E-01	4.1E-01	2.5E+00	1.4E-01
SWHI	Intermediate	INORG	Mercury	7439-97-6	D	D	6			6.90E-05	2.00E-04	2.0E-03		2.0E-03	
SWHI	Intermediate	INORG	Mercury	7439-97-6	T	D	8			6.90E-05	2.00E-04	2.0E-03		2.0E-03	
SWHI	Intermediate	INORG	Nickel	7440-02-0	D	A	6	3.30E-03	2.32E-02	2.20E-03	2.00E-02	1.0E-01	2.3E-01	1.0E-01	2.3E-01
SWHI	Intermediate	INORG	Nickel	7440-02-0	T	A	8	2.30E-03	5.90E-02	2.20E-03	2.20E-03	1.0E-01	5.9E-01	1.0E-01	5.9E-01
SWHI	Intermediate	INORG	Selenium	7782-49-2	D	D	6			4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Intermediate	INORG	Selenium	7782-49-2	T	D	8			4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Intermediate	INORG	Silver	7440-22-4	D	D	6			1.50E-03	5.00E-03	3.4E-02		9.8E-02	
SWHI	Intermediate	INORG	Silver	7440-22-4	T	D	8			9.80E-04	5.00E-03	3.4E-02		9.8E-02	
SWHI	Intermediate	INORG	Thallium	7440-28-0	D		6	6.80E-04	6.10E-03	1.80E-05	1.00E-02	2.0E-03	3.1E+00	2.0E-03	3.1E+00
SWHI	Intermediate	INORG	Thallium	7440-28-0	T		8	9.20E-05	9.20E-05	1.80E-05	1.00E-02	2.0E-03	4.6E-02	2.0E-03	4.6E-02
SWHI	Intermediate	INORG	Vanadium	7440-62-2	D		6			8.20E-04	1.00E-02	4.5E-03		6.2E-02	
SWHI	Intermediate	INORG	Vanadium	7440-62-2	T		8	2.20E-03	3.40E-03	6.70E-04	1.00E-02	4.5E-03	7.6E-01	6.2E-02	5.5E-02
SWHI	Intermediate	INORG	Zinc	7440-66-6	D	D	6	1.56E-02	1.56E-02	1.20E-02	2.00E-02	2.4E+00	6.5E-03	5.0E+00	3.1E-03
SWHI	Intermediate	INORG	Zinc	7440-66-6	T	D	8	1.34E-02	3.03E-02	1.20E-02	2.00E-02	2.4E+00	1.3E-02	5.0E+00	6.1E-03
W-01	Deep	VOC	Acetone	67-64-1	T	ID	11	4.50E-02	3.10E+00	5.10E-04	3.70E-01	7.3E-01	4.2E+00	2.1E+00	1.5E+00
W-01	Deep	VOC	Benzene	71-43-2	T	A	11	5.60E-04	4.50E-03	1.60E-04	1.20E-01	5.0E-03	9.0E-01	5.0E-03	9.0E-01
W-01	Deep	VOC	Bromodichloromethane	75-27-4	T	B2	10			1.70E-04	4.00E-02	1.0E-01		1.0E-01	
W-01	Deep	VOC	Bromofom	75-25-2	T	B2	11			1.80E-04	1.20E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	Bromomethane	74-83-9	T	D	10			2.00E-04	1.00E-01	1.0E-02		2.9E-02	
W-01	Deep	VOC	2-Butanone	78-93-3	T	ID	11	9.60E-04	9.60E-04	4.10E-04	4.00E-01	1.3E+01	7.4E-05	3.8E+01	2.5E-05
W-01	Deep	VOC	Carbon Disulfide	75-15-0	T		11	9.40E-03	9.40E-03	2.00E-04	8.00E-02	8.0E-01	1.2E-02	2.3E+00	4.1E-03
W-01	Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	11			1.20E-04	1.20E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Chlorobenzene	108-90-7	T	D	11			1.40E-04	1.30E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	Chloroethane	75-00-3	T		11			2.60E-04	9.70E-02	4.3E-01		1.7E+00	
W-01	Deep	VOC	Chloroform	67-66-3	T	B2	11	1.60E-04	1.60E-04	3.50E-04	1.20E-01	1.0E-01	1.6E-03	1.0E-01	1.6E-03
W-01	Deep	VOC	Chloromethane	74-87-3	T	D	11			1.30E-04	1.60E-01	2.6E-01		1.1E+00	
W-01	Deep	VOC	Cumene	98-82-8	T	D	11			1.20E-04	1.30E-01	8.0E-01		2.3E+00	
W-01	Deep	VOC	Cyclohexane	110-82-7	T	ID	11			1.30E-04	1.10E-01				
W-01	Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	11			6.20E-04	2.70E-01	2.0E-04		2.0E-04	
W-01	Deep	VOC	Dibromochloromethane	124-48-1	T	C	11			2.60E-04	1.20E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	11			2.20E-04	1.10E-01	1.0E-03		1.0E-03	
W-01	Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	11			1.10E-04	1.30E-01	6.0E-01		6.0E-01	
W-01	Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	11			1.50E-04	1.30E-01	6.6E-03		1.9E-02	
W-01	Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	11			1.70E-04	1.30E-01	7.5E-02		7.5E-02	
W-01	Deep	VOC	Dichlorodifluoromethane	75-71-8	T		11			2.60E-04	1.60E-01	1.7E+00		4.8E+00	
W-01	Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	11			1.60E-04	1.00E-01	8.8E-01		2.5E+00	
W-01	Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	11			2.10E-04	9.30E-02	5.0E-03		5.0E-03	
W-01	Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	10			2.40E-04	4.00E-02	7.0E-03		7.0E-03	
W-01	Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10			2.20E-04	2.00E-02	7.0E-02		7.0E-02	
W-01	Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		11			1.50E-04	1.10E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	11			1.70E-04	1.40E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10			3.50E-04	1.20E-01	8.5E-03		3.5E-02	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Deep	VOC	Ethyl Benzene	100-41-4	T	D	10			1.20E-04	1.40E-01	7.0E-01		7.0E-01	
W-01	Deep	VOC	2-Hexanone	591-78-6	T		11			4.60E-04	4.00E-01	1.0E+00		2.9E+00	
W-01	Deep	VOC	Methyl Acetate	79-20-9	T		11			4.10E-04	4.00E-01				
W-01	Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		11			1.30E-04	2.00E-01	2.4E-01		6.9E-01	
W-01	Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8	3.20E-04	3.20E-04	2.60E-04	4.00E-01	1.8E+00	1.8E-04	5.2E+00	6.2E-05
W-01	Deep	VOC	Methylcyclohexane	108-87-2	T		11			1.50E-04	1.40E-01				
W-01	Deep	VOC	Methylene Chloride	75-09-2	T	B2	11	1.60E-03	1.60E-03	2.90E-04	9.70E-02	5.0E-03	3.2E-01	5.0E-03	3.2E-01
W-01	Deep	VOC	Styrene	100-42-5	T		11			1.50E-04	1.20E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	11			2.50E-04	1.20E-01	8.5E-03		3.5E-02	
W-01	Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	10			4.20E-04	1.40E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Toluene	108-88-3	T	D	11			1.80E-04	1.30E-01	1.0E+00		1.0E+00	
W-01	Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	11			1.70E-04	1.30E-01	7.0E-02		7.0E-02	
W-01	Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	11			1.50E-04	1.30E-01	2.0E-01		2.0E-01	
W-01	Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	11			3.00E-04	1.20E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Trichloroethene	79-01-6	T	C-B2	11			1.40E-04	1.40E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Trichlorofluoromethane	75-69-4	T		11			2.80E-04	1.80E-01	2.6E+00		7.3E+00	
W-01	Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		11			3.20E-04	1.10E-01	1.7E+02		1.7E+02	
W-01	Deep	VOC	Vinyl Chloride	75-01-4	T	A	11			1.50E-04	1.20E-01	2.0E-03		2.0E-03	
W-01	Deep	VOC	Xylenes (total)	1330-20-7	T	ID	11			3.30E-04	1.50E-01	1.0E+01		1.0E+01	
W-01	Deep	SVOC	Acenaphthene	83-32-9	T		11			8.00E-04	5.00E-03	1.3E+00		3.8E+00	
W-01	Deep	SVOC	Acenaphthylene	208-96-8	T	D	11			7.10E-04	5.00E-03	5.2E-02		1.5E-01	
W-01	Deep	SVOC	Acetophenone	98-86-2	T	D	11			2.60E-03	1.00E-02	1.5E+00		4.4E+00	
W-01	Deep	SVOC	Anthracene	120-12-7	T	D	11			6.80E-04	5.00E-03	4.3E-02		4.3E-02	
W-01	Deep	SVOC	Atrazine	1912-24-9	T		11			2.50E-03	5.00E-03	3.0E-03		3.0E-03	
W-01	Deep	SVOC	Benzaldehyde	100-52-7	T		11			2.80E-03	1.00E-02				
W-01	Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	11			7.00E-04	5.00E-03	2.1E-03		8.5E-03	
W-01	Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	11			7.30E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	11			9.40E-04	5.00E-03	2.0E-03		2.0E-03	
W-01	Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	11			8.50E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	11			8.40E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Biphenyl	92-52-4	T	D	11			2.60E-03	1.00E-02				
W-01	Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	11			8.70E-04	5.00E-03				
W-01	Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	11			9.70E-04	5.00E-03	2.0E-03		8.3E-03	
W-01	Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	11	2.90E-03	2.90E-03	2.70E-03	5.00E-03	6.0E-03	4.8E-01	6.0E-03	4.8E-01
W-01	Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	11			8.80E-04	5.00E-03				
W-01	Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	11			8.80E-04	5.00E-03	1.2E+00		2.7E+00	
W-01	Deep	SVOC	Caprolactam	105-60-2	T		11			2.50E-03	1.00E-02	5.8E+00		1.7E+01	
W-01	Deep	SVOC	Carbazole	86-74-8	T	B2	11			8.20E-04	1.00E-02	8.5E-01		3.5E-01	
W-01	Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		11			9.90E-04	5.00E-03	1.5E-01		4.2E-01	
W-01	Deep	SVOC	4-Chloroaniline	106-47-8	T		11			6.10E-04	1.00E-02				
W-01	Deep	SVOC	2-Chloronaphthalene	91-58-7	T		11			8.50E-04	5.00E-03	1.8E+00		5.2E+00	
W-01	Deep	SVOC	2-Chlorophenol	95-57-8	T		11			1.00E-03	5.00E-03	4.5E-02		1.3E-01	
W-01	Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		11			7.90E-04	5.00E-03				
W-01	Deep	SVOC	Chrysene	218-01-9	T	B2	11			7.50E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	11			7.90E-04	5.00E-03	2.0E-03		2.0E-03	
W-01	Deep	SVOC	Dibenzofuran	132-64-9	T	D	11			1.10E-03	5.00E-03				
W-01	Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10			9.30E-04	2.00E-02	1.1E-03		4.3E-03	
W-01	Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		11			8.50E-04	1.00E-02	7.3E-02		2.1E-01	
W-01	Deep	SVOC	Diethylphthalate	84-66-2	T	D	11	7.10E-04	7.10E-04	6.50E-04	5.00E-03	5.5E+00	1.3E-04	1.6E+01	4.4E-05
W-01	Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		11			8.50E-04	5.00E-03	3.7E-01		1.0E+00	
W-01	Deep	SVOC	Dimethylphthalate	131-11-3	T	D	11			7.60E-04	5.00E-03	7.3E+01		2.1E+02	
W-01	Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	11			6.70E-04	5.00E-03	8.8E-01		2.5E+00	
W-01	Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		11			1.30E-03	2.00E-02	2.0E-02		2.0E-02	
W-01	Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		11			3.00E-03	2.00E-02				
W-01	Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	11			7.90E-04	5.00E-03	7.7E-03		3.2E-02	
W-01	Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	11			5.70E-04	5.00E-03				
W-01	Deep	SVOC	Di-n-octylphthalate	117-84-0	T		11			1.10E-03	5.00E-03	1.3E-01		3.8E-01	
W-01	Deep	SVOC	Fluoranthene	206-44-0	T	D	11			8.10E-04	5.00E-03	2.1E-01		2.1E-01	
W-01	Deep	SVOC	Fluorene	86-73-7	T	D	11			1.00E-03	5.00E-03	8.8E-01		2.0E+00	
W-01	Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	11			7.40E-04	5.00E-03	1.0E-03		1.0E-03	
W-01	Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	11			7.30E-04	5.00E-03	1.5E-02		4.2E-02	
W-01	Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	10			1.10E-03	5.00E-03	5.0E-02		5.0E-02	
W-01	Deep	SVOC	Hexachloroethane	67-72-1	T	C	11			7.40E-04	5.00E-03	7.3E-03		2.1E-02	
W-01	Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	11			6.30E-04	5.00E-03	2.0E-03		2.0E-03	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Deep	SVOC	Isophorone	78-59-1	T	C	11				6.30E-04	5.00E-03	7.7E-01		3.1E+00	
W-01	Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	11				6.40E-04	5.00E-03	2.6E-01		7.5E-01	
W-01	Deep	SVOC	Methylphenol (total)	1319-77-3	T		11				1.30E-03	5.00E-03	3.7E-01		1.0E+00	
W-01	Deep	SVOC	Naphthalene	91-20-3	T	C	11				7.50E-04	5.00E-03	5.2E-01		1.5E+00	
W-01	Deep	SVOC	2-Nitroaniline	88-74-4	T		11				7.00E-04	2.00E-02				
W-01	Deep	SVOC	3-Nitroaniline	99-09-2	T	C	11				7.10E-04	2.00E-02				
W-01	Deep	SVOC	4-Nitroaniline	100-01-6	T	C	11				1.30E-03	2.00E-02				
W-01	Deep	SVOC	Nitrobenzene	98-95-3	T	D	11				8.10E-04	5.00E-03	3.4E-03		9.6E-03	
W-01	Deep	SVOC	2-Nitrophenol	88-75-5	T		11				2.10E-03	5.00E-03	2.0E-02		5.8E-02	
W-01	Deep	SVOC	4-Nitrophenol	100-02-7	T		11				1.90E-03	2.00E-02				
W-01	Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	11				1.40E-03	5.00E-03	2.7E-01		1.1E+00	
W-01	Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	11				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	11				7.80E-04	5.00E-03				
W-01	Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	11				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
W-01	Deep	SVOC	Phenanthrene	85-01-8	T	D	11				8.20E-04	5.00E-03	5.2E-02		1.5E-01	
W-01	Deep	SVOC	Phenol	108-95-2	T	ID	11	4	5.20E-03	8.80E-03	2.60E-03	5.00E-03	4.4E+00	2.0E-03	1.3E+01	6.8E-04
W-01	Deep	SVOC	Pyrene	129-00-0	T	D	11				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
W-01	Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		11				1.20E-03	5.00E-03	7.3E-01		2.1E+00	
W-01	Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	11				1.70E-03	5.00E-03	1.2E-01		4.7E-01	
W-01	Deep	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		5.0E-04	
W-01	Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	11				8.20E-05	4.00E-04	5.0E-04		5.0E-04	
W-01	Deep	INORG	Antimony	7440-36-0	D		5	1	2.30E-03	2.30E-03	2.20E-03	2.50E-02	6.0E-03	3.8E-01	6.0E-03	3.8E-01
W-01	Deep	INORG	Antimony	7440-36-0	T		11				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
W-01	Deep	INORG	Arsenic	7440-38-2	D	A	5	2	4.40E-03	7.10E-03	3.90E-03	1.00E-02	5.0E-02	1.4E-01	5.0E-02	1.4E-01
W-01	Deep	INORG	Arsenic	7440-38-2	T	A	11	7	4.40E-03	1.45E-02	3.90E-03	1.00E-02	5.0E-02	2.9E-01	5.0E-02	2.9E-01
W-01	Deep	INORG	Barium	7440-39-3	D	D	5	5	1.15E-01	3.73E-01			2.0E+00	1.9E-01	2.0E+00	1.9E-01
W-01	Deep	INORG	Barium	7440-39-3	T	D	11	11	1.26E-01	4.58E-01			2.0E+00	2.3E-01	2.0E+00	2.3E-01
W-01	Deep	INORG	Beryllium	7440-41-7	D	B1	5				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
W-01	Deep	INORG	Beryllium	7440-41-7	T	B1	11				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
W-01	Deep	INORG	Cadmium	7440-43-9	D	B1	5				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	INORG	Cadmium	7440-43-9	T	B1	11				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	INORG	Chromium (total)	7440-47-3	D		5	1	2.30E-03	2.30E-03	1.40E-03	1.00E-02	1.0E-01	2.3E-02	1.0E-01	2.3E-02
W-01	Deep	INORG	Chromium (total)	7440-47-3	T		11	8	2.30E-03	9.10E-03	1.40E-03	1.00E-02	1.0E-01	9.1E-02	1.0E-01	9.1E-02
W-01	Deep	INORG	Cobalt	7440-48-4	D	B1	5	1	2.40E-03	2.40E-03	1.30E-03	2.00E-02	4.0E-02	6.0E-02	1.0E-01	2.4E-02
W-01	Deep	INORG	Cobalt	7440-48-4	T	B1	11	5	7.60E-04	2.20E-03	7.40E-04	2.00E-02	4.0E-02	5.5E-02	1.0E-01	2.2E-02
W-01	Deep	INORG	Copper	7440-50-8	D	D	5				4.20E-03	5.00E-03	1.4E+00		4.0E+00	
W-01	Deep	INORG	Copper	7440-50-8	T	D	11				1.70E-03	5.00E-03	1.4E+00		4.0E+00	
W-01	Deep	INORG	Lead	7439-92-1	D	B2	5				2.50E-03	3.00E-03	4.0E-03		4.0E-03	
W-01	Deep	INORG	Lead	7439-92-1	T	B2	11	1	1.60E-03	1.60E-03	1.60E-03	3.00E-03	4.0E-03	4.0E-01	4.0E-03	4.0E-01
W-01	Deep	INORG	Manganese	7439-96-5	D	D	5	4	3.45E-02	7.03E-02	9.00E-04	9.00E-04	8.6E-01	8.2E-02	2.5E+00	2.8E-02
W-01	Deep	INORG	Manganese	7439-96-5	T	D	11	8	2.81E-02	7.12E-02	6.80E-04	9.00E-04	8.6E-01	8.3E-02	2.5E+00	2.8E-02
W-01	Deep	INORG	Mercury	7439-97-6	D	D	5	1	7.20E-05	7.20E-05	6.90E-05	6.90E-05	2.0E-03	3.6E-02	2.0E-03	3.6E-02
W-01	Deep	INORG	Mercury	7439-97-6	T	D	11				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
W-01	Deep	INORG	Nickel	7440-02-0	D	A	5	1	6.40E-03	6.40E-03	2.20E-03	2.00E-02	1.0E-01	6.4E-02	1.0E-01	6.4E-02
