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2020 ANNUAL GROUNDWATER MONITORING REPORT

Pontiac North Campus

March 2021

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Pontiac North Campus

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CONTENTS

Acronyms and Abbreviations iv

1 Introduction 1

2 Groundwater Sampling Procedures 4

2.1 Water Level Measurements 4

2.2 Groundwater Sample Collection 4

3 Groundwater Sampling Results 5

3.1 Groundwater Elevation 5

3.2 Analytical Results 5

3.3 Analytical Data Quality Assurance / Quality Control 8

4 Trends and Conclusions 9

4.1 Evaluation of Trends 9

4.2 Conclusions and Recommendations 10

5 References 11

FIGURES

Figure 1 Site Location

Figure 2 Groundwater Contour Map, October 2020

Figure 3A Groundwater Analytical Summary, VOCs and pH, October 2020

Figure 3B Groundwater Analytical Summary, Inorganics and TDS, October 2020

Figure 3C Groundwater Analytical Summary, PCBs, October 2020

Figure 4 Groundwater Analytical Summary, Property Boundaries and Select Offsite Wells, October 2020

TABLES

Table 1 Groundwater Elevation Summary, October 2020

Table 2 Summary of Groundwater Analytical Results - Non-Fiero

Table 3 Summary of Groundwater Analytical Results - Fiero

APPENDICES

A 2009 GMP Request and USEPA Approval

B 2018 GMP Request and USEPA Approval

C MWF12-01R Soil Boring and Well Construction Log

D Chemical Concentration Graphs

ACRONYMS AND ABBREVIATIONS

AOI	Area of Interest
CMS	Site Corrective Measures Study
DCE	dichloroethene
DO	dissolved oxygen
EGLE	Michigan Department of Environment, Great Lakes, and Energy
EI	Environmental Indicator
FSP	Field Sampling Plan
GLWA	Great Lakes Water Authority
GMC	General Motors Corporation
GM LLC	General Motors LLC
GMP	Groundwater Monitoring Program
GSI	Groundwater Surface Water Interface
IMWP	Interim Measures Work Plan
LNAPL	light non-aqueous phase liquid
mg/L	milligrams per liter
MLC	Motors Liquidation Company
NRDWC	non-residential drinking water criteria
NRFSSBASE	non-residential Fiero site specific vapor intrusion to indoor air criteria – basement
NRFSSSOG	non-residential Fiero site specific vapor intrusion to indoor air criteria – slab on grade
NRHBDW	non-residential health-based drinking water
NRVI	non-residential volatilization to indoor air pathway screening levels
NTU	nephelometric turbidity unit
ORP	oxidation reduction potential
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PNC	Pontiac North Campus
QAPP	Quality Assurance Project Plan
RACER	Revitalizing Auto Communities Environmental Response
RCRA	Resource Conservation and Recovery Act

RDWC	residential drinking water criteria
RFI	RCRA Field Investigation
RFSSBASE	residential Fiero site specific vapor intrusion to indoor air criteria – basement
RFSSSOG	residential Fiero site specific vapor intrusion to indoor air criteria – slab on grade
RVI	residential volatilization to indoor air pathway screening levels
SSPL	site-specific parameter list
TCE	trichloroethene
TCL	target compound list
TDS	total dissolved solids
TSS	total suspended solids
ug/L	micrograms per liter
USEPA	U.S. Environmental Protection Agency
VI	vapor intrusion
VOC	volatile organic compound

1 INTRODUCTION

On June 1, 2009, General Motors Corporation (GMC) filed for Chapter 11 protection under the U.S. bankruptcy code. On July 10, 2009 GMC was renamed Motors Liquidation Company (MLC) and on the same day some of the operating assets of GMC, including a portion of the Pontiac North Campus (PNC), were sold to a newly formed company named "General Motors Company". General Motors Company changed its name to General Motors LLC (GM LLC) on October 16, 2009. Assets not sold to GM LLC remained the property of MLC, in its capacity as debtor-in-possession in the bankruptcy case. Effective March 31, 2011, the Revitalizing Auto Communities Environmental Response Trust (RACER) was created through a Bankruptcy Settlement Agreement among MLC, the federal government, 14 states, and the St. Regis Mohawk Tribe. Ownership of MLC properties were transferred to RACER and RACER became responsible for completing remediation of those properties, including a portion of PNC (hereafter referred to as the Site) (**Figure 1**).

The Site Groundwater Monitoring Program (GMP) was presented as part of the Environmental Indicators (EI) CA 750 determination (ENVIRON 2002). Groundwater samples have been collected from select monitoring wells on either a semi-annual or annual basis since 2002 as part of the GMP to demonstrate that constituent concentrations in groundwater are stable and that migration of contaminated groundwater is not occurring. Since 2002, the GMP has been modified two times based on the results of ongoing Site investigation and monitoring activities. On October 30, 2009, MLC and GM LLC jointly submitted a request to the U.S. Environmental Protection Agency (USEPA) to modify the Site GMP, which USEPA approved on November 23, 2009 via email (**Appendix A**). On August 27, 2018, RACER submitted a request to USEPA to modify the Site GMP, which USEPA approved on September 17, 2018 via email (**Appendix B**).

A water well restriction ordinance prohibiting the installation and use of groundwater wells was adopted by the City of Pontiac on August 16, 2013 that includes the Site and certain areas downgradient of the Site. Existing and planned deed restrictions do restrict, and will further restrict use of onsite groundwater for any purpose. PNC property parcels sold by RACER include restrictions on groundwater use and prohibit the installation of groundwater wells.

Beginning with the annual event in 2009, the original sub-set of eight monitoring wells sampled located on and immediately downgradient from current or former RACER-owned property and are listed below.

Shallow Saturated Zone	
MW-40-99	MWM16-21 (MWM16-30 added as replacement - 2017)
MWF1R	MWM16-43 (MWM16-37 added as replacement - 2016)
MWF7-01	MWW1-04
MWF12-01	MWW10-03

During the 2013 annual groundwater sampling event, it was discovered that monitoring well MWM16-43 was damaged and no longer suitable for sampling. Monitoring well MWM16-43 is located south of Columbia Ave near the former Plant 15. Monitoring well MWM16-37 located just north and east of

MWM16-43, was proposed as an alternative sampling location as the screens for both wells are set at the same depth and monitor the same groundwater unit.

During the 2017 well inventory event, monitoring well MWM16-21 could not be located. Monitoring well MWM16-21 was located north of Columbia Ave near the former Plant 25. The well appears to have been paved/concreted over during parking lot resurfacing completed by the current property owner. The closest undamaged well to MWM16-21 and with similar screen depth was MWM16-30 located southeast of MWM16-21. This well, in addition to eight other wells listed in the table below, have similar screened intervals and were added to the sampling list to better characterize groundwater quality in the former Fiero area and to delineate previous vinyl chloride exceedances upgradient and adjacent to MWM16-37.

Additional Shallow Saturated Zone Wells	
MWF8-01	MWF12-02
MWM31-02	MWM32-01
MWM16-29	MWM16-02
MWM16-31	MWM16-36

The objective of the 2018 GMP modification was to incorporate recommended analysis and/or gauging of certain monitoring wells based on the results of continued investigation activities and recommendations pertaining to proposed corrective measures being implemented at the Site. Modifications were also based on the results of groundwater investigation activities for 1,4-dioxane and volatile organic compounds (VOCs) at the southwestern Fiero boundary.

The following modifications were proposed and accepted:

2018 GMP Modification	Basis
Add MW-02-17 in lieu of MWF1R; add MW-16-23 and MW-16-25, and newly installed MW-05-18	Monitor trends in VOCs and 1,4-dioxane concentrations
Add monitoring wells MWF7-02, MWF16-06, MW-01-17, TW-MD-01 and TW-MD-07 for gauging and sampling for VOCs/1,4-dioxane. Add 1,4-dioxane to the list of analytical parameters for MWF12-01, MWW01-SEN03, MWW1-04, MW40-99, and TW-10-02, and add VOCs to the list of analytical parameters for MWOS-01.	
Add gauging of SB-08-14, SB-25-14, SB-43-14 and maintain gauging of MWW8-65 and TWW8-01.	Ongoing Light Non-Aqueous Phase Liquid (LNAPL) investigation and testing activities

2018 GMP Modification	Basis
Maintenance of gauging for TW-01-03, TW-10-01, and TW-10-02, and expansion of analysis parameters for MWW01-SEN03, MWW01-SEN04, MWW5-01, TW-09-01, MWW10-SEN02	Modifications from the Montcalm Seep Interim Measures Work Plan to incorporate baseline (2018) and future annual monitoring requirements
Addition of INJ-01-17, INJ-02-18, MW-03-17, MW-04-17, TW-MD-01, TW-MD-02, TW-MD-03, TW-MD-04, TW-MD-05, TW-MD-06, TW-MD-07, and MWW1-15 to include gauging and sampling for specified parameters.	
Remove MWF16-17, MWW8-34, MWW8-45, MWW8-48, RWW8-119, RWW8-124, RWW8-125, RWW8-130, RWW8-131, RWW8-132, TWM2-04, TWMW-05, MWM16-15 and MWM16-45 from annual gauging. Remove MWF1R, MWM16-29, and MWM16-36 from annual gauging and sampling, and remove annual analysis of VOCs and inorganics from monitoring well MWF12-01.	Based on a combination of past analytical results and the availability of data from other nearby monitoring wells and due to complications related to accessibility

At the former Fiero property at the southwest corner of Area of Interest (AOI) F-12, monitoring well MWF12-01 was accidentally destroyed during Powerhouse demolition activities which occurred during 2019. A replacement well was installed adjacent to the former MWF12-01 in July 2020 and named MWF12-01R. The boring and well construction log is included in **Appendix C**.

Based on comments from USEPA's review of the 2018 Annual Groundwater Monitoring Report, the following wells were added to the 2019-2020 gauging list:

- Former Fiero Parking Lot
    - PZF17-01, PZF17-02, PZF17-03, PZF17-04, PZF17-05

In addition, the following wells were gauged during the 2020 monitoring event to better assess groundwater flow offsite west of Fiero and southwest near the Duck Pond:

- Duck Pond
    - MWOS-05, MWOS-07, MWDP-1R, MWDP-3R, MWDP-04, MWDP-05, PZOS-02 and MWOS-08 and MWOS-09, both installed in August 2020.

In addition to gauging, the following wells were sampled for additional constituents listed below to characterize the distribution of groundwater contaminants:

- Offsite and Former Fiero Property

- MWOS-01 and MWOS-02 were analyzed for Total and Dissolved Manganese
- MWOS-03 was analyzed for Total and Dissolved Vanadium and polychlorinated biphenyls (PCBs)
- MWF12-01R was analyzed for 1,4-dioxane, which was originally listed the 2018 GMP modification for MWF12-01, and Total and Dissolved Manganese.

The following sections of this report summarize the procedures used to complete the groundwater sampling and the analytical results for the groundwater samples collected during this event.

2 GROUNDWATER SAMPLING PROCEDURES

2.1 Water Level Measurements

Groundwater and LNAPL level measurements were recorded from selected monitoring wells on October 12 through 13, 2020 in accordance with USEPA Low-Stress (or Low-Flow) Purging and Sampling Procedure (USEPA 2017). Groundwater and LNAPL levels were measured to the nearest 0.01 foot with an oil/water interface probe. Groundwater elevations were calculated using surveyed top-of-well casing elevations. Equivalent groundwater elevations were calculated for wells where LNAPL was present. A summary of water levels and groundwater elevations is presented in **Table 1**.

2.2 Groundwater Sample Collection

Groundwater samples were collected using low-flow sampling procedures on October 13 through October 16, 2020. The procedures are taken from the Low-Stress (or Low-Flow) Purging and Sampling Procedure (USEPA 2017), which is the USEPA Region V standard method for collecting low-stress/low-flow groundwater samples from monitoring wells.

During sampling, purge water was monitored for dissolved oxygen (DO), temperature, specific conductivity, turbidity, oxygen reduction potential (ORP), and pH. These water quality measurements were used to determine groundwater sample stability prior to collection of the groundwater samples.

Groundwater samples were collected and submitted to Merit Laboratories, Inc. in Lansing, MI for analysis of target compound list (TCL) volatile organic compounds (VOCs) using USEPA Method 8260C, 1,4-dioxane using USEPA Method 8260B-SIMs, PCBs using USEPA Method E608.3 and select site-specific parameter list (SSPL) metals using USEPA Methods E200.8 and E245.1. Selected groundwater samples were also analyzed for geochemical parameters including: calcium and magnesium utilizing USEPA method E200.8, alkalinity utilizing standard method SM2320B, hardness utilizing standard method SM2340C, and dissolved and suspended solids utilizing standard methods SM2540C/D.

Due to factors such as accessibility and recovery, the following deviations from the planned sampling protocol occurred during the 2020 groundwater monitoring event:

- No analyses were completed at monitoring well MWW5-01 as the monitoring well was dry.
- MWM4-06R was unable to be located for gauging purposes. Based on global positioning system (GPS) coordinates used in the field for well locating, it is believed that the well was buried underneath a debris pile at the time of the event.

- Limited groundwater recovery allowed for analysis of VOCs and inorganics at monitoring well MWW10-SEN02, but not for PCB's and geochemical parameters.