W-01	Deep	INORG	Nickel	7440-02-0	T	A	11	7	3.00E-03	9.90E-03	2.20E-03	2.00E-02	1.0E-01	9.9E-02	1.0E-01	9.9E-02
W-01	Deep	INORG	Selenium	7782-49-2	D	D	5				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
W-01	Deep	INORG	Selenium	7782-49-2	T	D	11				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
W-01	Deep	INORG	Silver	7440-22-4	D	D	5				1.50E-03	5.00E-03	3.4E-02		9.8E-02	
W-01	Deep	INORG	Silver	7440-22-4	T	D	11				9.80E-04	5.00E-03	3.4E-02		9.8E-02	
W-01	Deep	INORG	Thallium	7440-28-0	D		5				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
W-01	Deep	INORG	Thallium	7440-28-0	T		11				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
W-01	Deep	INORG	Vanadium	7440-62-2	D		5				8.20E-04	1.00E-02	4.5E-03		6.2E-02	
W-01	Deep	INORG	Vanadium	7440-62-2	T		11				6.70E-04	1.00E-02	4.5E-03		6.2E-02	
W-01	Deep	INORG	Zinc	7440-66-6	D	D	5	1	2.36E-02	2.36E-02	1.20E-02	2.00E-02	2.4E+00	9.8E-03	5.0E+00	4.7E-03
W-01	Deep	INORG	Zinc	7440-66-6	T	D	11	1	1.65E-02	1.65E-02	1.20E-02	2.00E-02	2.4E+00	6.9E-03	5.0E+00	3.3E-03
W-01	Intermediate	VOC	Acetone	67-64-1	T	ID	4	1	3.80E-02	3.80E-02	5.10E-04	7.30E-03	7.3E-01	5.2E-02	2.1E+00	1.8E-02
W-01	Intermediate	VOC	Benzene	71-43-2	T	A	4				1.60E-04	2.30E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Bromodichloromethane	75-27-4	T	B2	4				1.70E-04	2.40E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	2.60E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	Bromomethane	74-83-9	T	D	3				2.00E-04	2.90E-03	1.0E-02		2.9E-02	
W-01	Intermediate	VOC	2-Butanone	78-93-3	T	ID	4				4.10E-04	5.90E-03	1.3E+01		3.8E+01	
W-01	Intermediate	VOC	Carbon Disulfide	75-15-0	T		4				2.00E-04	2.90E-03	8.0E-01		2.3E+00	
W-01	Intermediate	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	1.70E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	2.00E-03	1.0E-01		1.0E-01	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Intermediate	VOC	Chloroethane	75-00-3	T		4				2.60E-04	3.70E-03	4.3E-01		1.7E+00	
W-01	Intermediate	VOC	Chloroform	67-66-3	T	B2	4	1	1.70E-04	1.70E-04	3.50E-04	2.00E-03	1.0E-01	1.7E-03	1.0E-01	1.7E-03
W-01	Intermediate	VOC	Chloromethane	74-87-3	T	D	4	1	2.10E-04	2.10E-04	4.90E-04	1.90E-03	2.6E-01	8.1E-04	1.1E+00	1.9E-04
W-01	Intermediate	VOC	Cumene	98-82-8	T	D	4				1.20E-04	1.70E-03	8.0E-01		2.3E+00	
W-01	Intermediate	VOC	Cyclohexane	110-82-7	T	ID	4				1.30E-04	1.90E-03				
W-01	Intermediate	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	8.90E-03	2.0E-04		2.0E-04	
W-01	Intermediate	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	3.70E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	3.10E-03	1.0E-03		1.0E-03	
W-01	Intermediate	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	1.60E-03	6.0E-01		6.0E-01	
W-01	Intermediate	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	2.10E-03	6.6E-03		1.9E-02	
W-01	Intermediate	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	2.40E-03	7.5E-02		7.5E-02	
W-01	Intermediate	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	3.70E-03	1.7E+00		4.8E+00	
W-01	Intermediate	VOC	1,1-Dichloroethane	75-34-3	T	C	4				1.60E-04	2.30E-03	8.8E-01		2.5E+00	
W-01	Intermediate	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	3.00E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	1,1-Dichloroethene	75-35-4	T	C	4				2.40E-04	3.40E-03	7.0E-03		7.0E-03	
W-01	Intermediate	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.20E-04	3.10E-03	7.0E-02		7.0E-02	
W-01	Intermediate	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	2.10E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	2.40E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	3.90E-03	8.5E-03		3.5E-02	
W-01	Intermediate	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	1.70E-03	7.0E-01		7.0E-01	
W-01	Intermediate	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	6.60E-03	1.0E+00		2.9E+00	
W-01	Intermediate	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	5.90E-03				
W-01	Intermediate	VOC	Methyl tert-butyl ether	1634-04-4	T		4				1.30E-04	1.90E-03	2.4E-01		6.9E-01	
W-01	Intermediate	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	3				2.30E-04	3.30E-03	1.8E+00		5.2E+00	
W-01	Intermediate	VOC	Methylcyclohexane	108-87-2	T		4				1.50E-04	2.10E-03				
W-01	Intermediate	VOC	Methylene Chloride	75-09-2	T	B2	3				2.90E-04	4.90E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Styrene	100-42-5	T		4				1.50E-04	2.10E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	3.60E-03	8.5E-03		3.5E-02	
W-01	Intermediate	VOC	Tetrachloroethene	127-18-4	T	C-B2	4				2.30E-04	3.30E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Toluene	108-88-3	T	D	4				1.80E-04	2.60E-03	1.0E+00		1.0E+00	
W-01	Intermediate	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	2.40E-03	7.0E-02		7.0E-02	
W-01	Intermediate	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4				1.50E-04	2.10E-03	2.0E-01		2.0E-01	
W-01	Intermediate	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	4.30E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Trichloroethene	79-01-6	T	C-B2	4				1.40E-04	2.00E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	4.00E-03	2.6E+00		7.3E+00	
W-01	Intermediate	VOC	1,1,2-Trichloro-1,2,2,2-tetrafluoroethane	76-13-1	T		4				3.20E-04	4.60E-03	1.7E+02		1.7E+02	
W-01	Intermediate	VOC	Vinyl Chloride	75-01-4	T	A	4				1.50E-04	2.10E-03	2.0E-03		2.0E-03	
W-01	Intermediate	VOC	Xylenes (total)	1330-20-7	T	ID	4				3.30E-04	4.70E-03	1.0E+01		1.0E+01	
W-01	Intermediate	SVOC	Acenaphthene	83-32-9	T		4				8.00E-04	8.00E-04	1.3E+00		3.8E+00	
W-01	Intermediate	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	7.10E-04	5.2E-02		1.5E-01	
W-01	Intermediate	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	2.60E-03	1.5E+00		4.4E+00	
W-01	Intermediate	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	6.80E-04	4.3E-02		4.3E-02	
W-01	Intermediate	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	2.50E-03	3.0E-03		3.0E-03	
W-01	Intermediate	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	2.80E-03				
W-01	Intermediate	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	7.00E-04	2.1E-03		8.5E-03	
W-01	Intermediate	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	7.30E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	9.40E-04	2.0E-03		2.0E-03	
W-01	Intermediate	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	8.50E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	8.40E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	2.60E-03				
W-01	Intermediate	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	8.70E-04				
W-01	Intermediate	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	9.70E-04	2.0E-03		8.3E-03	
W-01	Intermediate	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4	1	8.80E-03	8.80E-03	2.70E-03	2.70E-03	6.0E-03	1.5E+00	6.0E-03	1.5E+00
W-01	Intermediate	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	8.80E-04				
W-01	Intermediate	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	8.80E-04	1.2E+00		2.7E+00	
W-01	Intermediate	SVOC	Caprolactam	105-60-2	T		4	3	6.70E-03	3.90E-02	2.50E-03	2.50E-03	5.8E+00	6.7E-03	1.7E+01	2.3E-03
W-01	Intermediate	SVOC	Carbazole	86-74-8	T	B2	4				8.20E-04	8.20E-04	8.5E-02		3.5E-01	
W-01	Intermediate	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	9.90E-04	1.5E-01		4.2E-01	
W-01	Intermediate	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	6.10E-04				
W-01	Intermediate	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	8.50E-04	1.8E+00		5.2E+00	
W-01	Intermediate	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	1.00E-03	4.5E-02		1.3E-01	
W-01	Intermediate	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	7.90E-04				
W-01	Intermediate	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	7.50E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	7.90E-04	2.0E-03		2.0E-03	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Intermediate	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	1.10E-03				
W-01	Intermediate	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	9.30E-04	1.1E-03		4.3E-03	
W-01	Intermediate	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	8.50E-04	7.3E-02		2.1E-01	
W-01	Intermediate	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	6.50E-04	5.5E+00		1.6E+01	
W-01	Intermediate	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	8.50E-04	3.7E-01		1.0E+00	
W-01	Intermediate	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	7.60E-04	7.3E+01		2.1E+02	
W-01	Intermediate	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	6.70E-04	8.8E-01		2.5E+00	
W-01	Intermediate	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	1.30E-03	2.0E-02		2.0E-02	
W-01	Intermediate	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	3.00E-03				
W-01	Intermediate	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	7.90E-04	7.7E-03		3.2E-02	
W-01	Intermediate	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.70E-04				
W-01	Intermediate	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	1.10E-03	1.3E-01		3.8E-01	
W-01	Intermediate	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	8.10E-04	2.1E-01		2.1E-01	
W-01	Intermediate	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	1.00E-03	8.8E-01		2.0E+00	
W-01	Intermediate	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	7.40E-04	1.0E-03		1.0E-03	
W-01	Intermediate	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	7.30E-04	1.5E-02		4.2E-02	
W-01	Intermediate	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	1.10E-03	5.0E-02		5.0E-02	
W-01	Intermediate	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	7.40E-04	7.3E-03		2.1E-02	
W-01	Intermediate	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	6.30E-04	2.0E-03		2.0E-03	
W-01	Intermediate	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	6.30E-04	7.7E-01		3.1E+00	
W-01	Intermediate	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	6.40E-04	2.6E-01		7.5E-01	
W-01	Intermediate	SVOC	Methylphenol (total)	1319-77-3	T		4	1	2.65E-03	2.65E-03	1.30E-03	1.30E-03	3.7E-01	7.2E-03	1.0E+00	2.7E-03
W-01	Intermediate	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	7.50E-04	5.2E-01		1.5E+00	
W-01	Intermediate	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	7.00E-04				
W-01	Intermediate	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	7.10E-04				
W-01	Intermediate	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	1.30E-03				
W-01	Intermediate	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	8.10E-04	3.4E-03		9.6E-03	
W-01	Intermediate	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	2.10E-03	2.0E-02		5.8E-02	
W-01	Intermediate	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	1.90E-03				
W-01	Intermediate	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	1.40E-03	2.7E-01		1.1E+00	
W-01	Intermediate	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	6.70E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	7.80E-04				
W-01	Intermediate	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	2.40E-03	1.0E-03		1.0E-03	
W-01	Intermediate	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	8.20E-04	5.2E-02		1.5E-01	
W-01	Intermediate	SVOC	Phenol	108-95-2	T	ID	4	1	7.00E-03	7.00E-03	2.60E-03	2.60E-03	4.4E+00	1.6E-03	1.3E+01	5.4E-04
W-01	Intermediate	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	1.10E-03	1.4E-01		1.4E-01	
W-01	Intermediate	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	1.20E-03	7.3E-01		2.1E+00	
W-01	Intermediate	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	1.70E-03	1.2E-01		4.7E-01	
W-01	Intermediate	P/PCB	PCBs (total)	1336-36-3	D	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
W-01	Intermediate	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
W-01	Intermediate	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.20E-03	6.0E-03		6.0E-03	
W-01	Intermediate	INORG	Antimony	7440-36-0	T		4				2.20E-03	3.40E-03	6.0E-03		6.0E-03	
W-01	Intermediate	INORG	Arsenic	7440-38-2	D	A	2	1	6.20E-03	6.20E-03	3.90E-03	3.90E-03	5.0E-02	1.2E-01	5.0E-02	1.2E-01
W-01	Intermediate	INORG	Arsenic	7440-38-2	T	A	4	3	2.70E-03	5.20E-03	2.10E-03	2.10E-03	5.0E-02	1.0E-01	5.0E-02	1.0E-01
W-01	Intermediate	INORG	Barium	7440-39-3	D	D	2	2	4.00E-02	4.04E-01			2.0E+00	2.0E-01	2.0E+00	2.0E-01
W-01	Intermediate	INORG	Barium	7440-39-3	T	D	4	4	6.77E-02	4.32E-01			2.0E+00	2.2E-01	2.0E+00	2.2E-01
W-01	Intermediate	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	5.40E-04	4.0E-03		4.0E-03	
W-01	Intermediate	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	6.00E-04	4.0E-03		4.0E-03	
W-01	Intermediate	INORG	Cadmium	7440-43-9	D	B1	2	1	2.80E-04	2.80E-04	2.80E-04	2.80E-04	5.0E-03	5.6E-02	5.0E-03	5.6E-02
W-01	Intermediate	INORG	Cadmium	7440-43-9	T	B1	4	2	2.80E-04	5.70E-04	2.80E-04	2.80E-04	5.0E-03	1.1E-01	5.0E-03	1.1E-01
W-01	Intermediate	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.40E-03	1.0E-01		1.0E-01	
W-01	Intermediate	INORG	Chromium (total)	7440-47-3	T		4	1	6.80E-03	6.80E-03	1.40E-03	1.50E-03	1.0E-01	6.8E-02	1.0E-01	6.8E-02
W-01	Intermediate	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	1.30E-03	4.0E-02		1.0E-01	
W-01	Intermediate	INORG	Cobalt	7440-48-4	T	B1	4	1	1.40E-03	1.40E-03	7.40E-04	1.30E-03	4.0E-02	3.5E-02	1.0E-01	1.4E-02
W-01	Intermediate	INORG	Copper	7440-50-8	D	D	2				4.20E-03	4.20E-03	1.4E+00		4.0E+00	
W-01	Intermediate	INORG	Copper	7440-50-8	T	D	4				1.70E-03	4.20E-03	1.4E+00		4.0E+00	
W-01	Intermediate	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	2.50E-03	4.0E-03		4.0E-03	
W-01	Intermediate	INORG	Lead	7439-92-1	T	B2	4	1	1.35E-02	1.35E-02	1.60E-03	2.50E-03	4.0E-03	3.4E+00	4.0E-03	3.4E+00
W-01	Intermediate	INORG	Manganese	7439-96-5	D	D	2	2	2.80E-03	1.59E-01			8.6E-01	1.8E-01	2.5E+00	6.4E-02
W-01	Intermediate	INORG	Manganese	7439-96-5	T	D	4	4	6.31E-02	1.77E-01			8.6E-01	2.1E-01	2.5E+00	7.1E-02
W-01	Intermediate	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	6.90E-05	2.0E-03		2.0E-03	
W-01	Intermediate	INORG	Mercury	7439-97-6	T	D	4				6.90E-05	8.70E-05	2.0E-03		2.0E-03	
W-01	Intermediate	INORG	Nickel	7440-02-0	D	A	2				2.20E-03	2.20E-03	1.0E-01		1.0E-01	
W-01	Intermediate	INORG	Nickel	7440-02-0	T	A	4	1	5.70E-03	5.70E-03	2.20E-03	2.90E-03	1.0E-01	5.7E-02	1.0E-01	5.7E-02