At the off-site Pontiac School Board (PSB) property, monitoring well MWPS-02 was also unable to be gauged in 2020 due to inaccessibility. While this well was listed for gauging in the 2018 GMP modification, an access agreement is not in place between PSB and RACER.

3 GROUNDWATER SAMPLING RESULTS

3.1 Groundwater Elevation

Groundwater elevations from unconfined water table zone monitoring wells (screened across the water table) were used to create a shallow groundwater potentiometric surface map (**Figure 2**). Monitoring wells included within the shallow unconfined unit are generally screened within fill material and/or glacial outwash deposits comprised primarily of sands and gravels across the Site. Apparent shallow groundwater flow across the Site and the adjacent GM LLC property is generally to the south and southwest; however, subsurface features (e.g., sewer lines, other man-made features, and re-worked native and fill material) may create localized effects (groundwater mounds or depressions). Due to the predominance of these localized effects in the vicinity of the parking lot north of the USPS building, it appears that groundwater elevations in this area are not representative of general Site hydrology and were not used to create contours on Figure 2. In general, since the Storm Sewer Bulkheading Event in 2012, the groundwater levels have increased up to 5 feet in the area downgradient of the former Plant 14 bulkhead locations on the Tatro (formerly Proastio) property nearby AOI M-2 and north of the USPS building. Groundwater elevation data will continue to be evaluated as part of the groundwater monitoring program to monitor potential changes in groundwater flow direction.

3.2 Analytical Results

Groundwater data were compared to select criteria from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Clean Up Criteria Requirements Table 1: Groundwater: Residential and Nonresidential, Part 201 Generic Cleanup Criteria and Screening Levels, December 21, 2020 (EGLE 2020c). The select criteria used to evaluate groundwater quality at the Site include residential and non-residential drinking water criteria (RDWC and NRDWC), groundwater surface water interface criteria (GSI), non-residential health-based drinking water values (NRHBDW), and residential and non-residential groundwater volatilization to indoor air inhalation criteria. In addition, based on updated vapor intrusion (VI) guidance (EGLE 2020b) water quality across the Site, with the exception the Fiero property, was also compared to residential and non-residential volatilization to indoor air pathway (RVI and NRVI) screening levels for groundwater not in contact. These screening levels are a voluntary tool used to determine site risk and to evaluate if more site-specific criteria would be appropriate. Furthermore, following the results of the 2019 Annual Groundwater Monitoring Report, development of site-specific VI criteria were requested from EGLE for comparison to monitoring wells located on the former Fiero portion of the Site (EGLE 2020a). These criteria include residential and nonresidential Fiero site-specific volatilization to indoor air criteria for basement (RFSSBASE and NRFSSBASE) and slab-on-grade (RFSSSOG and NRFSSSOG) scenarios.

A summary of the October 2020 annual sampling groundwater analytical data at the Site with the exception of the former Fiero portion of the Site is included in **Table 2,** while groundwater analytical data for the former Fiero portion of the Site is included in **Table 3** given that site-specific criteria apply. Analytical data maps for the entire Site are presented on **Figure 3A** (VOCs and pH), **Figure 3B** (inorganics and total dissolved solids (TDS)), and **Figure 3C** (PCBs). Groundwater analytical data near the property boundaries of the Site are summarized on **Figure 4**. Note that analytical parameters which are listed on Figures 3A, 3B, 3C, and 4 include only those parameters where a regulatory exceedance of promulgated criteria for RDWC, NRDWC, GSI, NRHBDW, or VI-related criteria or screening levels exists anytime in the timeframe from 2016-2020, No groundwater analytical results have exceeded EGLE Part 201 generic residential and non-residential groundwater volatilization to indoor air inhalation criteria (EGLE 2020c) nor non-residential Fiero site-specific basement/slab-on-grade criteria. Therefore, no such criteria or exceedances are referenced on Figures 3A, 3B, 3C, or 4.

Of note, the RDWC and NRDWC for pH are aesthetic drinking water values. Several inorganics including copper, iron, and manganese have RDWC and NRDWC which represent aesthetic drinking water values as well. The NRHBDW values associated with these inorganic constituents will be utilized for comparison as that value is more applicable.

A complete list of test results in 2020 for other target parameters which were tested and either not detected or detected at concentrations below specified criteria are listed in Tables 2 and 3. To the extent that exceedances are realized in future years or promulgated criteria change rendering additional exceedances, additional parameters will be added to the analytical databox figure in future reports as relevant.

Criteria used for comparison include those designed to be protective of potential exposures via drinking water use and groundwater interfacing with surface water and are conservative for evaluating the groundwater data from the Site. The criteria are being used to provide a point of reference for detected constituents. The Site and the immediate vicinity obtain potable water from the Great Lakes Water Authority (GLWA) and do not rely on local groundwater as a drinking water supply. In addition, a groundwater restriction ordinance prohibiting the use of groundwater wells was adopted by the City of Pontiac on August 16, 2013 for the Site and certain areas downgradient of the Site. Therefore, groundwater with constituent concentrations higher than these generic screening criteria does not indicate that the groundwater poses unacceptable risks given the existing or planned groundwater use and other restrictions.

Given the existing or planned groundwater use, residential drinking water use is not a current or reasonably expected future use of groundwater at the Site or in the adjacent groundwater ordinance area. However, groundwater at the Site does have the potential to migrate off site based on the interpreted southwesterly groundwater flow direction. Due to the potential for off-site migration, RDWC, NRDWC, and GSI are used for screening data near the downgradient property boundary. In addition, deed restrictions have been or will be recorded for each Site parcel which prohibit building or occupying new structures without first assessing the volatilization to indoor air pathway or installing vapor mitigation measures. To evaluate exposure risks associated with the potential for groundwater to migrate offsite, applicable VI criteria are used for screening data near the downgradient property boundary as well.

The October 2020 groundwater data, presented in Tables 2 and 3 and on Figures 3A, 3B, 3C, and 4, have been compared to RDWC, NRDWC, GSI, NRHBDW, and applicable VI criteria/screening levels as a frame of reference for the evaluation of groundwater quality near the downgradient property boundary. Although there are groundwater concentrations throughout the Site which exceed applicable criteria, a groundwater ordinance, and planned and existing groundwater use restrictions will prevent unacceptable risk due to these exceedances. To that objective, the results and conclusions of the 2020 groundwater monitoring event described below are consistent with previous year's events and aligned with implemented and proposed interim/corrective measures at the Site. Results which may require further discussion, consideration, and/or evaluation, such as select criteria exceedances where controls are not in place near property boundaries, are the primary focus below.

The following is a summary of the October 2020 groundwater sample results focused on property boundary exceedances:

VOCs

- The concentrations of trichloroethene (TCE) detected in monitoring well MWF16-23 (21 ug/L) located along the southwest corner of the Fiero property boundary exceeds the RDWC of 5 ug/L, NRDWC of 5 ug/L, RFSSSOG criteria of 15 ug/L, and RFSSBASE criteria of 8.1 ug/L.
- The concentrations of 1,4 Dioxane detected in monitoring wells MW-01-17 (8 ug/L), MW-40-99 (9 ug/L), MW-02-17 (30 mg/L), and MWF12-01R (107 ug/L) all exceed RDWC of 7.2 ug/L.
- The concentration of Vinyl Chloride detected in monitoring well MWM16-31 (2 ug/L) exceeds RDWC and NRDWC of 2 ug/L.

PCBs

- Monitoring well MWW1-04 located in the southwest portion of the USPS property contained a PCB concentration (0.2 ug/L) which is equal to GSI criteria. Monitoring well TW-MD-06 located in the south portion of the USPS property contained a PCB concentration (0.6 ug/L) which exceeded RDWC, NRDWC, and GSI.

Inorganics

- The concentration of iron at monitoring wells TW-MD-01 (8,480 ug/L), TW-MD-02 (13,200 ug/L), TW-MD-03 (8,580 ug/L), TW-MD-04 (11,800 ug/L), TW-MD-05 (9,240 ug/L), TW-MD-06 (8,200 ug/L), and TW-MD-07 (24,300 ug/L) exceeded the NRHBDW criteria of 5,600 mg/L.
- The concentration of vanadium at monitoring well MWW1-04 (6 ug/L) exceeded RDWC of 4.5 ug/L.
- MWW1-04, located at the southern property boundary just west of the Saginaw Street extension north of Montcalm Street, exhibited an elevated field pH reading of 11.55 which exceeded the RDWC and NRDWC of 6.5 to 8.5, and GSI criterion of 6.5 to 9.0. The pH readings from the remaining wells sampled in October 2020 were within the GSI pH range of 6.5 to 9.0.

Total Dissolved Solids

- All monitoring wells sampled for total dissolved solids (TDS) exceeded the GSI criterion of 500,000 ug/L. This includes monitoring wells TW-MD-01 through TW-MD-07 which are located along the southern property boundary. TDS concentrations ranged from 616,000 to 1,820,000 ug/L.

3.3 Analytical Data Quality Assurance / Quality Control

For lab analysis quality control, one duplicate sample was ordered for every ten groundwater samples, and 1 matrix spike/matrix spike duplicate (MS/MSD) was ordered for every twenty groundwater samples. Furthermore, one trip blank was ordered for each sample set which included analysis for VOCs. Within a day after delivery of each set of samples to Merit Laboratories, a sample set receipt was issued from the laboratory and checked for any inconsistencies with the Chain of Custody (COC) and planned reference test methods. With the exception of deviations noted in Section 2.2 due to accessibility and recovery, no issues with hold times or inconsistencies were noted for the October 2021 groundwater sampling event.

Standard Level II laboratory analytical reports were delivered for each COC in both pdf files and electronic data deliverable (EDD) packages, followed by laboratory quality control reports. EDD files were uploaded to databases from which tables were developed, and results were checked against the laboratory reports and evaluated with respect to data flags as well as consistency with past results. For the October 2021 data, there were no trip blank detections, and duplicate sample results were representative of matched samples.

A review was performed on thirteen Level II QC reports for groundwater data collected in October of 2020, and all laboratory qualifiers were evaluated. Based on the review, several VOC results are estimated (J/UJ) due to LCS/LCSD percent recoveries outside of control limits and/or LCS/LCSD relative percent difference (RPD) exceedances, MS/MSD recoveries outside of control limits, and surrogate recoveries outside of control limits. VOC results which are estimated include the following:

- Acetone (MWW01-SEN03, MWW01-SEN04, MW-03-17, MW-04-17, MW-40-99, TW-09-01, TW-10-02 and TW-MD-03)
- 1,1,2,2-Tetrachloroethane (MWW1-15, MW-05-18, MWF7-02, MWF8-01, MWF12-02, MWF16-06, MWF16-23, MWF16-25, MWM16-02, MWM16-30 and INJ-02-18)
- Carbon Disulfide (MWW01-SEN03, MWW10-SEN02, MW-40-99, MW-01-17 and TW-09-01)
- Carbon tetrachloride (TMWM16-31, MWM16-37, MWW10-SEN02, MWW1-04, TW-MD-01, TW-MD-02 and MWOS-01)
- Tetrachloroethane (MWF16-06)
- Tetrachloroethene (MWM16-31, MWM16-37, MWW10-SEN02, MWW1-04, TW-MD-01, TW-MD-02 and MWOS-01)
- 1,1,1-Trichloroethane (MWF16-06)
- 1,1,2-Trichloroethane (MWM16-31, MWM16-37, MWW10-SEN02, MWW1-04, TW-MD-01, TW-MW-02 and MWOS-01)
- 1,1-Dichloroethane (MWW01-SEN03, MW-40-99, MWF16-06 and TW-09-01)
- 1,1-Dichloroethene (MWW01-SEN03, MW-40-99 and TW-09-01)
- trans-1,2-Dichloroethene (MWW01-SEN03, MW-40-99 and TW-09-01)
- tert-Methyl butyl ether (MTBE) (MWW01-SEN03, MW-40-99 and TW-09-01)

- Methylene chloride (MWW01-SEN03, MW-40-99 and TW-09-01)
- Methyl acetate (MWW01-SEN03, MW-40-99 and TW-09-01)
- Vinyl chloride (MWM16-31 and MWM16-37)

For calcium and iron in the sample collected from injection well INJ-02-18, results are estimated (J/UJ) due to MS/MSD recoveries outside of control limits.

In summary, while the results for numerous VOCs and two metals from the October 2021 groundwater sampling event are estimated which introduces possibilities for both limited high or low bias, reported constituent concentrations did not vary from past results outside of normal variability and trending to the extent that changes identified cleanup criteria exceedances or the associated findings, conclusions or recommendations in this report. Therefore, no material issues with laboratory analysis or reporting were identified which affects usability of any of the data.