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Intermediate	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	4.50E-03	5.0E-02		5.0E-02	
W-01	Intermediate	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.70E-03	5.0E-02		5.0E-02	
W-01	Intermediate	INORG	Silver	7440-22-4	D	D	2				1.50E-03	1.50E-03	3.4E-02		9.8E-02	
W-01	Intermediate	INORG	Silver	7440-22-4	T	D	4				9.80E-04	1.50E-03	3.4E-02		9.8E-02	
W-01	Intermediate	INORG	Thallium	7440-28-0	D		2				1.80E-05	5.00E-03	2.0E-03		2.0E-03	
W-01	Intermediate	INORG	Thallium	7440-28-0	T		4	1	4.40E-05	4.40E-05	3.30E-05	5.00E-03	2.0E-03	2.2E-02	2.0E-03	2.2E-02
W-01	Intermediate	INORG	Vanadium	7440-62-2	D		2	1	2.50E-03	2.50E-03	8.20E-04	8.20E-04	4.5E-03	5.6E-01	6.2E-02	4.0E-02
W-01	Intermediate	INORG	Vanadium	7440-62-2	T		4	1	4.90E-03	4.90E-03	6.70E-04	8.20E-04	4.5E-03	1.1E+00	6.2E-02	7.9E-02
W-01	Intermediate	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	1.20E-02	2.4E+00		5.0E+00	
W-01	Intermediate	INORG	Zinc	7440-66-6	T	D	4	1	5.92E-01	5.92E-01	1.20E-02	1.40E-02	2.4E+00	2.5E-01	5.0E+00	1.2E-01
W-09	Deep	VOC	Acetone	67-64-1	T	ID	6	2	6.60E-04	1.60E-03	1.10E-03	1.10E-03	7.3E-01	2.2E-03	2.1E+00	7.6E-04
W-09	Deep	VOC	Benzene	71-43-2	T	A	6				1.60E-04	3.70E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Bromodichloromethane	75-27-4	T	B2	6				1.70E-04	3.20E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	3.70E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	3.00E-04	1.0E-02		2.9E-02	
W-09	Deep	VOC	2-Butanone	78-93-3	T	ID	6				4.10E-04	5.90E-04	1.3E+01		3.8E+01	
W-09	Deep	VOC	Carbon Disulfide	75-15-0	T		6	3	2.40E-04	9.30E-04	2.00E-04	2.40E-04	8.0E-01	1.2E-03	2.3E+00	4.0E-04
W-09	Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	3.70E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	3.80E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	Chloroethane	75-00-3	T		6				2.60E-04	2.90E-04	4.3E-01		1.7E+00	
W-09	Deep	VOC	Chloroform	67-66-3	T	B2	6	1	2.80E-04	2.80E-04	1.40E-04	3.50E-04	1.0E-01	2.8E-03	1.0E-01	2.8E-03
W-09	Deep	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	4.90E-04	2.6E-01		1.1E+00	
W-09	Deep	VOC	Cumene	98-82-8	T	D	6				1.20E-04	3.90E-04	8.0E-01		2.3E+00	
W-09	Deep	VOC	Cyclohexane	110-82-7	T	ID	6				1.30E-04	3.30E-04				
W-09	Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				6.20E-04	8.20E-04	2.0E-04		2.0E-04	
W-09	Deep	VOC	Dibromochloromethane	124-48-1	T	C	6				2.60E-04	3.70E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	3.40E-04	1.0E-03		1.0E-03	
W-09	Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	3.80E-04	6.0E-01		6.0E-01	
W-09	Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	3.80E-04	6.6E-03		1.9E-02	
W-09	Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.70E-04	3.80E-04	7.5E-02		7.5E-02	
W-09	Deep	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.60E-04	4.90E-04	1.7E+00		4.8E+00	
W-09	Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	3.00E-04	8.8E-01		2.5E+00	
W-09	Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	2.80E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.40E-04	3.10E-04	7.0E-03		7.0E-03	
W-09	Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	3.50E-04	7.0E-02		7.0E-02	
W-09	Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	3.30E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	4.10E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				2.70E-04	3.50E-04	8.5E-03		3.5E-02	
W-09	Deep	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	4.10E-04	7.0E-01		7.0E-01	
W-09	Deep	VOC	2-Hexanone	591-78-6	T		6				4.60E-04	5.80E-04	1.0E+00		2.9E+00	
W-09	Deep	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	5.40E-04				
W-09	Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		6	4	2.40E-04	5.20E-03	2.70E-04	2.70E-04	2.4E-01	2.2E-02	6.9E-01	7.5E-03
W-09	Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	2.60E-04	1.8E+00		5.2E+00	
W-09	Deep	VOC	Methylcyclohexane	108-87-2	T		6				1.50E-04	4.20E-04				
W-09	Deep	VOC	Methylene Chloride	75-09-2	T	B2	7	1	1.80E-02	1.80E-02	2.80E-04	3.40E-04	5.0E-03	3.6E+00	5.0E-03	3.6E+00
W-09	Deep	VOC	Styrene	100-42-5	T		6				1.50E-04	3.50E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.50E-04	3.60E-04	8.5E-03		3.5E-02	
W-09	Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				2.30E-04	4.20E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Toluene	108-88-3	T	D	6				1.80E-04	3.90E-04	1.0E+00		1.0E+00	
W-09	Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.70E-04	4.00E-04	7.0E-02		7.0E-02	
W-09	Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6				1.50E-04	3.90E-04	2.0E-01		2.0E-01	
W-09	Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				3.00E-04	3.60E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	4.20E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Trichlorofluoromethane	75-69-4	T		6				2.80E-04	5.40E-04	2.6E+00		7.3E+00	
W-09	Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				3.20E-04	3.20E-04	1.7E+02		1.7E+02	
W-09	Deep	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	3.60E-04	2.0E-03		2.0E-03	
W-09	Deep	VOC	Xylenes (total)	1330-20-7	T	ID	6				3.30E-04	4.40E-04	1.0E+01		1.0E+01	
W-09	Deep	SVOC	Acenaphthene	83-32-9	T		6				8.00E-04	8.00E-04	1.3E+00		3.8E+00	
W-09	Deep	SVOC	Acenaphthylene	208-96-8	T	D	6				7.10E-04	7.10E-04	5.2E-02		1.5E-01	
W-09	Deep	SVOC	Acetophenone	98-86-2	T	D	6				2.60E-03	2.60E-03	1.5E+00		4.4E+00	
W-09	Deep	SVOC	Anthracene	120-12-7	T	D	6				6.80E-04	6.80E-04	4.3E-02		4.3E-02	
W-09	Deep	SVOC	Atrazine	1912-24-9	T		6				2.50E-03	2.50E-03	3.0E-03		3.0E-03	
W-09	Deep	SVOC	Benzaldehyde	100-52-7	T		6				2.80E-03	2.80E-03				
W-09	Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				7.00E-04	7.00E-04	2.1E-03		8.5E-03	

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-09	Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				7.30E-04	7.30E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				9.40E-04	9.40E-04	2.0E-03		2.0E-03	
W-09	Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				8.50E-04	8.50E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				8.40E-04	8.40E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Biphenyl	92-52-4	T	D	6				2.60E-03	2.60E-03				
W-09	Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	8.70E-04				
W-09	Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	5				9.70E-04	9.70E-04	2.0E-03		8.3E-03	
W-09	Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6				2.70E-03	2.70E-03	6.0E-03		6.0E-03	
W-09	Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				8.80E-04	8.80E-04				
W-09	Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				8.80E-04	8.80E-04	1.2E+00		2.7E+00	
W-09	Deep	SVOC	Caprolactam	105-60-2	T		6	1	3.10E-03	3.10E-03	2.50E-03	2.50E-03	5.8E+00	5.3E-04	1.7E+01	1.8E-04
W-09	Deep	SVOC	Carbazole	86-74-8	T	B2	6				8.20E-04	8.20E-04	8.5E-02		3.5E-01	
W-09	Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				9.90E-04	9.90E-04	1.5E-01		4.2E-01	
W-09	Deep	SVOC	4-Chloroaniline	106-47-8	T		6				6.10E-04	6.10E-04				
W-09	Deep	SVOC	2-Chloronaphthalene	91-58-7	T		6				8.50E-04	8.50E-04	1.8E+00		5.2E+00	
W-09	Deep	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	1.00E-03	4.5E-02		1.3E-01	
W-09	Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				7.90E-04	7.90E-04				
W-09	Deep	SVOC	Chrysene	218-01-9	T	B2	6				7.50E-04	7.50E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				7.90E-04	7.90E-04	2.0E-03		2.0E-03	
W-09	Deep	SVOC	Dibenzofuran	132-64-9	T	D	6				1.10E-03	1.10E-03				
W-09	Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	6				9.30E-04	9.30E-04	1.1E-03		4.3E-03	
W-09	Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		6				8.50E-04	8.50E-04	7.3E-02		2.1E-01	
W-09	Deep	SVOC	Diethylphthalate	84-66-2	T	D	6				6.50E-04	6.50E-04	5.5E+00		1.6E+01	
W-09	Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		6				8.50E-04	8.50E-04	3.7E-01		1.0E+00	
W-09	Deep	SVOC	Dimethylphthalate	131-11-3	T	D	6				7.60E-04	7.60E-04	7.3E+01		2.1E+02	
W-09	Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				6.70E-04	6.70E-04	8.8E-01		2.5E+00	
W-09	Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	1.30E-03	2.0E-02		2.0E-02	
W-09	Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	3.00E-03				
W-09	Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				7.90E-04	7.90E-04	7.7E-03		3.2E-02	
W-09	Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.70E-04				
W-09	Deep	SVOC	Di-n-octylphthalate	117-84-0	T		6				1.10E-03	1.10E-03	1.3E-01		3.8E-01	
W-09	Deep	SVOC	Fluoranthene	206-44-0	T	D	6				8.10E-04	8.10E-04	2.1E-01		2.1E-01	
W-09	Deep	SVOC	Fluorene	86-73-7	T	D	6				1.00E-03	1.00E-03	8.8E-01		2.0E+00	
W-09	Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	7.40E-04	1.0E-03		1.0E-03	
W-09	Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	5				7.30E-04	7.30E-04	1.5E-02		4.2E-02	
W-09	Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	5				1.10E-03	1.10E-03	5.0E-02		5.0E-02	
W-09	Deep	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	7.40E-04	7.3E-03		2.1E-02	
W-09	Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	6.30E-04	2.0E-03		2.0E-03	
W-09	Deep	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	6.30E-04	7.7E-01		3.1E+00	
W-09	Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	5				6.40E-04	6.40E-04	2.6E-01		7.5E-01	
W-09	Deep	SVOC	Methylphenol (total)	1319-77-3	T		6				1.30E-03	1.30E-03	3.7E-01		1.0E+00	
W-09	Deep	SVOC	Naphthalene	91-20-3	T	C	5				7.50E-04	7.50E-04	5.2E-01		1.5E+00	
W-09	Deep	SVOC	2-Nitroaniline	88-74-4	T		6				7.00E-04	7.00E-04				
W-09	Deep	SVOC	3-Nitroaniline	99-09-2	T	C	6				7.10E-04	7.10E-04				
W-09	Deep	SVOC	4-Nitroaniline	100-01-6	T	C	6				1.30E-03	1.30E-03				
W-09	Deep	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	8.10E-04	3.4E-03		9.6E-03	
W-09	Deep	SVOC	2-Nitrophenol	88-75-5	T		6				2.10E-03	2.10E-03	2.0E-02		5.8E-02	
W-09	Deep	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	1.90E-03				
W-09	Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				1.40E-03	1.40E-03	2.7E-01		1.1E+00	
W-09	Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	6.70E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	7.80E-04				
W-09	Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	2.40E-03	1.0E-03		1.0E-03	
W-09	Deep	SVOC	Phenanthrene	85-01-8	T	D	6				8.20E-04	8.20E-04	5.2E-02		1.5E-01	
W-09	Deep	SVOC	Phenol	108-95-2	T	ID	6				2.60E-03	2.60E-03	4.4E+00		1.3E+01	
W-09	Deep	SVOC	Pyrene	129-00-0	T	D	6				1.10E-03	1.10E-03	1.4E-01		1.4E-01	
W-09	Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				1.20E-03	1.20E-03	7.3E-01		2.1E+00	
W-09	Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				1.70E-03	1.70E-03	1.2E-01		4.7E-01	
W-09	Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
W-09	Deep	INORG	Antimony	7440-36-0	D		2	1	2.70E-03	2.70E-03	2.20E-03	2.20E-03	6.0E-03	4.5E-01	6.0E-03	4.5E-01
W-09	Deep	INORG	Antimony	7440-36-0	T		6	1	4.90E-03	4.90E-03	2.20E-03	3.40E-03	6.0E-03	8.2E-01	6.0E-03	8.2E-01
W-09	Deep	INORG	Arsenic	7440-38-2	D	A	2	2	5.20E-03	2.59E-02			5.0E-02	5.2E-01	5.0E-02	5.2E-01
W-09	Deep	INORG	Arsenic	7440-38-2	T	A	6	5	3.10E-03	3.95E-02	2.10E-03	2.10E-03	5.0E-02	7.9E-01	5.0E-02	7.9E-01
W-09	Deep	INORG	Barium	7440-39-3	D	D	2	2	9.89E-02	2.02E-01			2.0E+00	1.0E-01	2.0E+00	1.0E-01
W-09	Deep	INORG	Barium	7440-39-3	T	D	6	6	3.60E-02	5.85E-01			2.0E+00	2.9E-01	2.0E+00	2.9E-01