4 TRENDS AND CONCLUSIONS

4.1 Evaluation of Trends

Select key constituents detected in numerous events in property boundary wells were graphed to allow for evaluation of trends in concentration over time. These graphs are presented in **Appendix D**. Identified trends are as follows:

- The elevated pH of groundwater in MWW1-04, located at the southwest corner of the USPS property, has consistently exceeded the GSI pH range of 6.5 to 9.0 since 2007. The overall pH trend at this well has remained stable, and this characteristic appears to be isolated as pH readings from other wells (MWOS-03 and MWW1-15) near and downgradient of MWW1-04 are within the GSI criteria limits.
- PCB concentrations at MWW1-04 have fluctuated above, below, and equal to the GSI criteria over the past few annual sampling events. Due to the sporadic PCB exceedances, low water solubility and leaching potential of PCBs, moderate to high partition coefficients (preferentially partition to organic matter in soils and sediments) (USEPA 2021), and distance to the nearest down-gradient surface water body, PCBs are very unlikely to migrate to Harris Lake. However, off-site monitoring well MWOS-03, located north of Harris Lake, was analyzed for PCBs to confirm on-site impacts do not pose a GSI risk to Harris Lake. Results do not indicate PCB detections at down-gradient off-site well MWOS-03.
- Vinyl chloride concentrations at MWM16-37, located on-site south of Columbia Avenue, have decreased since 2016. The most recent concentration from the 2020 sampling event does not exceed criteria for any potential exposure pathways.
- TCE concentrations at MWF16-23, located along the southwest corner of the Fiero property boundary, have slightly increased since 2018. Concentrations exceed RFSSVIACSOG and RFSSVIACBASE; additional focused investigation activities are ongoing to further evaluate potential risk to off-site receptors.

- As depicted in Figure 4, multiple wells along the USPS southern property boundary that were sampled under the GMP for the first time in 2018, exceed GSI criterion for TDS. While certain results fluctuated from 2018 to 2019, the data set remains limited to evaluate trends. TDS was added to the groundwater monitoring program in 2018 used only as an indicator of radius of influence for the Montcalm Seep control system.

4.2 Conclusions and Recommendations

Conclusions of the 2020 groundwater monitoring event are summarized below. As described in Section 3.2, based on updated VI guidance, water quality across the Site, with the exception the Fiero property, was also compared to RVI and NRVI screening levels for groundwater not in contact. Site-specific VI criteria developed in 2020 were also used for comparison to results from monitoring wells located on the Fiero portion of the property. Consistent with the 2019 Annual Groundwater Monitoring Report, NRHBDW values were used for comparison for several inorganics including copper, iron, and manganese as these constituents had RDWC and NRDWC which represent aesthetic drinking water values. The NRHBDW values associated with these inorganic constituents were utilized for comparison as these health-based values are more applicable than the aesthetic values.

Although there were data fluctuations and certain criteria comparisons were added or changed in 2020, referenced exceedances did not change to the extent that trigger reconsideration or changes to the implemented or proposed interim/corrective measures at the Site:

- The pH of groundwater at MWW1-04 has continued to exceed the GSI pH range of 6.5 to 9.0 since 2007. A Notice of Migration was submitted to MDEQ and the City of Pontiac in February 2006 for the potential migration of groundwater exhibiting high pH offsite. However, no high pH levels have been detected downgradient of MWW1-04. This includes pH data from MWW1-06 from 2003-2008 (Appendix D) and from MWOS-03 in 2016 and 2020. All pH results from these downgradient locations fell within the 6.5 to 9.0 range, indicating this characteristic is localized. The uppermost portion of the well at MWW1-04 is screened across brick and gravel fill material which may be the cause of the elevated pH at this location.

As previously indicated, the Site and the immediate vicinity obtain potable water from the Great Lakes Water Authority (GLWA) and do not rely on local groundwater as a drinking water supply. In addition, a groundwater restriction ordinance prohibiting the use of groundwater wells was adopted by the City of Pontiac on August 16, 2013 for the Site and certain areas downgradient of the Site. Therefore, groundwater with constituent concentrations higher than the generic drinking water screening criteria does not indicate that the groundwater poses unacceptable risks given the existing or planned groundwater use restrictions.

Although a number of groundwater samples within the Site contain concentrations of VOCs which exceed applicable VI criteria, downgradient wells within the property or near the property boundary do not exceed those criteria. Only one well (MWF16-23) located along the west Fiero property boundary, has a TCE concentration that exceeds the Fiero site-specific VI criteria.

Following the 2019 Annual Groundwater Monitoring Report recommendations of site-specific VI criteria development for the Fiero portion of the property, four monitoring wells (were installed to delineate

potential off-site migration of TCE near MWF16-23. Investigation activities are ongoing in the vicinity of MWF-16-23 to further assess the vapor intrusion pathway and risk to off-site receptors.

With the exception of TDS, other GSI exceedances in on-site wells are delineated by downgradient on-site and/or off-site wells which do not contain constituents that exceed GSI. TDS exceeds GSI criteria along the southern property boundary north of Montcalm Street. The Montcalm seep control system will mitigate the potential for groundwater daylighting to the ground surface and eventually entering the City of Pontiac storm sewer system.

Contingent on the results of implementing the recommendations below, groundwater data and trends continue to support USEPA's 2004 CA750 determination that migration of contaminated groundwater is under control for the Pontiac North Facility and the 2017 CA750 determination that migration of contaminated groundwater is under control for the former Pontiac Fiero Assembly Facility.

Based on the results of continued groundwater monitoring and current regulations and guidelines, the following recommendations are suggested:

- Continue the implementation of focused investigation activities to further assess the vapor intrusion pathway and risk to off-site receptors to the monitor VOC concentrations in groundwater in wells near the Fiero property boundary.

No changes are recommended to the groundwater monitoring program at this time. However, the program will be re-evaluated as pending investigation activities into potential exposure pathways are completed and as the final decision process progresses. Any recommended changes will be proposed and reviewed with USEPA prior to implementation.

5 REFERENCES

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ENVIRON International Corporation (ENVIRON). 2002. Resource Conservation and Recovery Act Environmental Indicators Report, General Motors Corporation, Pontiac North Campus Facility, Pontiac, Michigan. July, 2002.

Michigan Department of Environment, Great Lakes, and Energy (EGLE) 2020a. Former Fiero Assembly Site-Specific Criteria Evaluation. April 21.

EGLE. 2020b. Guidance Document for the Vapor Intrusion Pathway. Appendix D – Volatilization to Indoor Air Pathway (VIAP) Screening Levels. September 4, 2020.

EGLE. 2020c. Clean Up Criteria Requirements Table 1: Groundwater: Residential and Nonresidential, Part 201 Generic Cleanup Criteria and Screening Levels, December 21, 2020.

U.S. Environmental Protection Agency (USEPA; Region I). 1996. Low-Stress (or Low-Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells – Revision 4. July 30, 1996; Revised September 19, 2017.

USEPA. 2021. Exposure Assessment Tools by Chemical Classes - Other Organics. Dioxins, Furans, and PCBs. https://www.epa.gov/expobox/exposure-assessment-tools-chemical-classes-other-organics

FIGURES

Service Layer Credits: Esri, USDA Farm Service Agency

SPO PARKING

FORMER BUILDING 25

SPO

FORMER BUILDING 15

FORMER PLANT 12

BUILDING 14

FORMER FIERO PARKING LOT

FORMER FIERO PLANT 17

POWER HOUSE

GM WWTP

FORMER BUILDING 14S (PLANTS 5 AND 23)

GM POWERTRAIN

USPS REGIONAL DISTRIBUTION CENTER (LEASED PROPERTY)

HARRIS LAKE

STORMWATER DETENTION FACILITY

OAKLAND PARK

PERRY PARK

LEGEND

- USPS DISTRIBUTION CENTER PROPERTY BOUNDARY
- PROPERTY SOLD BY RACER
- GENERAL MOTORS, LLC (GM)
- CURRENT OR FORMER RACER PROPERTY

SPO – SERVICE PARTS OPERATION

USPS – UNITED STATES POSTAL SERVICE

WWTP – WASTEWATER TREATMENT PLANT

NOTE: ALL BOUNDARIES ARE APPROXIMATE

0 300 600

SCALE IN FEET

RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

SITE LAYOUT MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: NOVI, MI DIV: ENV DB: TRY PIC: PM: B. SANDERS TM: TR: PROJECT NUMBER: 30006882
COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet
D:\GIS\Project Files\MotorsLiquidationCompany\PontiacNorthCampus\Documents\Former_Fiero_Property\PropertyLayout_202009.mxd PLOTTED: 1/8/2021 2:55:35 PM BY: TYarbrough

CITY:SYRACUSE DIV/GROUP:IMDV-21 DB:G.STOWELL PM: B.SAUNDERS LYR:ON=*;OFF=*REF* 30006882
C:\Users\kdavis\BIM 360\Arcadis\ANA - RACER TRUST\Project Files\RACER Pontiac North Campus\2021\01-DWG\GW-CONT-2.dwg LAYOUT: 2 SAVED: 1/15/2021 11:52 AM ACADVER: 23.1S (LMS TECH) PAGESETUP: C-PD2B-PDF-GMS PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/19/2021 9:32 AM
BY: DAVIS, KATHI

XREFS:
X-PNC-DP
X-BASE-21

IMAGES:
X-ARIAL-2.jpg

LEGEND:

- GROUNDWATER MONITORING WELL LOCATION
- (939.47) GROUNDWATER ELEVATION
- * WELL NOT APPROPRIATE FOR GROUNDWATER CONTOURING DUE TO SCREEN DEPTH AND/OR NOT REPRESENTATIVE OF SITE HYDROLOGY
- SUMP
- 955.00 GROUNDWATER CONTOUR (CONTOUR INTERVAL 5.0 FEET) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- NS NOT SURVEYED
- CNL COULD NOT LOCATE
- NA NOT AVAILABLE; WELL ONLY CONTAINED LNAPL AND A DEPTH TO WATER MEASUREMENT WAS NOT AVAILABLE
- TOE DRAIN

NOTES

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER ELEVATIONS CALCULATED FROM WATER LEVELS COLLECTED ON OCTOBER 12 – 13, 2020.
3. ALL ELEVATIONS ARE REFERENCED TO A MEAN SEA LEVEL DATUM AND ARE IN UNITS OF FEET ABOVE MEAN SEA LEVEL.
4. WELLS WITH NO GROUNDWATER ELEVATION AND LABEL WERE NOT INCLUDED IN THE ANNUAL SAMPLING AND GAUGING.
5. THE EQUIVALENT GROUNDWATER ELEVATION IS CALCULATED WHERE LNAPL IS PRESENT USING THE LNAPL SURFACE ELEVATION, THE THICKNESS OF LNAPL AND THE APPROXIMATE SPECIFIC DENSITY OF THE LNAPL (0.88).

0 300' 600'
GRAPHIC SCALE

RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

GROUNDWATER CONTOUR MAP OCTOBER - 2020

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

MWM16-37					
Date	9/20/2016	10/23/2017	10/2/2018	10/10/2019	10/16/2020
Field Parameters					
pH	7.06	7.06	7.12	7.17	7.29 [7.29]
VOCs					
Carbon Tetrachloride	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Chloroform	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Tetrachloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1,1-Trichloroethane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Trichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Vinyl chloride	*9 (RDW, NRDW, RVI)*	*4 (RDW, NRDW, RVI)*	*3 (RDW, NRDW, RVI)*	2 (RDW, NRDW)	1 [1]

MWM16-30			
Date	10/23/2017	10/10/2019	10/15/2020
Field Parameters			
pH	6.44 (RDW, NRDW, GSI)	6.86	6.83
VOCs			
Carbon Tetrachloride	< 1 U	< 1 U	< 1 U
Chloroform	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U
Tetrachloroethene	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	10	6	6
Trichloroethene	*16 (RDW, NRDW, RVI, NRVI)*	*17 (RDW, NRDW, RVI, NRVI)*	*14 (RDW, NRDW, RVI, NRVI)*
Vinyl chloride	< 1 U	< 1 U	< 1 U

MWM16-31				
Date	10/23/2017	10/2/2018	10/10/2019	10/16/2020
Field Parameters				
pH	7.01	7.04	7.27	7.28
VOCs				
Carbon Tetrachloride	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
Chloroform	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
Tetrachloroethene	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
1,1,1-Trichloroethane	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
Trichloroethene	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
Vinyl chloride	*3 (RDW, NRDW, RVI)*	< 1 U	2 [2] (RDW, NRDW)	2 (RDW, NRDW)

MWF8-01					
Date	9/21/2016	10/26/2017	10/4/2018	10/7/2019	10/15/2020
Field Parameters					
pH	6.99	7.08	5.56 (RDW, NRDW, GSI)	6.9	6.83
VOCs					
Carbon tetrachloride	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloroform	< 1 U	1	2	< 1 U	2
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl Chloride	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U

MWF16-06			
Date	10/4/2018	10/7/2019	10/15/2020
Field Parameters			
pH	6.44 (RDW, NRDW, GSI)	7.65	7.41
VOCs			
Carbon tetrachloride	*14 Y (RDW, NRDW, RFSSSOG, RFSSBASE)*	*13 (RDW, NRDW, RFSSBASE)*	*13 r (RDW, NRDW, RFSSBASE)*
Chloroform	*38 Y*	*34*	*34 r*
1,1-Dichloroethane	47 Y	67	*212 E*
1,1-Dichloroethene	9 Y (RDW, NRDW)	12 (RDW, NRDW)	23 r (RDW, NRDW)
cis-1,2-Dichloroethene	12 Y	17	*82 r (RDW, NRDW, RFSSBASE)*
1,4-Dioxane	15 (RDW)	29 (RDW)	20 (RDW)
Tetrachloroethene	70 Y (RDW, NRDW, GSI)	76 (RDW, NRDW, GSI)	127 r (RDW, NRDW, GSI)
1,1,1-Trichloroethane	163 Y (GSI)	164 (GSI)	201 E (RDW, NRDW, GSI)
Trichloroethene	*12 Y (RDW, NRDW, RFSSBASE)*	*12 (RDW, NRDW, RFSSBASE)*	*24 r (RDW, NRDW, RFSSSOG, RFSSBASE)*
Vinyl Chloride	< 5 UY	< 1 U	< 1 Ur