Table 8.5: Intermediate and Deep Groundwater Screening Results
General Motors - Pontiac North Campus, Pontiac, Michigan

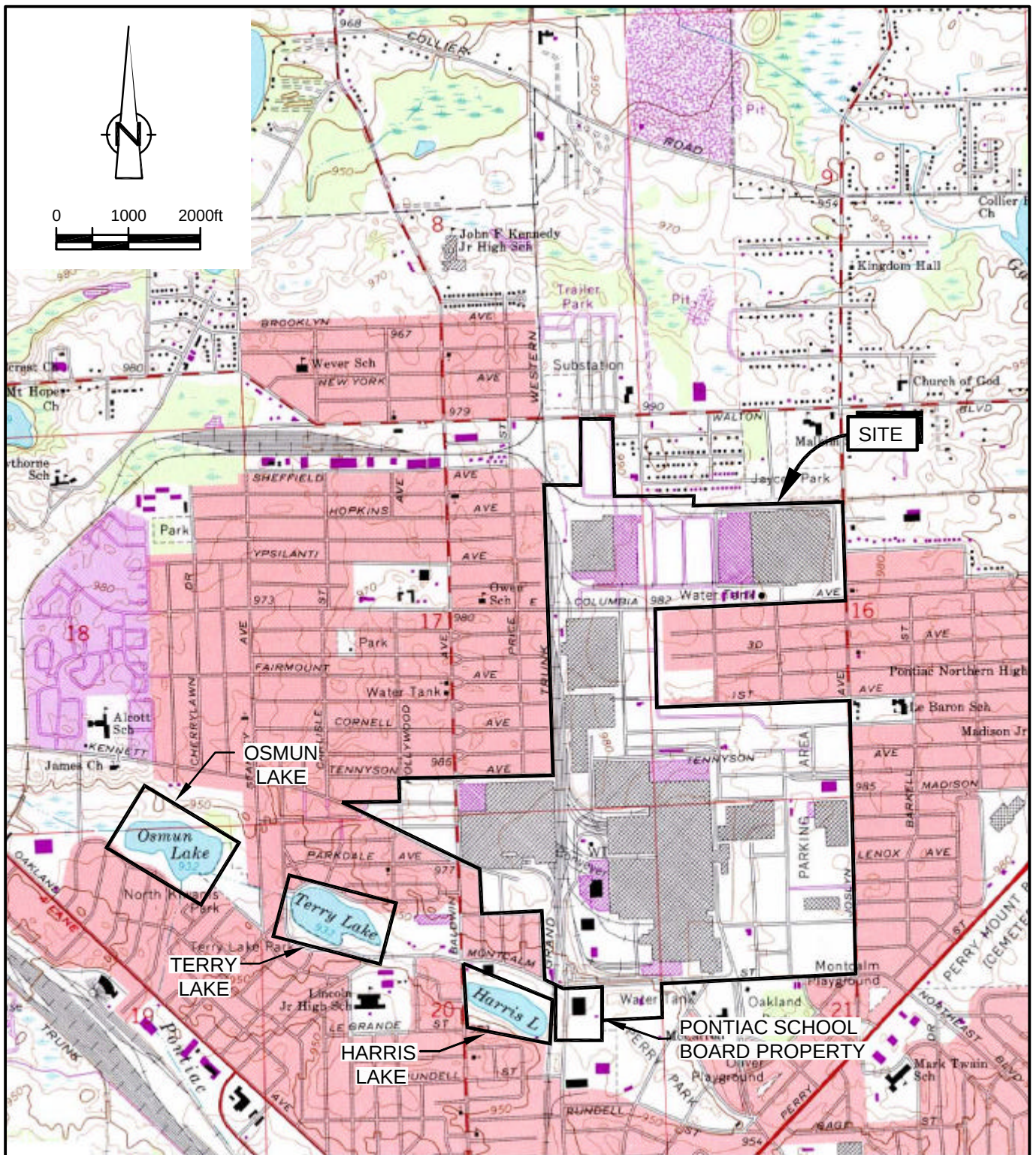
Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-09	Deep	INORG	Beryllium	7440-41-7	D	B1	2			5.40E-04	5.40E-04	4.0E-03		4.0E-03	
W-09	Deep	INORG	Beryllium	7440-41-7	T	B1	6			5.40E-04	6.00E-04	4.0E-03		4.0E-03	
W-09	Deep	INORG	Cadmium	7440-43-9	D	B1	2			2.80E-04	2.80E-04	5.0E-03		5.0E-03	
W-09	Deep	INORG	Cadmium	7440-43-9	T	B1	6	3.00E-04	3.00E-04	2.80E-04	2.80E-04	5.0E-03	6.0E-02	5.0E-03	6.0E-02
W-09	Deep	INORG	Chromium (total)	7440-47-3	D		2			1.40E-03	1.40E-03	1.0E-01		1.0E-01	
W-09	Deep	INORG	Chromium (total)	7440-47-3	T		6	2.80E-03	8.40E-03	1.40E-03	1.40E-03	1.0E-01	8.4E-02	1.0E-01	8.4E-02
W-09	Deep	INORG	Cobalt	7440-48-4	D	B1	2			1.30E-03	1.30E-03	4.0E-02		1.0E-01	
W-09	Deep	INORG	Cobalt	7440-48-4	T	B1	6	7.60E-04	8.40E-03	7.40E-04	1.30E-03	4.0E-02	2.1E-01	1.0E-01	8.4E-02
W-09	Deep	INORG	Copper	7440-50-8	D	D	2			4.20E-03	4.20E-03	1.4E+00		4.0E+00	
W-09	Deep	INORG	Copper	7440-50-8	T	D	6			1.70E-03	4.20E-03	1.4E+00		4.0E+00	
W-09	Deep	INORG	Lead	7439-92-1	D	B2	2			2.50E-03	2.50E-03	4.0E-03		4.0E-03	
W-09	Deep	INORG	Lead	7439-92-1	T	B2	6			1.60E-03	2.50E-03	4.0E-03		4.0E-03	
W-09	Deep	INORG	Manganese	7439-96-5	D	D	2	6.18E-02	6.18E-02	9.00E-04	9.00E-04	8.6E-01	7.2E-02	2.5E+00	2.5E-02
W-09	Deep	INORG	Manganese	7439-96-5	T	D	6	4.61E-02	2.55E-01	9.00E-04	9.00E-04	8.6E-01	3.0E-01	2.5E+00	1.0E-01
W-09	Deep	INORG	Mercury	7439-97-6	D	D	2			6.90E-05	6.90E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Mercury	7439-97-6	T	D	6			6.90E-05	8.70E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Nickel	7440-02-0	D	A	2			2.20E-03	2.20E-03	1.0E-01		1.0E-01	
W-09	Deep	INORG	Nickel	7440-02-0	T	A	6	3.10E-03	9.30E-03	2.20E-03	2.90E-03	1.0E-01	9.3E-02	1.0E-01	9.3E-02
W-09	Deep	INORG	Selenium	7782-49-2	D	D	2			4.50E-03	4.50E-03	5.0E-02		5.0E-02	
W-09	Deep	INORG	Selenium	7782-49-2	T	D	6			4.50E-03	4.70E-03	5.0E-02		5.0E-02	
W-09	Deep	INORG	Silver	7440-22-4	D	D	2			1.50E-03	1.50E-03	3.4E-02		9.8E-02	
W-09	Deep	INORG	Silver	7440-22-4	T	D	6	1.30E-03	1.30E-03	9.80E-04	1.50E-03	3.4E-02	3.8E-02	9.8E-02	1.3E-02
W-09	Deep	INORG	Thallium	7440-28-0	D		2			1.80E-05	1.80E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Thallium	7440-28-0	T		6			1.80E-05	3.30E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Vanadium	7440-62-2	D		2			8.20E-04	8.20E-04	4.5E-03		6.2E-02	
W-09	Deep	INORG	Vanadium	7440-62-2	T		6			6.70E-04	8.20E-04	4.5E-03		6.2E-02	
W-09	Deep	INORG	Zinc	7440-66-6	D	D	2			1.20E-02	1.20E-02	2.4E+00		5.0E+00	
W-09	Deep	INORG	Zinc	7440-66-6	T	D	6			1.20E-02	1.40E-02	2.4E+00		5.0E+00	
Notes:															
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.															
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.															
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).															
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.															
The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.															
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.															
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.															
The MDEQ Drinking Water Criteria for Chromium III was calculated by ENVIRON to be account for valence specific toxicity.															
Chem Group - Chemical Group															
Meas Basis - Measured Basis; T = Total, D = Dissolved															
Carc Class - EPA Weight-of-Evidence Cancer Classification															
Min QL - Minimum Quantitation Limit															
Max QL - Maximum Quantitation Limit															
The evaluation of intermediate and deep groundwater is from the Supplemental RFI Report (ENCORE 2003).															

TABLE 10-1
PROPOSED FINAL CORRECTIVE MEASURES
GENERAL MOTORS CORPORATION PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

AOI/Area DESIGNATION	DESCRIPTION	MEDIA	FINAL CORRECTIVE MEASURES	STATUS
F-1, F-2, F-3, F-4, F-5, F-6, F-8, F-9, F-10, F-11, F-12, F-13, F-14, F-15, W-2, W-3, W-4, W-6, W-7, W-12, W-13, M-3, M-6, M-7, M-8, M-9, M-10, M-11, M-12, M-13, M-14, M-15, M-17, M-18, M-19, M-20, M-21, M-22, M-23, M-24, M-25, P-1, P-2, P-3, P-4, P-5, P-7, P-8, P-10, S-1, S-2, M-5, Terry Lake, Osmun Lake	Multiple	Multiple	No Further Action	NFA
W-9	Former Central Foundry (Plant 6)	Soil	PCB Soil Excavation, Soil Cap, and Institutional Controls	IM Underway
AOI W-8: LNAPL Area No. 3	Plant 9 Basement	LNAPL	Corrective Measures to be proposed in IM Work Plan	IM Underway
Off-Site Property	Pontiac School Board	Sediment in Sewer	Complete Interim Measures (Storm Sewer Removal)	IM Underway
Off-Site Property	Harris Lake	Soil, Sediment	Complete Interim Measures (Sediment and Soil Removal)	IM Underway/ Fieldwork Completed
Storm Sewers	Sitewide	Groundwater	To be determined as per Storm Sewer Feasibility Analysis Report (ENCORE, 2003)	
W-1, W-5, W-8, W-9, W-10, W-11, M-1, M-2, M-5, M-16, F-7, P-9, P-11	Multiple	On-Site	Institutional Controls and Groundwater Monitoring	Proposed
M-4	Plant 25 Former Gasoline UST & Current Gasoline AST	Groundwater	Institutional Controls and Groundwater Monitoring	Proposed
P-6	Former UST Farm & Stoddard Solvent AST	Groundwater	Institutional Controls and Groundwater Monitoring	Proposed
AOIs W-1 and W-10: LNAPL Area No. 1	West Yard, Railroad Marshalling Area	LNAPL	LNAPL Recovery via Collection Trench or Extraction Well System	Proposed
AOI W-10: LNAPL Area No. 2	Railroad Marshalling Area	LNAPL	LNAPL Recovery via Collection Trench or Extraction Well System	Proposed
AOI M-2: LNAPL Area No. 4	Active Production Area	LNAPL	Manual LNAPL Recovery via Bailing or Pumping	Proposed
AOIs M-2 and M-16: LNAPL Area No. 5	Plant 25	LNAPL	To be evaluated upon completion of investigation and LNAPL delineation	TBD
AOI W-9: LNAPL Area No. 6	Former Central Foundry (Plant 6)	LNAPL	Corrective measures to be proposed in a IM Work Plan to follow.	TBD
Off-Site Property	None	Off-Site Groundwater	To be evaluated upon completion of delineation of constituents in off-Site groundwater.	TBD

NFA = No Further Action IM = Interim Measure TBD = To Be Determined

Figures



SOURCE: USGS QUADRANGLE MAP;
PONTIAC NORTH, MICHIGAN



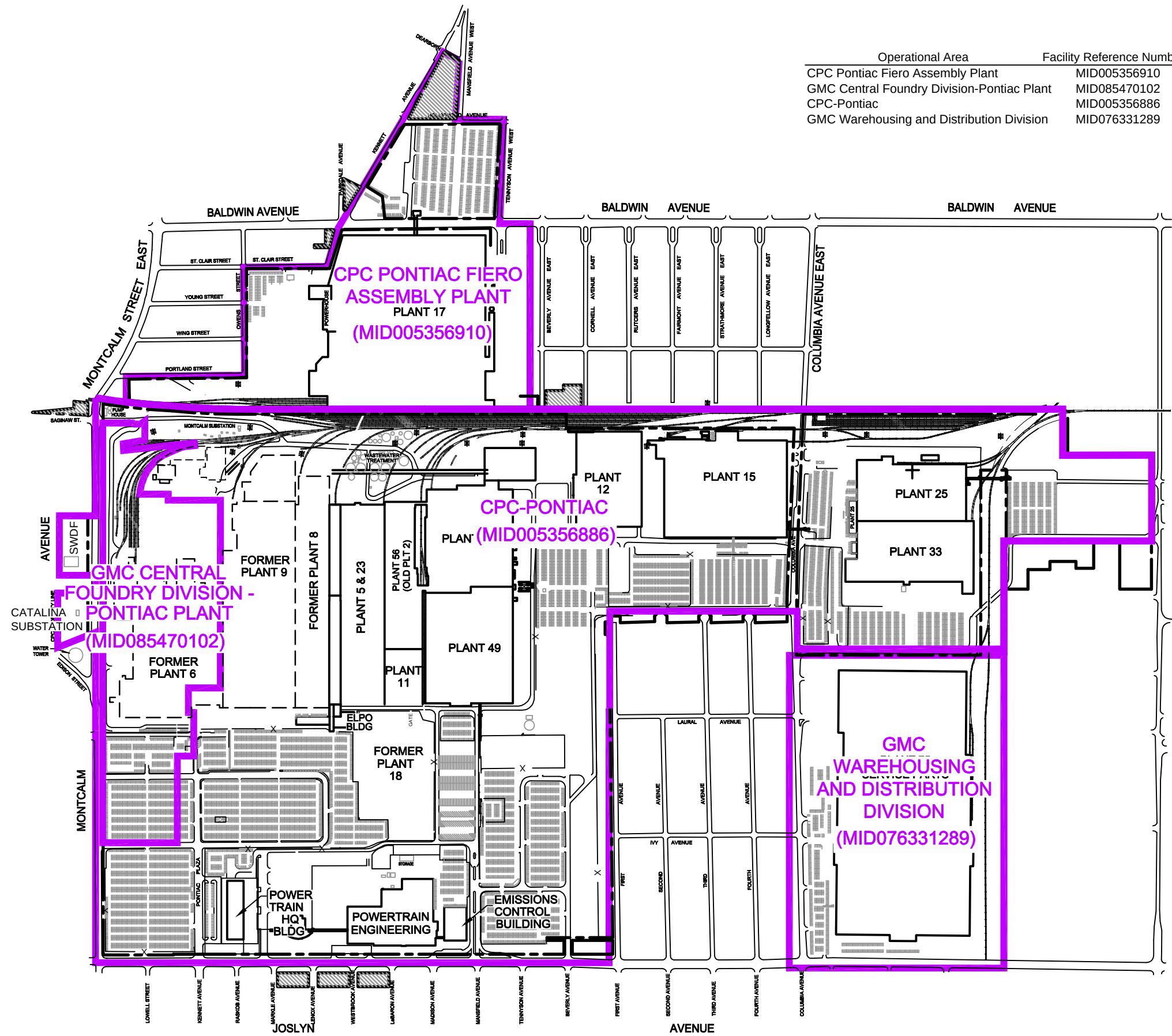
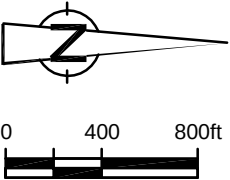
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS CMP