MWF16-23			
Date	10/1/2018	10/7/2019	10/15/2020
Field Parameters			
pH	6.91	7.04	6.96
VOCs			
Carbon tetrachloride	< 1 U	< 1 U	< 1 U
Chloroform	< 1 U	< 1 U	1
1,1-Dichloroethane	9	6	6
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	19	21	10
1,4-Dioxane	4	< 1 U	1
Tetrachloroethene	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	9	9	10
Trichloroethene	*15 (RDW, NRDW, RFSSSOG, RFSSBASE)*	*20 (RDW, NRDW, RFSSSOG, RFSSBASE)*	*21 (RDW, NRDW, RFSSSOG, RFSSBASE)*
Vinyl Chloride	< 1 U	< 1 U	< 1 U

MWF7-02			
Date	10/4/2018	10/7/2019	10/13/2020
Field Parameters			
pH	5.91 (RDW, NRDW, GSI)	7.12	7.01
VOCs			
Carbon tetrachloride	< 1 U [< 1 U]	< 1 U	< 1 U
Chloroform	1 [< 1 U]	< 1 U	1
1,1-Dichloroethane	48 [48]	38	24
1,1-Dichloroethene	11 [11] (RDW, NRDW)	10 (RDW, NRDW)	15 (RDW, NRDW)
cis-1,2-Dichloroethene	3 [3]	3	3
1,4-Dioxane	500 Y [500 Y] (RDW, NRDW, GSI)	300 Y (RDW, GSI)	530 Y (RDW, NRDW, GSI)
Tetrachloroethene	34 [33] (RDW, NRDW)	54 (RDW, NRDW)	70 (RDW, NRDW, GSI)
1,1,1-Trichloroethane	73 [73]	60	77
Trichloroethene	3 [3]	3	3
Vinyl Chloride	< 1 U [< 1 U]	< 1 U	< 1 U

MW-02-17			
Date	10/2/2018	10/7/2019	10/13/2020
Field Parameters			
pH	6.73	7.09	7.19
VOCs			
Carbon tetrachloride	< 1 U	< 1 U	< 1 U
Chloroform	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	2	2	< 1 U
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U
1,4-Dioxane	21 (RDW)	29 (RDW)	30 (RDW)
Tetrachloroethene	6 (RDW, NRDW)	10 (RDW, NRDW)	3
1,1,1-Trichloroethane	6	7	6
Trichloroethene	2	4	2
Vinyl Chloride	< 1 U	< 1 U	< 1 U

TW-10-02			
Date	10/1/2018	10/9/2019	10/13/2020
Field Parameters			
pH	6.48 (RDW, NRDW, GSI)	6.6	6.72
VOCs			
1,4-Dioxane	45 (RDW)	90 [120] (RDW)	30 (RDW)

MWW10-SEN02			
Date	10/5/2018	10/8/2019	10/16/2020
Field Parameters			
pH	6.75	6.96	6.99
VOCs			
Carbon Tetrachloride	< 1 U	< 1 U	< 1 U
Chloroform	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U
1,4-Dioxane	NA	9 (RDW)	NA
Tetrachloroethene	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	< 1 U	< 1 U	< 1 U
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U

MWW01-SEN03			
Date	10/5/2018	10/10/2019	10/15/2020
Field Parameters			
pH	7.57	7.08	7.22
VOCs			
Carbon Tetrachloride	< 1 U	< 1 U	< 1 U
Chloroform	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U
1,4-Dioxane	26 (RDW)	< 1 U	12 (RDW)
Tetrachloroethene	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	< 1 U	< 1 U	< 1 U
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U

MWF12-01/MWF12-01R				
Date	9/21/2016	10/24/2017	10/3/2018	10/13/2020
Field Parameters				
pH	7.19	7.04	6.92	7.03
VOCs				
Carbon tetrachloride	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA
Chloroform	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA
1,1-Dichloroethane	3 [4]	2 [2]	NA	NA
1,1-Dichloroethene	< 1 U [1]	< 1 U [< 1 U]	NA	NA
cis-1,2-Dichloroethene	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA
1,4-Dioxane	NA	NA	5	107 (RDW)
Tetrachloroethene	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA
1,1,1-Trichloroethane	16 [17]	8 [10]	NA	NA
Trichloroethene	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA
Vinyl Chloride	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA

MWW1-04					
Date	9/21/2016	10/25/2017	10/4/2018	10/7/2019	10/16/2020
Field Parameters					
pH	11.69 (RDW, NRDW, GSI)	11.15 (RDW, NRDW, GSI)	11.46 (RDW, NRDW, GSI)	11.31 (RDW, NRDW, GSI)	11.55 (RDW, NRDW, GSI)
VOCs					
Carbon Tetrachloride	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
Chloroform	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
1,1-Dichloroethene	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
1,1-Dichloroethene	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
cis-1,2-Dichloroethene	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
1,4-Dioxane	NA	NA	< 1 U [< 1 U]	< 1 U	< 1 U
Tetrachloroethene	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
1,1,1-Trichloroethane	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
Trichloroethene	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
Vinyl chloride	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U

MW-01-17			
Date	10/3/2018	10/8/2019	10/15/2020
Field Parameters			
pH	7.35	7.34	8.27
VOCs			
Carbon Tetrachloride	< 1 U	< 1 U	< 1 U
Chloroform	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U
1,4-Dioxane	< 1 U	< 1 U	8 (RDW)
Tetrachloroethene	< 1 U	< 1 U	< 1 U
1,1,1-Trichloroethane	< 1 U	< 1 U	< 1 U
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U

MW-40-99						
Date	9/20/2016	10/26/2017	10/3/2018	10/9/2019	10/15/2020	
Field Parameters						
pH	7	7.15	7.12	7.02	7.38 [7.38]	
VOCs						
Carbon Tetrachloride	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
Chloroform	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
1,1-Dichloroethane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
1,1-Dichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
cis-1,2-Dichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
1,4-Dioxane	NA	NA	< 1 U	11 (RDW)	6 [9] (RDW)	
Tetrachloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
1,1,1-Trichloroethane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
Trichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	
Vinyl chloride	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]	

LEGEND:

- APPROXIMATE GENERAL MOTORS (GM) COMPANY, LLC PROPERTY BOUNDARY
- APPROXIMATE RACER TRUST (RACER) PROPERTY BOUNDARY
- MWM1 — GROUNDWATER MONITORING WELL LOCATION
- FENCED AREA
- M-5 — APPROXIMATE AOI (AREA OF INTEREST) AREA AND IDENTIFICATION NUMBER
- OFF-SITE GROUNDWATER ORDINANCE AREA

MICHIGAN PART 201 GENERIC CRITERIA AND FIERO SITE SPECIFIC CRITERIA FOR GROUNDWATER

- RDW – RESIDENTIAL DRINKING WATER CRITERIA
- NRDW – NON-RESIDENTIAL DRINKING WATER CRITERIA
- GSI – GROUNDWATER SURFACE WATER INTERFACE CRITERIA
- RVI – RESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS
- NRVI – NONRESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS
- RFSSBASE – RESIDENTIAL FIERO SSVIAC BASEMENT
- RFSSSOG – RESIDENTIAL FIERO SSVIAC SLAB ON GRADE

CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL DRINKING WATER CRITERIA

CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO NON-RESIDENTIAL DRINKING WATER CRITERIA

CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO GROUNDWATER SURFACE WATER INTERFACE CRITERIA

UNDERLINED VALUE = CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS

RED VALUE = CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO NONRESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS

(ITALIC) CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL FIERO SSVIAC BASEMENT AND/OR RESIDENTIAL FIERO SSVIAC SLAB ON GRADE CRITERIA

NO EXCEEDANCES OF APPLICABLE CRITERIA FROM SAMPLING EVENTS BETWEEN 2016-2020

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. <0.25 – CONSTITUENT NOT DETECTED
5. NA – NOT ANALYZED
6. VOC – VOLATILE ORGANIC COMPOUND
7. Y – ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATIONS
8. X – ELEVATED REPORTING LIMIT DUE TO MATRIX INTERFERENCE
9. U – COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE r COMPOUND QUANTITATION LIMIT
10. r – ANALYTE REPORTED FROM BEST RESULTS FROM MULTIPLE RUNS
11. ANALYTICAL DATA DATING BACK TO SEPTEMBER 2016 PRESENTED ON THIS FIGURE. ALL HISTORICAL DATA PRESENTED IN ATTACHMENT 3.
12. MWW5-01 WAS DRY AND WAS NOT SAMPLED IN 2020.
13. NOTE THAT ANALYTICAL PARAMETERS WHICH ARE LISTED ON THE ANALYTICAL DATABOX FIGURE INCLUDE ONLY THOSE PARAMETERS WHERE A REGULATORY EXCEEDANCE OF PROMULGATED CRITERIA FOR RDW, NRDW, GSI, RVI, NVRI, RFSSBASE, AND/OR RFSSSOG, EXISTS ANYTIME FROM THE TIMEFRAME FROM 2016-2020.
14. pH RDW AND NRDW CRITERIA REPRESENT AESTHETIC DRINKING WATER VALUES AS REQUIRED BY SECTION 20120A(5) OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED (NREPA).
15. DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) DEVELOPED SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA (SSVIAC) FOR THE FORMER FIERO ASSEMBLY, APRIL 21, 2020.
16. OTHER CRITERIA LISTED ARE FROM THE DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) CLEAN UP CRITERIA REQUIREMENTS TABLE 1: GROUNDWATER: RESIDENTIAL AND NONRESIDENTIAL, PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS, DECEMBER 21, 2020.

	Units	Residential Drinking Water Criteria	Non-Residential Drinking Water Criteria	Groundwater Surface Water Interface	Residential Volatilization to Indoor Air Pathway Screening Levels	Nonresidential Volatilization to Indoor Air Pathway Screening Levels	Res Fiero SSVIAC SOG*	Res Fiero SSVIAC BASE*
Field Parameters								
pH	SU	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	--	--	--	--
Volatile Organics								
Carbon tetrachloride	ug/L	5	5	38	7.7	18	14	7.2
Chloroform	ug/L	80	80	350	14	32	19	10
1,1-Dichloroethane	ug/L	880	2,500	740	130	300	160	88
1,1-Dichloroethene	ug/L	7	7	130	330	480	410	220
cis-1,2-Dichloroethene	ug/L	70	70	620	95	140	110	62
1,4-Dioxane	ug/L	7.2	350	280	560,000	130,000	43,000	22,000
Tetrachloroethene	ug/L	5	5	60	130	130	250	130
1,1,1-Trichloroethane	ug/L	200	200	89	14,000	19,000	22,000	11,000
Trichloroethene	ug/L	5	5	200	10	10	15	8.1
Vinyl chloride	ug/L	2	2	13	2.1	18	2.2	1.2

NOTES:

1. * – ONLY APPLIES TO WELLS ON FORMER FIERO PROPERTY.
2. E – CRITERION IS THE AESTHETIC DRINKING WATER VALUE, AS REQUIRED BY SECTION 20120A(5) OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED (NREPA).