SITE LOCATION



FIGURE
1-1

Operational Area	Facility Reference Number
CPC Pontiac Fiero Assembly Plant	MID005356910
GMC Central Foundry Division-Pontiac Plant	MID085470102
CPC-Pontiac	MID005356886
GMC Warehousing and Distribution Division	MID076331289



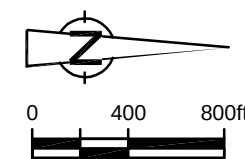
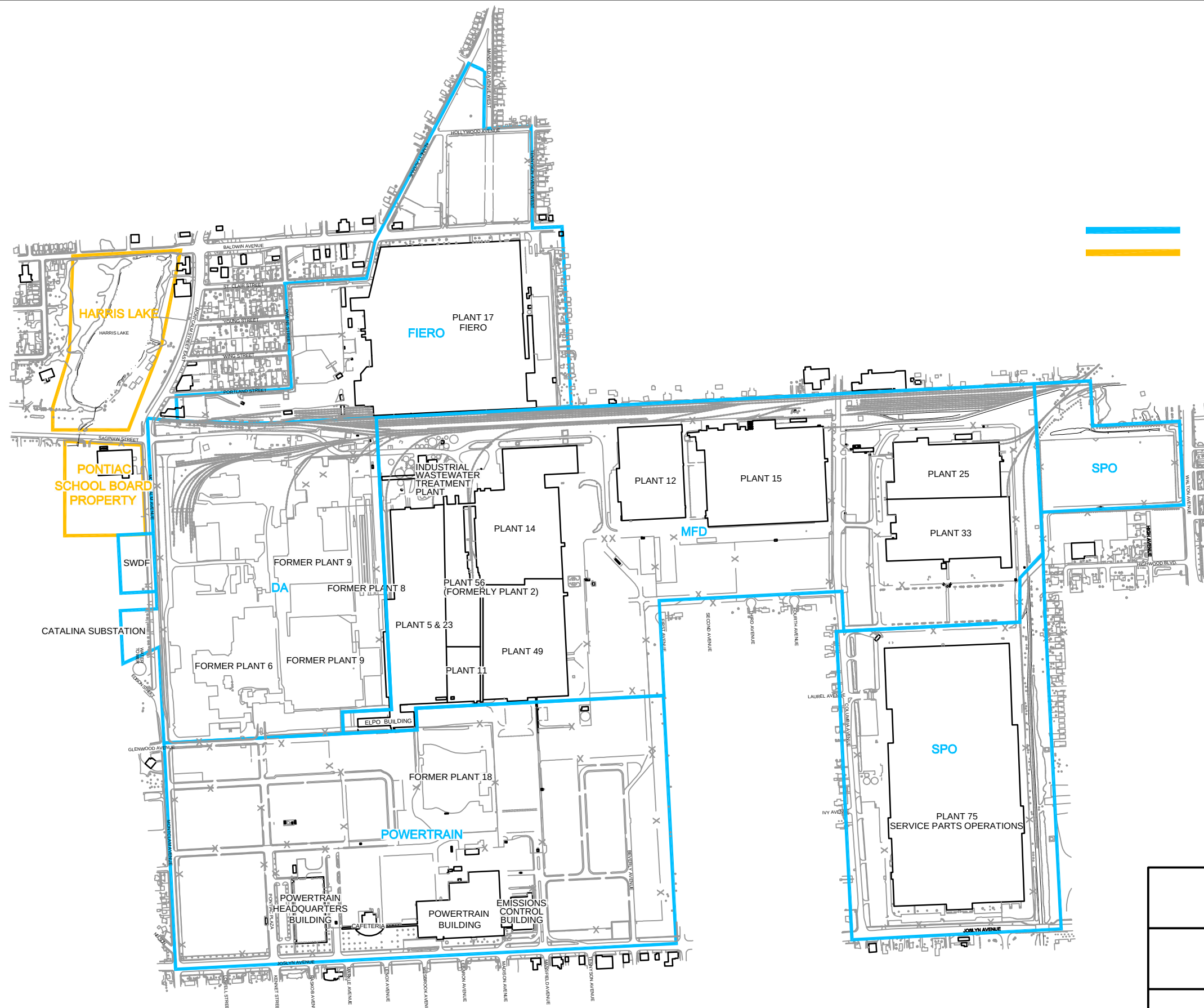
- LEGEND**
- PROPERTY BOUNDARY
 - RAILROAD TRACKS
 - FENCE
 - FACILITY BOUNDARY
 - FOOTPRINT OF FORMER STRUCTURE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS CMP