0 500' 1000'
GRAPHIC SCALE

RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

GROUNDWATER ANALYTICAL SUMMARY VOCs AND pH OCTOBER 2020

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3A

DIV/GROUP: IMDV DB: G.STOWELL PM:B.SAUNDERS LYR:ON=*;OFF=*REF* ACADVER: 23.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/20/2021 8:29 AM BY: OBERLANDER, ROSEANNE
C:\Users\roberlan\ent\BIM 360\Arcadis\ANA - MERITOR INC\Project Files\RACER PONTIAC NORTH\2020\30042811.00501-DWG\FIG3A-VOC-PH-DATABOX-10-20.DWG LAYOUT: 3A SAVED: 1/19/2021 1:20 PM
PROJECT NUMBER: 30006882
XREFS:
X-BASE-21
X-PNC-DL
X-BASE-PL-1
IMAGES:

MW-03-17			
Date	10/2/2018	10/9/2019	10/13/2020
Inorganics			
Arsenic	< 2 U	< 2 U	11 (RDW, NRDW, GSI)
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	80	420 (RDW, NRDW)	1,720 (RDW, NRDW)
Lead	< 3 U	< 3 U	< 3 U
Magnesium	16,900	24,000	28,300
Manganese	562 (RDW, NRDW)	840 (RDW, NRDW)	1,330 (RDW, NRDW, GSI)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	6	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	532,000 (RDW, NRDW, GSI)	850,000 (RDW, NRDW, GSI)	1,250,000 (RDW, NRDW, GSI)

MW-04-17			
Date	10/2/2018	10/8/2019	10/13/2020
Inorganics			
Arsenic	< 2 U	7	6
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	40	**6,000 (RDW, NRDW, NRHBDW)**	**12,400 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	487 (RDW, NRDW)	597 (RDW, NRDW)	451 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	536,000 (RDW, NRDW, GSI)	884,000 (RDW, NRDW, GSI)	1,220,000 (RDW, NRDW, GSI)

INJ-01-17			
Date	10/2/2018	10/8/2019	10/14/2020
Inorganics			
Arsenic	< 2 U	3 [3]	NA
Chromium	< 5 U	< 5 U [< 5 U]	NA
Copper	< 5 U	< 5 U [< 5 U]	NA
Iron	360 (RDW, NRDW)	5,400 [5,400] (RDW, NRDW)	NA
Lead	< 3 U	< 3 U [< 3 U]	NA
Manganese	402 (RDW, NRDW)	324 [331] (RDW, NRDW)	NA
Mercury	< 0.2 U	< 0.2 U [< 0.2 U]	NA
Nickel	< 5 U	< 5 U [< 5 U]	NA
Silver	< 0.5 U	< 0.5 U [< 0.5 U]	NA
Vanadium	< 5 U	< 5 U [< 5 U]	NA
Zinc	< 5 U	7 [8]	NA
Inorganics-Filtered			
Iron	NA	NA	2,870 (RDW, NRDW)
Manganese	NA	NA	368 (RDW, NRDW)
Miscellaneous			
Total dissolved solids	562,000 (RDW, NRDW, GSI)	844,000 [844,000] (RDW, NRDW, GSI)	1,260,000 (RDW, NRDW, GSI)

LEGEND:

- APPROXIMATE GENERAL MOTORS (GM) COMPANY, LLC PROPERTY BOUNDARY
- APPROXIMATE RACER TRUST (RACER) PROPERTY BOUNDARY
- MW1 — GROUNDWATER MONITORING WELL LOCATION
- FENCED AREA
- M-5 — APPROXIMATE AOI (AREA OF INTEREST) AREA AND IDENTIFICATION NUMBER
- OFF-SITE GROUNDWATER ORDINANCE AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

- RDW – RESIDENTIAL DRINKING WATER CRITERIA
- NRDW – NON-RESIDENTIAL DRINKING WATER CRITERIA
- GSI – GROUNDWATER SURFACE WATER INTERFACE CRITERIA
- RVI – RESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS
- NRVI – NONRESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS
- NRHBDW – NON-RESIDENTIAL HEALTH BASED DRINKING WATER

- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL DRINKING WATER CRITERIA
- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO NON-RESIDENTIAL DRINKING WATER CRITERIA
- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO GROUNDWATER SURFACE WATER INTERFACE CRITERIA
- **BOLD** VALUE = CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO NON-RESIDENTIAL HEALTH BASED DRINKING WATER
- *(ITALIC)* CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO SLAB ON GRADE CRITERIA
- NO EXCEEDANCES OF APPLICABLE CRITERIA FROM SAMPLING EVENTS BETWEEN 2016–2020

TW-09-01			
Date	10/1/2018	10/9/2019	10/15/2020
Inorganics			
Arsenic	20 (RDW, NRDW, GSI)	17 (RDW, NRDW, GSI)	20 (RDW, NRDW, GSI)
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	4,710 (RDW, NRDW)	550 (RDW, NRDW)	3,000 (RDW, NRDW)
Lead	< 3 U	< 3 U	< 3 U
Manganese	561 (RDW, NRDW)	133 (RDW, NRDW)	308 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	5	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	1,460,000 (RDW, NRDW, GSI)	1,230,000 (RDW, NRDW, GSI)	740,000 (RDW, NRDW, GSI)

MWW10-03					
Date	9/21/2016	10/26/2017	10/2/2018	10/10/2019	10/14/2020
Inorganics					
Arsenic	NA	NA	NA	NA	9 [7]
Chromium	NA	NA	NA	NA	< 5 U [< 5 U]
Copper	NA	NA	NA	NA	< 5 U [< 5 U]
Lead	< 3 U	< 3 U	< 3 U	11 (RDW, NRDW)	< 3 U [< 3 U]
Manganese	60 (RDW, NRDW)	67 (RDW, NRDW)	338 (RDW, NRDW)	408 (RDW, NRDW)	132 [114] (RDW, NRDW)
Mercury	NA	NA	NA	NA	< 0.2 U [< 0.2 U]
Nickel	NA	NA	NA	NA	< 5 U [< 5 U]
Silver	NA	NA	NA	NA	< 0.5 U [< 0.5 U]
Vanadium	NA	NA	NA	NA	< 5 U [< 5 U]
Zinc	NA	NA	NA	NA	< 5 U [< 5 U]

MWF12-02					
Date	9/21/2016	10/24/2017	10/3/2018	10/7/2019	10/13/2020
Inorganics					
Manganese	**3,910 (RDW, NRDW, GSI, NRHBDW)**	808 (RDW, NRDW)	292 (RDW, NRDW)	330 (RDW, NRDW)	868 [1,000] (RDW, NRDW)

MWF12-01/MWF12-01R					
Date	9/21/2016	10/24/2017		10/3/2018	10/13/2020
Inorganics					
Manganese	**2,250 [5,290] (RDW, NRDW, GSI, NRHBDW)**	**17,800 (RDW, NRDW, GSI, NRHBDW)**	NA	190 (RDW, NRDW)	
Inorganics-Filtered					
Manganese	NA	NA	NA	194 (RDW, NRDW)	

MWW10-SEN02			
Date	10/5/2018	10/8/2019	10/16/2020
Inorganics			
Arsenic	7	9	< 2 U
Chromium	53 (GSI)	96 (GSI)	9
Copper	54 (GSI)	58 (GSI)	< 5 U
Iron	**21,200 (RDW, NRDW, NRHBDW)**	**20,600 (RDW, NRDW, NRHBDW)**	NA
Lead	12 (RDW, NRDW)	9 (RDW, NRDW)	< 3 U
Manganese	563 (RDW, NRDW)	294 (RDW, NRDW)	< 5 U
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	128 (RDW, NRDW, GSI)	105 (RDW, NRDW, GSI)	12
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	21 (RDW)	22 (RDW)	< 5 U
Zinc	51	57	< 5 U
Miscellaneous			
Total dissolved solids	NA	1,280,000 (RDW, NRDW, GSI)	NA

MWW01-SEN03			
Date	10/5/2018	10/10/2019	10/15/2020
Arsenic	8	4	< 5 U
Chromium	29 (GSI)	< 5 U	< 5 U
Copper	16 (GSI)	< 5 U	< 5 U
Iron	**21,100 (RDW, NRDW, NRHBDW)**	1,020 (RDW, NRDW)	**9,430 (RDW, NRDW, NRHBDW)**
Lead	11 (RDW, NRDW)	< 3 U	< 3 U
Manganese	477 (RDW, NRDW)	279 (RDW, NRDW)	195 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	23	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	7 (RDW)	< 5 U	< 5 U
Zinc	27	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	1,110,000 (RDW, NRDW, GSI)	704,000 (RDW, NRDW, GSI)	846,000 (RDW, NRDW, GSI)

MWOS-01	
Date	10/16/2020
Inorganics	
Manganese	703 (RDW, NRDW)
Inorganics-Filtered	
Manganese	683 (RDW, NRDW)

MWOS-02	
Date	10/16/2020
Inorganics	
Manganese	1,210 (RDW, NRDW)
Inorganics-Filtered	
Manganese	298 (RDW, NRDW)

MWW1-15			
Date	10/3/2018	10/8/2019	10/15/2020
Inorganics			
Arsenic	2	2	2
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	**9,070 (RDW, NRDW, NRHBDW)**	5,040 (RDW, NRDW)	**6,910 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	238 (RDW, NRDW)	207 (RDW, NRDW)	216 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	794,000 (RDW, NRDW, GSI)	724,000 (RDW, NRDW, GSI)	654,000 (RDW, NRDW, GSI)

MWW1-04						
Date	9/21/2016	10/25/2017	10/4/2018	10/7/2019	10/16/2020	
Inorganics						
Vanadium	13 [13] (RDW)	45 (RDW, GSI)	16 [15] (RDW)	8 (RDW)	6 (RDW)	

TW-MD-01			
Date	10/3/2018	10/8/2019	10/15/2020
Inorganics			
Arsenic	< 2 U	2	2
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	**10,800 (RDW, NRDW, NRHBDW)**	**7,050 (RDW, NRDW, NRHBDW)**	**8,480 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	1,000 (RDW, NRDW)	867 (RDW, NRDW)	610 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	7
Silver	< 0.5 U	0.7 (GSI)	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	630,000 (RDW, NRDW, GSI)	680,000 (RDW, NRDW, GSI)	616,000 (RDW, NRDW, GSI)

TW-MD-02			
Date	10/3/2018	10/8/2019	10/15/2020
Inorganics			
Arsenic	8	6	5
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	**14,300 (RDW, NRDW, NRHBDW)**	**11,200 (RDW, NRDW, NRHBDW)**	**13,200 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	747 (RDW, NRDW)	501 (RDW, NRDW)	854 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	8	< 5 U
Miscellaneous			
Total dissolved solids	620,000 (RDW, NRDW, GSI)	728,000 (RDW, NRDW, GSI)	774,000 (RDW, NRDW, GSI)

TW-MD-03			
Date	10/3/2018	10/8/2019	10/14/2020
Inorganics			
Arsenic	5	NA	3
Chromium	< 5 U	NA	< 5 U
Copper	< 5 U	NA	< 5 U
Iron	**18,000 (RDW, NRDW, NRHBDW)**	2,030 (RDW, NRDW)	**8,580 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	NA	< 3 U
Manganese	820 (RDW, NRDW)	NA	286 (RDW, NRDW)
Mercury	< 0.2 U	NA	< 0.2 U
Nickel	< 5 U	NA	< 5 U
Silver	< 0.5 U	NA	< 0.5 U
Vanadium	< 5 U	NA	< 5 U
Zinc	< 5 U	NA	< 5 U
Inorganics-Filtered			
Manganese	NA	250 (RDW, NRDW)	NA
Miscellaneous			
Total dissolved solids	1,180,000 (RDW, NRDW, GSI)	780,000 (RDW, NRDW, GSI)	694,000 (RDW, NRDW, GSI)

INJ-02-18			
Date	10/2/2018	10/8/2019	10/14/2020
Inorganics			
Arsenic	7	NA	2
Chromium	< 5 U	NA	< 5 U
Copper	< 5 U	NA	< 5 U
Iron	2,360 (RDW, NRDW)	**20,900 (RDW, NRDW, NRHBDW)**	**15,100 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	NA	< 3 U
Manganese	386 (RDW, NRDW)	NA	393 (RDW, NRDW)
Mercury	< 0.2 U	NA	< 0.2 U
Nickel	30	NA	< 5 U
Silver	< 0.5 U	NA	< 0.5 U
Vanadium	< 5 U	NA	< 5 U
Zinc	< 5 U	NA	< 5 U
Inorganics-Filtered			
Manganese	NA	356 f (RDW, NRDW)	NA
Miscellaneous			
Total dissolved solids	556,000 (RDW, NRDW, GSI)	903,000 (RDW, NRDW, GSI)	1,260,000 (RDW, NRDW, GSI)

TW-MD-05			
Date	10/3/2018	10/9/2019	10/14/2020
Inorganics			
Arsenic	4	5	5
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	**11,500 (RDW, NRDW, NRHBDW)**	**13,000 (RDW, NRDW, NRHBDW)**	**9,240 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	356 (RDW, NRDW)	400 (RDW, NRDW)	313 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	586,000 (RDW, NRDW, GSI)	784,000 (RDW, NRDW, GSI)	638,000 (RDW, NRDW, GSI)

MWW01-SEN04			
Date	10/3/2018	10/9/2019	10/13/2020
Inorganics			
Arsenic	5 [5]	20 (RDW, NRDW, GSI)	5
Chromium	< 5 U [< 5 U]	190 (RDW, NRDW)	< 5 U
Copper	< 5 U [< 5 U]	174 (GSI)	9
Iron	**14,500 (RDW, NRDW, NRHBDW)**	**100,000 (RDW, NRDW, NRHBDW)**	**20,300 (RDW, NRDW, NRHBDW)**
Lead	4 [3] (RDW, NRDW)	1,700 (RDW, NRDW, GSI)	15 (RDW, NRDW, GSI)
Manganese	370 [369] (RDW, NRDW)	**2,520 (RDS, NRDW, NRHBDW)**	769 (RDW, NRDW)
Mercury	< 0.2 U [< 0.2 U]	0.4 (GSI)	< 0.2 U
Nickel	< 5 U [< 5 U]	111 (RDW, NRDW, GSI)	< 5 U
Silver	< 0.5 U [< 0.5 U]	< 0.5 U	< 0.5 U
Vanadium	< 5 U [< 5 U]	62 (RDW, NRDW, GSI)	< 5 U
Zinc	< 5 U [< 5 U]	191 (GSI)	< 5 U
Miscellaneous			
Total dissolved solids	580,000 (RDW, NRDW, GSI)	1,000,000 (RDW, NRDW, GSI)	1,360,000 (RDW, NRDW, GSI)

TW-MD-06			
Date	10/4/2018	10/9/2019	10/14/2020
Inorganics			
Arsenic	10	7	7
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	**24,900 (RDW, NRDW, NRHBDW)**	**9,570 (RDW, NRDW, NRHBDW)**	**8,200 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	947 (RDW, NRDW)	435 (RDW, NRDW)	276 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	9	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	1,080,000 (RDW, NRDW, GSI)	884,000 (RDW, NRDW, GSI)	678,000 (RDW, NRDW, GSI)

TW-MD-07			
Date	10/4/2018	10/9/2019	10/14/2020
Inorganics			
Arsenic	< 2 U	4	3
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	**23,900 (RDW, NRDW, NRHBDW)**	**10,000 (RDW, NRDW, NRHBDW)**	**24,300 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	201 (RDW, NRDW)	378 (RDW, NRDW)	470 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	958,000 (RDW, NRDW, GSI)	1,220,000 (RDW, NRDW, GSI)	1,820,000 (RDW, NRDW, GSI)

TW-MD-04			
Date	10/3/2018	10/9/2019	10/14/2020
Inorganics			
Arsenic	2	6	3
Chromium	< 5 U	< 5 U	< 5 U
Copper	< 5 U	< 5 U	< 5 U
Iron	**21,900 (RDW, NRDW, NRHBDW)**	**13,800 (RDW, NRDW, NRHBDW)**	**11,800 (RDW, NRDW, NRHBDW)**
Lead	< 3 U	< 3 U	< 3 U
Manganese	1,160 (RDW, NRDW)	571 (RDW, NRDW)	440 (RDW, NRDW)
Mercury	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	< 5 U	< 5 U	< 5 U
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Zinc	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	1,700,000 (RDW, NRDW, GSI)	792,000 (RDW, NRDW, GSI)	658,000 (RDW, NRDW, GSI)

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. <0.25 – CONSTITUENT NOT DETECTED
5. NA – NOT ANALYZED
6. U – COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT
7. ANALYTICAL DATA DATING BACK TO SEPTEMBER 2016 PRESENTED ON THIS FIGURE. ALL HISTORICAL DATA PRESENTED IN ATTACHMENT 3.
8. MWW5-01 WAS DRY AND WAS NOT SAMPLED IN 2020.
9. NOTE THAT ANALYTICAL PARAMETERS WHICH ARE LISTED ON THE ANALYTICAL DATABOX FIGURE INCLUDE ONLY THOSE PARAMETERS WHERE A REGULATORY EXCEEDANCE OF PROMULGATED CRITERIA FOR RDW, NRDW, GSI, AND/OR NRHBDW EXISTS ANYTIME FROM THE TIMEFRAME FROM 2016–2020.
10. pH RDW AND NRDW CRITERIA REPRESENT AESTHETIC DRINKING WATER VALUES AS REQUIRED BY SECTION 20120A(5) OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED (NREPA)..
11. OTHER CRITERIA LISTED ARE FROM THE DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) CLEAN UP CRITERIA REQUIREMENTS TABLE 1: GROUNDWATER: RESIDENTIAL AND NONRESIDENTIAL, PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS, DECEMBER 21, 2020.

	Units	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value
Inorganics					
Arsenic	ug/L	10	10	10	--
Chromium	ug/L	100	100	11	--
Copper*	ug/L	1,000 (E)	1,000 (E)	13	4,000
Iron*	ug/L	300 (E)	300 (E)	--	5,600
Lead	ug/L	4	4	14	--
Manganese*	ug/L	50 (E)	50 (E)	1,300	2,500
Mercury	ug/L	2	2	0.0013	--
Nickel	ug/L	100	100	73	--
Silver	ug/L	34	98	0.2	--
Vanadium	ug/L	4.5	62	27	--
Zinc	ug/L	2,400	5,000 (E)	170	--
Inorganics-Filtered					
Iron (dissolved)	ug/L	300	300	--	5,600
Manganese (dissolved)*	ug/L	50 (E)	50 (E)	1,300	2,500
Miscellaneous					
Total dissolved solids (TDS)	ug/L	500,000 (E)	500,000 (E)	500,000	--

NOTES:

1. E – CRITERION IS THE AESTHETIC DRINKING WATER VALUE, AS REQUIRED BY SECTION 20120A(5) OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED (NREPA).

0 500' 1000'
GRAPHIC SCALE

RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

GROUNDWATER ANALYTICAL SUMMARY INORGANICS AND TDS OCTOBER 2020

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3B

LEGEND:

- APPROXIMATE GENERAL MOTORS (GM) COMPANY, LLC PROPERTY BOUNDARY
- APPROXIMATE RACER TRUST (RACER) PROPERTY BOUNDARY
- MWM1 — GROUNDWATER MONITORING WELL LOCATION
- FENCED AREA
- M-5 — APPROXIMATE AOI (AREA OF INTEREST) AREA AND IDENTIFICATION NUMBER
- OFF-SITE GROUNDWATER ORDINANCE AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
NRDW – NON-RESIDENTIAL DRINKING WATER CRITERIA
GSI – GROUNDWATER SURFACE WATER INTERFACE CRITERIA

- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL DRINKING WATER CRITERIA
- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO NON-RESIDENTIAL DRINKING WATER CRITERIA
- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO GROUNDWATER SURFACE WATER INTERFACE CRITERIA
- NO EXCEEDANCES OF APPLICABLE CRITERIA FROM SAMPLING EVENTS BETWEEN 2016–2020

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. <0.25 – CONSTITUENT NOT DETECTED
5. NA – NOT ANALYZED
6. Y – ELEVATED REPORTING LIMIT DUE TO HIGH TARGET CONCENTRATIONS
7. U – COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT
8. ANALYTICAL DATA DATING BACK TO SEPTEMBER 2016 PRESENTED ON THIS FIGURE. ALL HISTORICAL DATA PRESENTED IN ATTACHMENT 3.
9. MWW5-01 WAS DRY AND WAS NOT SAMPLED IN 2020.
10. NOTE THAT ANALYTICAL PARAMETERS WHICH ARE LISTED ON THE ANALYTICAL DATABOX FIGURE INCLUDE ONLY THOSE PARAMETERS WHERE A REGULATORY EXCEEDANCE OF PROMULGATED CRITERIA FOR RDW, NRDW, AND GSI EXISTS ANYTIME FROM THE TIMEFRAME FROM 2016–2020.
11. OTHER CRITERIA LISTED ARE FROM THE DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) CLEAN UP CRITERIA REQUIREMENTS TABLE 1: GROUNDWATER: RESIDENTIAL AND NONRESIDENTIAL, PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS, DECEMBER 21, 2020.

MWW01-SEN04			
Date	10/3/2018	10/9/2019	10/13/2020
PCBs			
Total PCBs	0.2 [0.1] (GSI)	15 Y (RDW, NRDW, GSI)	0.2 (GSI)

MWW1-04					
Date	9/21/2016	10/25/2017	10/4/2018	10/7/2019	10/16/2020
PCBs					
Total PCBs	0.1 [0.1]	0.1	0.1 [< 0.1 U]	0.2 (GSI)	0.2 (GSI)

TW-MD-06			
Date	10/4/2018	10/9/2019	10/14/2020
PCBs			
Total PCBs	< 0.1 U	0.2 (GSI)	0.6 (RDW, NRDW, GSI)

	Units	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface
PCBs				
Total PCBs	ug/L	0.5	0.5	0.2

0 500' 1000'
GRAPHIC SCALE

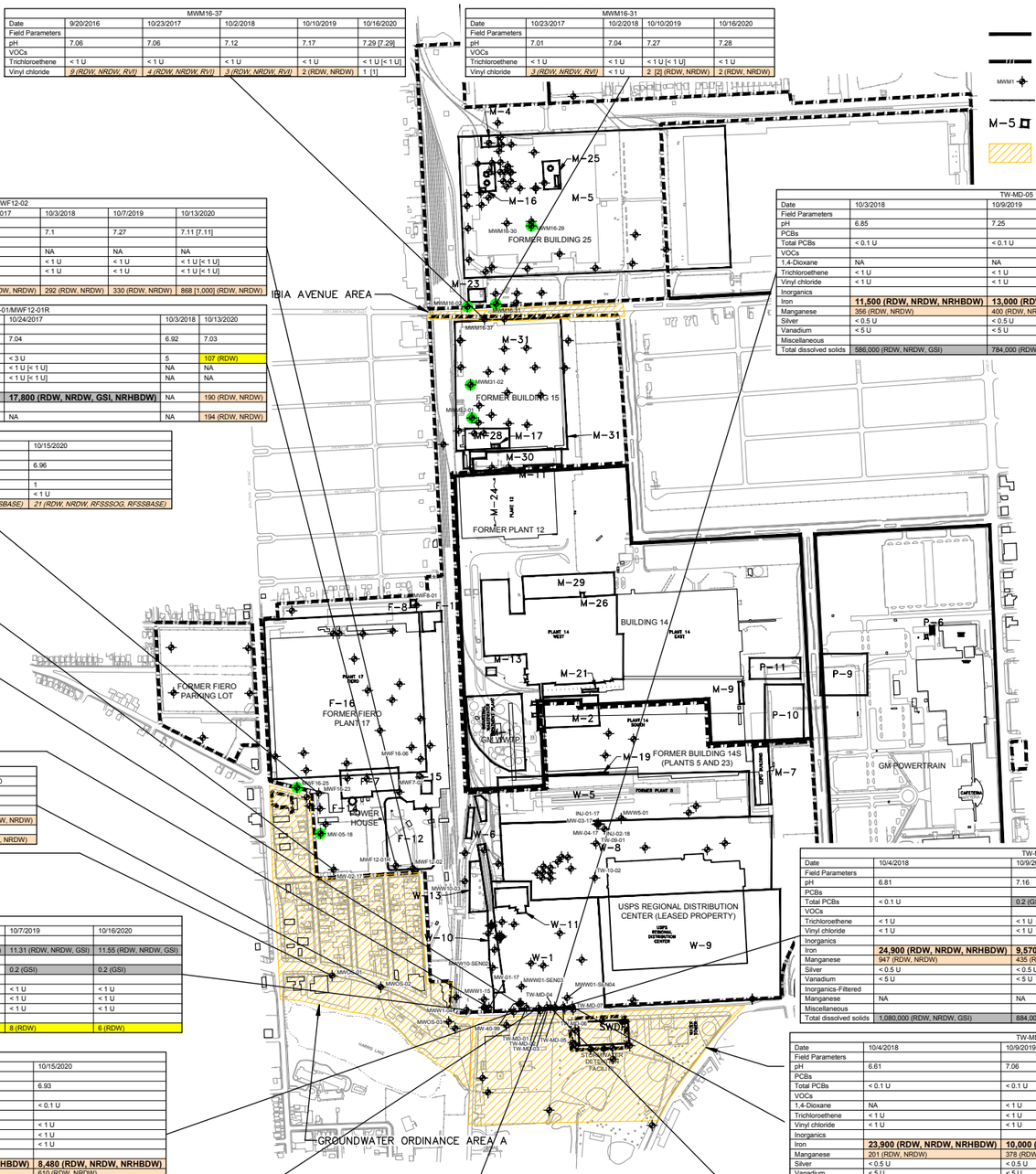
RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

GROUNDWATER ANALYTICAL SUMMARY PCBs OCTOBER 2020

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3C

DIV/GROUP: IMDV DB: G.STOWELL PM:B.SAUNDERS LYR:ON=*;OFF=*REF* ACADVER: 23.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/19/2021 2:21 PM BY: OBERLANDER, ROSEANNE
C:\Users\roberlander\BIM 360\Arcadis\ANA - MERITOR INC\Project Files\RACER PONTIAC NORTH\2020\30042811.005\01-DWG\FIG3C-PCB-DATABOX-10-20.DWG LAYOUT: 3C SAVED: 1/15/2021 2:53 PM
XREFS:
X-BASE-21
X-PNC-DL
X-BASE-PL-1
IMAGES:
PROJECT NUMBER: 30006882



MWM16-37					
Date	9/20/2016	10/23/2017	10/2/2018	10/10/2019	10/16/2020
Field Parameters					
pH	7.06	7.06	7.12	7.17	7.29 [7.29]
VOCs					
Trichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Vinyl chloride	*9 (RDW, NRDW, RVI)*	*4 (RDW, NRDW, RVI)*	*3 (RDW, NRDW, RVI)*	2 (RDW, NRDW)	1 [1]

MWM16-31				
Date	10/23/2017	10/2/2018	10/10/2019	10/16/2020
Field Parameters				
pH	7.01	7.04	7.27	7.28
VOCs				
Trichloroethene	< 1 U	< 1 U	< 1 U [< 1 U]	< 1 U
Vinyl chloride	*3 (RDW, NRDW, RVI)*	< 1 U	2 [2] (RDW, NRDW)	2 (RDW, NRDW)

MWF12-02					
Date	9/21/2016	10/24/2017	10/3/2018	10/7/2019	10/13/2020
Field Parameters					
pH	7.52	7.19	7.1	7.27	7.11 [7.11]
VOCs					
1,4-Dioxane	NA	< 3 U	NA	NA	NA
Tetrachloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Trichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Inorganics					
Manganese	**3,910 (RDW, NRDW, GSI, NRHBDW)**	808 (RDW, NRDW)	292 (RDW, NRDW)	330 (RDW, NRDW)	868 [1,000] (RDW, NRDW)