SITE FACILITIES

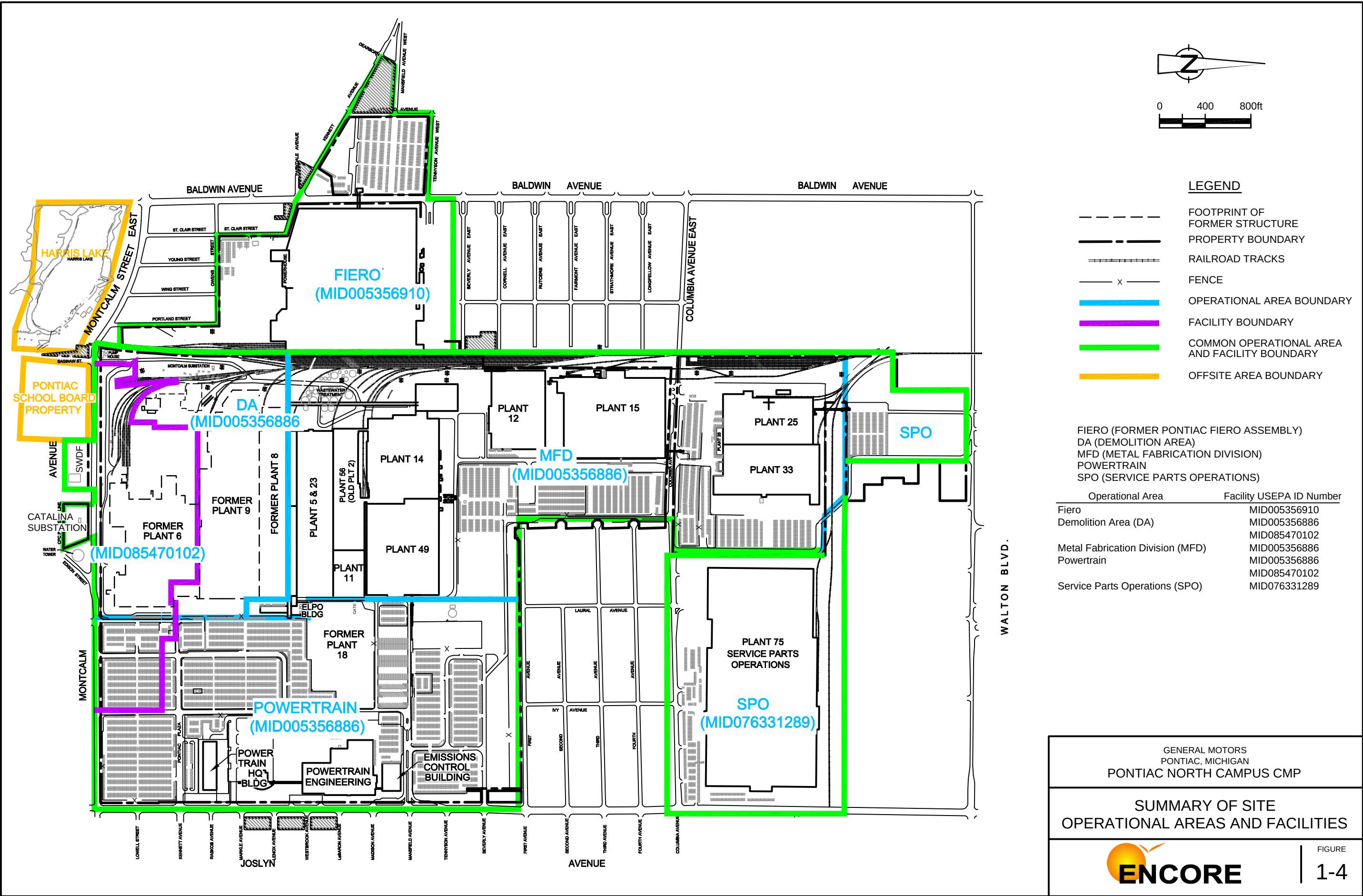


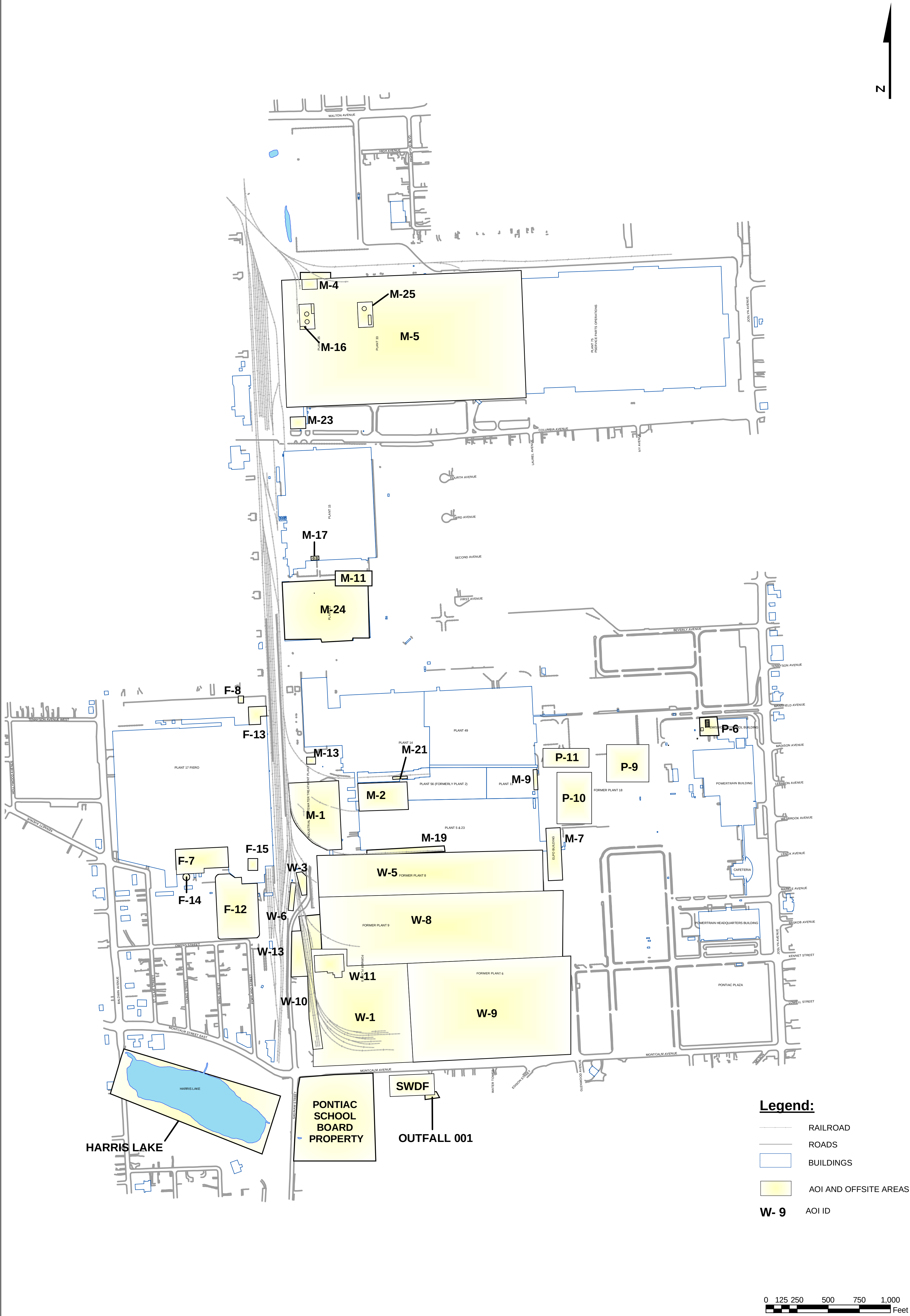
FIGURE
1-2



- LEGEND**
- OPERATIONAL AREA BOUNDARY
 - OFFSITE AREA BOUNDARY
 - FIERO (FORMER PONTIAC FIERO ASSEMBLY)
 - DA (DEMOLITION AREA)
 - MFD (METAL FABRICATION DIVISION)
 - POWERTRAIN
 - SPO (SERVICE PARTS OPERATIONS)

GENERAL MOTORS PONTIAC, MICHIGAN PONTIAC NORTH CAMPUS CMP	
SITE OPERATIONAL AREAS AND OFFSITE AREAS	
	FIGURE 1-3







SITE LOCATION



- LEGEND:
- GROUNDWATER MONITORING WELL LOCATION
 - CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA
 - APPROXIMATE AOI AREA
 - F-7 = POWERHOUSE BASEMENT SUMPS

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

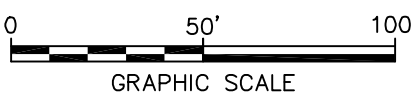
- RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
- IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
- RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
- IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
- RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- RVSC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
- IVSC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

- RDW – RESIDENTIAL DRINKING WATER CRITERIA
- IDW – INDUSTRIAL DRINKING WATER CRITERIA
- RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

- ALL SAMPLE LOCATIONS ARE APPROXIMATE.
- ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
- DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
- ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
- J – ESTIMATED CONCENTRATION.
- B – LABORATORY BLANK CONTAMINATION.
- NS – NOT SAMPLED.



GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS CMP

AOI F-7 - GROUNDWATER



FIGURE

4-5

MWF-01	10/21/01	1/9/02	8/21/03
1,1,1-Trichloroethane	ND	0.0063	NS
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U	NS
1,1-Dichloroethane	0.006	0.007	NS
1,2-Dichloroethane	0.002	0.001	0.004
Acetone	ND (0.0002) U	ND (0.001) U	NS
Benzene	ND (0.0005) U	ND (0.001) U	NS
Di-n-Propylamine	ND (0.0002) U	0.0004	NS
Ethylbenzene	ND (0.0002) U	ND (0.001) U	NS
Methylene chloride	ND (0.0004) U	ND (0.001) U	NS
Toluene	0.002	0.0008	0.0006
Trichloroethane	ND (0.0014) U	ND (0.001) U	NS
Methyl chloride	ND (0.0005) U	ND (0.001) U	NS
PCBs	ND	ND	ND
2,4-Dimethylphenol	ND (0.0008) U	ND (0.001) U	NS
Benzaldehyde	ND (0.0013) U	ND (0.001) U	NS
Butyl benzylphthalate	ND (0.0002) U	ND (0.001) U	NS
Di-n-Propylamine	ND (0.0005) U	ND (0.001) U	NS
Di-n-Propylamine (Crest)	ND (0.0002) U	ND (0.001) U	NS
Methylphenol (Crest)	ND (0.0002) U	ND (0.001) U	NS
PCBs	ND	ND	ND
Total PCBs	ND (0.00008) U	ND (0.0004) U	NS
Antimony	ND (0.0002) U	ND (0.001) U	NS
Antimony	0.005	0.004	NS
Barium	ND (0.0004) U	ND (0.001) U	NS
Beryllium	ND (0.00008) U	ND (0.001) U	NS
Cadmium	ND (0.0002) U	ND (0.001) U	NS
Chromium Total	ND (0.0002) U	ND (0.001) U	NS
Cobalt	ND (0.0002) U	ND (0.001) U	NS
Copper	ND (0.0002) U	ND (0.001) U	NS
Copper (total)	ND	ND	NS
Iron	ND	ND	NS
Lead	ND (0.0002) U	ND (0.001) U	NS
Manganese	0.004	0.004	NS
Nickel	ND (0.0002) U	ND (0.001) U	NS
Selenium	ND (0.0002) U	ND (0.001) U	NS
Thallium	ND (0.0002) U	ND (0.001) U	NS
Vanadium	ND (0.0002) U	ND (0.001) U	NS
Vanadium (Crest)	ND (0.0002) U	ND (0.001) U	NS
PCBs	ND	ND	ND
2,3,7,8-TCDF Equivalent	NS	NS	NS

PLANT 17 – FIERO

F-7

F-15

MWF-02	10/21/01	1/9/02
1,1,1-Trichloroethane	ND (0.0003) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U
1,1-Dichloroethane	0.007	0.004
1,2-Dichloroethane	ND (0.0002) U	ND (0.001) U
Acetone	ND (0.0005) U	ND (0.001) U
Benzene	ND (0.0005) U	ND (0.001) U
Di-n-Propylamine	ND (0.0002) U	ND (0.001) U
Ethylbenzene	ND (0.0002) U	ND (0.001) U
Methylene chloride	ND (0.0004) U	ND (0.001) U
Toluene	0.0004	0.0003
Trichloroethane	ND (0.0004) U	ND (0.001) U
Methyl chloride	ND (0.0005) U	ND (0.001) U
PCBs	ND	ND
2,4-Dimethylphenol	ND (0.0008) U	ND (0.001) U
Benzaldehyde	ND (0.0013) U	ND (0.001) U
Butyl benzylphthalate	ND (0.0002) U	ND (0.001) U
Di-n-Propylamine	ND (0.0005) U	ND (0.001) U
Di-n-Propylamine (Crest)	ND (0.0002) U	ND (0.001) U
Methylphenol (Crest)	ND (0.0002) U	ND (0.001) U
PCBs	ND	ND
Total PCBs	ND (0.00008) U	ND (0.0004) U
Antimony	ND (0.0002) U	ND (0.001) U
Antimony	0.005	0.004
Barium	ND (0.0004) U	ND (0.001) U
Beryllium	ND (0.00008) U	ND (0.001) U
Cadmium	ND (0.0002) U	ND (0.001) U
Chromium Total	ND (0.0002) U	ND (0.001) U
Cobalt	ND (0.0002) U	ND (0.001) U
Copper	ND (0.0002) U	ND (0.001) U
Copper (total)	ND	ND
Iron	ND	ND
Lead	ND (0.0002) U	ND (0.001) U
Manganese	0.004	0.004
Nickel	ND (0.0002) U	ND (0.001) U
Selenium	ND (0.0002) U	ND (0.001) U
Thallium	ND (0.0002) U	ND (0.001) U
Vanadium	ND (0.0002) U	ND (0.001) U
Vanadium (Crest)	ND (0.0002) U	ND (0.001) U
PCBs	ND	ND
2,3,7,8-TCDF Equivalent	NS	NS