MWF12-01/MWF12-01R				
Date	9/21/2016	10/24/2017	10/3/2018	10/13/2020
Field Parameters				
pH	7.19	7.04	6.92	7.03
VOCs				
1,4-Dioxane	NA	< 3 U	5	107 (RDW)
Tetrachloroethene	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA
Trichloroethene	< 1 U [< 1 U]	< 1 U [< 1 U]	NA	NA
Inorganics				
Manganese	**2,250 [5,290] (RDW, NRDW, GSI, NRHBDW)**	**17,800 (RDW, NRDW, GSI, NRHBDW)**	NA	190 (RDW, NRDW)
Inorganics-Filtered				
Manganese	NA	NA	NA	194 (RDW, NRDW)

MWF16-23			
Date	10/1/2018	10/7/2019	10/15/2020
Field Parameters			
pH	6.91	7.04	6.96
VOCs			
1,4-Dioxane	4	< 1 U	1
Tetrachloroethene	< 1 U	< 1 U	< 1 U
Trichloroethene	*15 (RDW, NRDW, RFSSSOG, RFSSBASE)*	*20 (RDW, NRDW, RFSSSOG, RFSSBASE)*	*21 (RDW, NRDW, RFSSSOG, RFSSBASE)*

MW-02-17			
Date	10/2/2018	10/7/2019	10/13/2020
Field Parameters			
pH	6.73	7.09	7.19
VOCs			
1,4-Dioxane	21 (RDW)	29 (RDW)	30 (RDW)
Tetrachloroethene	6 (RDW, NRDW)	10 (RDW, NRDW)	3
Trichloroethene	2	4	2

MW-40-99					
Date	9/20/2016	10/26/2017	10/3/2018	10/9/2019	10/15/2020
Field Parameters					
pH	7	7.15	7.12	7.01	7.38 [7.38]
PCBs					
Total PCBs	NA	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U [< 0.1 U]
VOCs					
1,4-Dioxane	NA	NA	< 1 U	11 (RDW)	6 [9] (RDW)
Trichloroethene	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Vinyl chloride	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]

MW-01-17			
Date	10/3/2018	10/8/2019	10/15/2020
Field Parameters			
pH	7.35	7.34	8.27
VOCs			
1,4-Dioxane	< 1 U	< 1 U	8 (RDW)
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U

MWOS-02	
Date	10/16/2020
Field Parameters	
pH	7.18
Inorganics	
Manganese	1,210 (RDW, NRDW)
Inorganics-Filtered	
Manganese	298 (RDW, NRDW)

MWOS-01			
Date	10/1/2018	10/7/2019	10/16/2020
Field Parameters			
pH	6.97	7.08	7.17
VOCs			
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Manganese	NA	NA	703 (RDW, NRDW)
Inorganics-Filtered			
Manganese	NA	NA	683 (RDW, NRDW)

MWW1-04					
Date	9/21/2016	10/25/2017	10/4/2018	10/7/2019	10/16/2020
Field Parameters					
pH	11.69 (RDW, NRDW, GSI)	11.15 (RDW, NRDW, GSI)	11.46 (RDW, NRDW, GSI)	11.31 (RDW, NRDW, GSI)	11.55 (RDW, NRDW, GSI)
PCBs					
Total PCBs	0.1 [0.1]	0.1	0.1 [< 0.1 U]	0.2 (GSI)	0.2 (GSI)
VOCs					
1,4-Dioxane	NA	< 3 U	< 1 U [< 1 U]	< 1 U	< 1 U
Trichloroethene	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
Vinyl chloride	NA	< 1 U [< 1 U]	< 1 U [< 1 U]	< 1 U	< 1 U
Inorganics					
Vanadium	13 [13] (RDW)	45 (RDW, GSI)	16 [15] (RDW)	8 (RDW)	6 (RDW)

TW-MD-01			
Date	10/3/2018	10/8/2019	10/15/2020
Field Parameters			
pH	6.9	7.14	6.93
PCBs			
Total PCBs	< 0.1 U	< 0.1 U	< 0.1 U
VOCs			
1,4-Dioxane	< 1 U	6	< 1 U
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Iron	**10,800 (RDW, NRDW, NRHBDW)**	**7,050 (RDW, NRDW, NRHBDW)**	**8,480 (RDW, NRDW, NRHBDW)**
Manganese	1,000 (RDW, NRDW)	867 (RDW, NRDW)	610 (RDW, NRDW)
Silver	< 0.5 U	0.7 (GSI)	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	630,000 (RDW, NRDW, GSI)	680,000 (RDW, NRDW, GSI)	616,000 (RDW, NRDW, GSI)

TW-MD-02			
Date	10/3/2018	10/8/2019	10/15/2020
Field Parameters			
pH	6.9	7.25	7.06
PCBs			
Total PCBs	< 0.1 U	< 0.1 U	< 0.1 U
VOCs			
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Iron	**14,300 (RDW, NRDW, NRHBDW)**	**11,200 (RDW, NRDW, NRHBDW)**	**13,200 (RDW, NRDW, NRHBDW)**
Manganese	747 (RDW, NRDW)	501 (RDW, NRDW)	854 (RDW, NRDW)
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	620,000 (RDW, NRDW, GSI)	728,000 (RDW, NRDW, GSI)	774,000 (RDW, NRDW, GSI)

TW-MD-03			
Date	10/3/2018	10/8/2019	10/14/2020
Field Parameters			
pH	7.01	7.33	7.11
PCBs			
Total PCBs	< 0.1 U	< 0.1 U	< 0.1 U
VOCs			
1,4-Dioxane	NA	NA	NA
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Iron	**18,000 (RDW, NRDW, NRHBDW)**	2,030 (RDW, NRDW)	**8,580 (RDW, NRDW, NRHBDW)**
Manganese	820 (RDW, NRDW)	NA	288 (RDW, NRDW)
Silver	< 0.5 U	NA	< 0.5 U
Vanadium	< 5 U	NA	< 5 U
Inorganics-Filtered			
Manganese	NA	250 (RDW, NRDW)	NA
Miscellaneous			
Total dissolved solids	1,180,000 (RDW, NRDW, GSI)	780,000 (RDW, NRDW, GSI)	694,000 (RDW, NRDW, GSI)

TW-MD-04			
Date	10/3/2018	10/9/2019	10/14/2020
Field Parameters			
pH	6.69	7.12	6.99
PCBs			
Total PCBs	< 0.1 U	< 0.1 U	< 0.1 U
VOCs			
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Iron	**21,900 (RDW, NRDW, NRHBDW)**	**13,800 (RDW, NRDW, NRHBDW)**	**11,800 (RDW, NRDW, NRHBDW)**
Manganese	1,160 (RDW, NRDW)	571 (RDW, NRDW)	440 (RDW, NRDW)
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	1,700,000 (RDW, NRDW, GSI)	792,000 (RDW, NRDW, GSI)	658,000 (RDW, NRDW, GSI)

TW-MD-05			
Date	10/3/2018	10/9/2019	10/14/2020
Field Parameters			
pH	6.85	7.25	7.17
PCBs			
Total PCBs	< 0.1 U	< 0.1 U	< 0.1 U
VOCs			
1,4-Dioxane	NA	NA	NA
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Iron	**11,500 (RDW, NRDW, NRHBDW)**	**13,000 (RDW, NRDW, NRHBDW)**	**9,240 (RDW, NRDW, NRHBDW)**
Manganese	356 (RDW, NRDW)	400 (RDW, NRDW)	313 (RDW, NRDW)
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Miscellaneous			
Total dissolved solids	586,000 (RDW, NRDW, GSI)	784,000 (RDW, NRDW, GSI)	638,000 (RDW, NRDW, GSI)

TW-MD-06			
Date	10/4/2018	10/9/2019	10/14/2020
Field Parameters			
pH	6.81	7.16	7.4
PCBs			
Total PCBs	< 0.1 U	0.2 (GSI)	0.6 (RDW, NRDW, GSI)
VOCs			
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Iron	**24,900 (RDW, NRDW, NRHBDW)**	**9,570 (RDW, NRDW, NRHBDW)**	**8,200 (RDW, NRDW, NRHBDW)**
Manganese	947 (RDW, NRDW)	435 (RDW, NRDW)	276 (RDW, NRDW)
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Inorganics-Filtered			
Manganese	NA	NA	NA
Miscellaneous			
Total dissolved solids	1,080,000 (RDW, NRDW, GSI)	884,000 (RDW, NRDW, GSI)	678,000 (RDW, NRDW, GSI)

TW-MD-07			
Date	10/4/2018	10/9/2019	10/14/2020
Field Parameters			
pH	6.61	7.06	6.92
PCBs			
Total PCBs	< 0.1 U	< 0.1 U	< 0.1 U
VOCs			
1,4-Dioxane	NA	< 1 U	2
Trichloroethene	< 1 U	< 1 U	< 1 U
Vinyl chloride	< 1 U	< 1 U	< 1 U
Inorganics			
Iron	**23,900 (RDW, NRDW, NRHBDW)**	**10,000 (RDW, NRDW, NRHBDW)**	**24,300 (RDW, NRDW, NRHBDW)**
Manganese	201 (RDW, NRDW)	378 (RDW, NRDW)	470 (RDW, NRDW)
Silver	< 0.5 U	< 0.5 U	< 0.5 U
Vanadium	< 5 U	< 5 U	< 5 U
Inorganics-Filtered			
Manganese	NA	NA	NA
Miscellaneous			
Total dissolved solids	958,000 (RDW, NRDW, GSI)	1,220,000 (RDW, NRDW, GSI)	1,820,000 (RDW, NRDW, GSI)

LEGEND:

- APPROXIMATE GENERAL MOTORS (GM) COMPANY, LLC PROPERTY BOUNDARY
- APPROXIMATE RACER TRUST (RACER) PROPERTY BOUNDARY
- MWM1 GROUNDWATER MONITORING WELL LOCATION
- FENCED AREA
- M-5 APPROXIMATE AOI (AREA OF INTEREST) AREA AND IDENTIFICATION NUMBER
- OFF-SITE GROUNDWATER ORDINANCE AREA

MICHIGAN PART 201 GENERIC CRITERIA AND FIERO SITE SPECIFIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
NRDW – NON-RESIDENTIAL DRINKING WATER CRITERIA
GSI – GROUNDWATER SURFACE WATER INTERFACE CRITERIA
RVI – RESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS
RFSSBASE – RESIDENTIAL FIERO SSVIAC BASEMENT
RFSSSOG – RESIDENTIAL FIERO SSVIAC SLAB ON GRADE
NRHBDW – NON-RESIDENTIAL HEALTH BASED DRINKING WATER

- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL DRINKING WATER CRITERIA
- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO NON-RESIDENTIAL DRINKING WATER CRITERIA
- CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO GROUNDWATER SURFACE WATER INTERFACE CRITERIA
- **BOLD** VALUE = CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO NON-RESIDENTIAL HEALTH BASED DRINKING WATER
- UNDERLINED VALUE = CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL VOLATILIZATION TO INDOOR AIR PATHWAY SCREENING LEVELS
- *(ITALIC)* CONSTITUENT CONCENTRATION EXCEEDS OR IS EQUAL TO RESIDENTIAL FIERO SSVIAC BASEMENT AND/OR RESIDENTIAL FIERO SSVIAC SLAB ON GRADE CRITERIA
- NO EXCEEDANCES OF APPLICABLE CRITERIA FROM SAMPLING EVENTS BETWEEN 2016–2020

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. <0.25 – CONSTITUENT NOT DETECTED
5. NA – NOT ANALYZED
6. VOC – VOLATILE ORGANIC COMPOUND
7. U – COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT
8. ANALYTICAL DATA DATING BACK TO SEPTEMBER 2016 PRESENTED ON THIS FIGURE. ALL HISTORICAL DATA PRESENTED IN ATTACHMENT 3.
9. MWW5-01 WAS DRY AND WAS NOT SAMPLED IN 2020.
10. NOTE THAT ANALYTICAL PARAMETERS WHICH ARE LISTED ON THE ANALYTICAL DATABOX FIGURE INCLUDE ONLY THOSE PARAMETERS WHERE A REGULATORY EXCEEDANCE OF PROMULGATED CRITERIA FOR RDW, NRDW, GSI, RVI, NVRI, RFSSBASE, RFSSSOG, AND/OR NRHBDW EXISTS ANYTIME FROM THE TIMEFRAME FROM 2016–2020.
11. pH RDW AND NRDW CRITERIA REPRESENT AESTHETIC DRINKING WATER VALUES AS REQUIRED BY SECTION 20120A(5) OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED (NREPA).
12. DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) DEVELOPED SITE-SPECIFIC VOLATILIZATION TO INDOOR AIR CRITERIA (SSVIAC) FOR THE FORMER FIERO ASSEMBLY, APRIL 21, 2020.
13. OTHER CRITERIA LISTED ARE FROM THE DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) CLEAN UP CRITERIA REQUIREMENTS TABLE 1: GROUNDWATER: RESIDENTIAL AND NONRESIDENTIAL, PART 201 GENERIC CLEANUP CRITERIA AND SCREENING LEVELS, DECEMBER 21, 2020.

	Units	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential Volatilization to Indoor Air Pathway Screening Levels	Res Fiero SSVIAC SOG*	Res Fiero SSVIAC BASE*
Field Parameters								
pH	SU	6.5 - 8.5 (E)	6.5 - 8.5 (E)	6.5 - 9.0	--	--	--	--
PCBs								
Total PCBs	ug/L	0.5	0.5	0.2	--	--	--	--
Volatile Organics								
1,4-Dioxane	ug/L	7.2	350	280		56,000	43,000	22,00
Tetrachloroethene	ug/L	5	5	60	--	130	250	130
Trichloroethene	ug/L	5	5	200	--	10	15	8.1
Vinyl Chloride	ug/L	2	2	13		2.1	2.2	1.2
Inorganics								
Iron	ug/L	300 (E)	300 (E)	--	5,600	--	--	--
Manganese	ug/L	50 (E)	50 (E)	1,300	2,500	--	--	--
Silver	ug/L	34	98	0.2	--	--	--	--
Vanadium	ug/L	4.5	62	27	--	--	--	--
Inorganics-Filtered								
Manganese (dissolved)*	ug/L	50 (E)	50 (E)	1,300	2,500	--	--	--
Miscellaneous								
Total dissolved solids (TDS)	ug/L	500,000 (E)	500,000 (E)	500,000	--	--	--	--

NOTES:

1. * – ONLY APPLIES TO WELLS ON FORMER FIERO PROPERTY.
2. E – CRITERION IS THE AESTHETIC DRINKING WATER VALUE, AS REQUIRED BY SECTION 20120A(5) OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED (NREPA).

0 500' 1000'
GRAPHIC SCALE

RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

GROUNDWATER ANALYTICAL SUMMARY PROPERTY BOUNDARIES OCTOBER 2020

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

DIV/GROUP: IMDV DB: G.STOWELL PM:B.SAUNDERS LYR:ON=*;OFF=*REF* ACADVER: 23.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/21/2021 10:52 AM BY: OBERLANDER, ROSEANNE
C:\Users\roberlander\BIM 360\Arcadis\ANA - MERITOR INC\Project Files\RACER PONTIAC NORTH\2020\30042811.005\01-DWG\FIG4-PROP-BOUND-DATABOX-10-20.DWG LAYOUT: 4 SAVED: 1/20/2021 9:04 AM
PROJECT NUMBER: 30006982
IMAGES:
XREFS:
X-BASE-21
X-PNC-DL
X-BASE-PL-1

TABLES

Table 1
Groundwater Elevation Summary, October 2020
2020 Annual Groundwater Monitoring Report
RACER Trust Pontiac North Campus

ARCADIS Design & Consultancy for natural and built assets

Well ID	Well Elevation [1]	Depth to Water (ft)	Depth to LNAPL (ft)	Total Depth (ft)	Groundwater Elevation	LNAPL Thickness (ft)	Equivalent Groundwater Elevation [2]
OFFSITE							
MWOS-01	943.79	7.50	--	12.97	936.29	--	--
MWOS-02	943.46	7.16	--	15.35	936.30	--	--
MWOS-03	944.35	7.76	--	18.18	936.59	--	--
MWOS-04	942.52	4.32	--	12.84	938.20	--	--
MWOS-06	944.01	3.87	--	12.65	940.14	--	--
MWOS-08	975.09	25.78	--	28.9	949.31	--	--
MWOS-09	976.42	27.40	--	28.19	949.02	--	--
FIERO							
F-7							
MWF7-02	970.58	19.45	--	25.60	951.13	--	--
F-8							
MWF8-01	972.94	17.90	--	27.70	955.04	--	--
F-12							
MWF12-01R	967.99	20.38		23.30	947.61	--	--
MWF12-02	966.81	18.40	--	27.75	948.41	--	--
F-16							
MWF16-10	973.57	19.12		30.81	954.45	--	--
MWF16-11	973.36	19.03	--	26.07	954.33	--	--
MWF16-05	973.68	19.98	--	22.62	953.70	--	--
MWF16-06	973.77	14.11	--	28.72	959.66		
MWF16-16	973.22	22.20	--	31.35	951.02	--	--
MWF16-23	973.39	23.70	--	30.54	949.69	--	--
MWF16-25	975.24	25.75	--	37.25	949.49	--	--
MW-02-17	972.52	25.81	--	29.58	946.71	--	--
MW-05-18	975.21	27.05	--	33.70	948.16	--	--
DEMOLITION AREA							
W-1							
MWW01-SEN03	981.67	38.63	--	48.05	943.04	--	--
MWW01-SEN04	971.12	29.44	--	37.89	941.68	--	--
MWW1-04	947.49	8.91	--	16.40	938.58	--	--
MWW1-06	943.63	6.16	--	14.30	937.47	--	--
MW-40-99	952.32	10.40	--	18.30	941.92	--	--
MW-01-17	949.40	7.52	--	10.74	941.88		
TW-01-01	972.95	28.90	25.94	--	944.05	2.96	946.65
TW-01-02	973.38	21.20	--	21.50	952.18	--	--
TW-01-03	969.06	15.85	--	23.10	953.21	--	--
SB-43-14	969.90	Dry	--	18.36	--	--	--
W-5							
MWW5-01	970.57	Dry	--	16.55	--	--	--
W-8							
TW-03-01	970.48	20.55	20.02	NM	949.93	0.53	950.40
MWW8-36	968.62	16.24	16.14	NM	952.38	0.10	952.47
MWW8-65	969.62	--*	24.39	34.60	NA	10.21	NA
RWW8-129	966.71	16.39	15.37	NM	950.32	1.02	951.22
RWW8-133	966.34	17.26	14.99	NM	949.08	2.27	951.08
TW-11-01	969.28	8.49	5.85	NM	960.79	2.64	963.11
TW-11-02	970.38	10.35	6.64	NM	960.03	3.71	963.29
TW-09-01	970.01	15.85	15.75	NM	954.16	0.10	954.25
TW-10-01	971.91	19.95	--	32.79	951.96	--	--
TW-10-02	971.83	17.09	--	35.29	954.74	--	--
TWW8-01	969.37	--*	23.01	31.00	NA	7.99	NA
W-10							
MWW10-03	958.20	9.92	--	13.09	948.28	--	--
MWW10-SEN01	967.31	18.60	--	22.45	948.71	--	--
MWW10-SEN02	967.68	25.65	--	28.36	942.03	--	--
SB-25-14	966.21	16.75	16.46	--	949.46	0.29	949.71
RW-08-14	NS	17.20	10.72	NM	NA	NA	NA

See Notes on last page.

Table 1
Groundwater Elevation Summary, October 2020
2020 Annual Groundwater Monitoring Report
RACER Trust Pontiac North Campus

ARCADIS Design & Consultancy for natural and built assets

Well ID	Well Elevation [1]	Depth to Water (ft)	Depth to LNAPL (ft)	Total Depth (ft)	Groundwater Elevation	LNAPL Thickness (ft)	Equivalent Groundwater Elevation [2]
MFD							
M-2							
MWM2-22	970.82	17.41	--	24.45	953.41	--	--
MWM2-28	971.07	17.32	--	26.18	953.75	--	--
MWM2-37	970.52	47.67	--	66.82	922.85	--	--
M-4							
MWM4-05	985.70	8.70	--	23.09	977.00	--	--
MWM4-06R	984.85	CNL	--	NM	NA	--	--
M-5							
MWM5-02	977.07	18.49	--	27.40	958.58	--	--
MWM5-03	978.78	20.15	--	33.29	958.63	--	--
M-16							
MWM16-02	979.83	21.45	--	28.80	958.38	--	--
MWM16-30	985.37	26.24	--	31.68	959.13	--	--
MWM16-31	981.08	22.18	--	33.64	958.90	--	--
MWM16-37	980.37	21.84	--	34.77	958.53	--	--
M-31/M-32							
MWM31-02	983.64	25.76	--	37.71	957.88	--	--
MWM32-01	983.64	26.08	--	35.16	957.56	--	--
Montcalm							
INJ-01-17	965.12	4.75	--	--	960.37	--	--
INJ-02-18	966.27	4.96	--	--	961.31	--	--
MW-03-17	964.77	9.62	--	21.90	955.15	--	--
MW-04-17	965.18	10.22	--	24.75	954.96	--	--
TW-MD-01	946.20	5.01	--	10.33	941.19	--	--
TW-MD-02	945.98	6.04	--	12.43	939.94	--	--
TW-MD-03	946.60	5.50	--	11.95	941.10	--	--
TW-MD-04	946.98	5.98	--	13.62	941.00	--	--
TW-MD-05	946.71	5.56	--	13.40	941.15	--	--
TW-MD-06	947.08	6.01	--	16.88	941.07	--	--
TW-MD-07	947.08	5.50	--	14.85	941.58	--	--
MWW1-15	951.37	9.28	--	18.34	942.09	--	--
Former Fiero Parking Lot							
PZF17-01	963.37	10.98	--	15.82	952.39	--	--
PZF17-02	977.43	23.42	--	31.10	954.01	--	--
PZF17-03	967.04	15.68	--	22.67	951.36	--	--
PZF17-04	972.47	19.55	--	28.95	952.92	--	--
PZF17-05	975.97	25.80	--	34.10	950.17	--	--
Duck Pond							
MWOS-05	944.26	4.19	--	11.10	940.07	--	--
MWDP-1R	947.41	5.74	--	14.10	941.67	--	--
MWDP-3R	948.13	6.30	--	15.07	941.83	--	--
MWDP-05	944.35	5.17	--	9.85	939.18	--	--
MWOS-07	947.53	5.87	--	15.00	941.66	--	--
PZOS-02	946.38	5.98	--	15.40	940.40	--	--

Table 1
Groundwater Elevation Summary, October 2020
2020 Annual Groundwater Monitoring Report
RACER Trust Pontiac North Campus

ARCADIS Design & Consultancy for natural and built assets

Well ID	Well Elevation [1]	Depth to Water (ft)	Depth to LNAPL (ft)	Total Depth (ft)	Groundwater Elevation	LNAPL Thickness (ft)	Equivalent Groundwater Elevation [2]

Notes:
Water levels collected on October 12 -13, 2020.

Abbreviations:

*	Only LNAPL detected in well. No depth to water available.
--	Not available
CNL	Could not locate
ft	Feet
LNAPL	Light non-aqueous phase liquid
NA	Not applicable
NM	Not measured
NS	Well has not been surveyed

Footnotes:
[1] Top of Casing Elevation is in feet National Vertical Geodetic Datum (1988)
[2] The equivalent groundwater (GW) elevation is calculated where LNAPL is present using the LNAPL surface elevation, the thickness of LNAPL and the approximate specific density of the LNAPL (0.88). This specific density is most representative of LNAPL samples collected at the Site. The calculation is as follows:
Equivalent GW elevation = LNAPL surface elevation - ((1-specific density of the LNAPL) x LNAPL thickness)

Table 2
Summary of Groundwater Analytical Results
2020 Annual Groundwater Monitoring Report
RACER Trust Pontiac North Campus

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	INJ-01-17 10/14/20 INJ-01-17_GW10142020	INJ-02-18 10/14/20 INJ-02-18_GW-10142020	MW-01-17 10/15/20 MW-01-17_GW-10152020	MW-03-17 10/13/20 MW-03-17_GW-10132020	MW-04-17 10/13/20 MW-04-17_GW-10132020
Field Parameters														
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	SU	7.18	7.31	8.27	7.14	7.25
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	NTU	216	2.88	5.78	2.46	3.11
PCBs														
Aroclor-1016 (PCB-1016)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1221 (PCB-1221)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1232 (PCB-1232)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1242 (PCB-1242)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1248 (PCB-1248)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1254 (PCB-1254)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1260 (PCB-1260)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Total PCBs	0.5	0.5	0.2	- -	45	45	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Volatile Organics														
Acetone	730	2,100	1,700	- -	1,000,000,000	1,000,000,000	*40,000,000*	40,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	5	5	200	- -	5,600	35,000	*28*	66	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	80	80	- -	- -	4,800	37,000	*34*	73	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	80	80	- -	- -	470,000	3,100,000	*2,700*	6,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane (Methyl bromide)	10	29	5	- -	4,000	9,000	*55*	80	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	240,000,000	240,000,000	*4,300,000*	4,300,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon disulfide	800	2,300	- -	- -	250,000	550,000	*2,100*	3,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	5	5	38	- -	370	2,400	*7.7*	18	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	1,100,000	1,100,000	*190*	560	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	220,000	300,000	*49*	410	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	100	100	25	- -	210,000	470,000	*940*	1,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dibromochloromethane	80	80	- -	- -	14,000	110,000	*23*	130	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	430	1,700	1,100	- -	5,700,000	5,700,000	*15,000*	22,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform (Trichloromethane)	80	80	350	- -	28,000	180,000	*14*	32	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane (Methyl chloride)	260	1,100	NA	- -	8,600	45,000	*380*	560	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	- -	- -	- -	- -	- -	- -	*2,000*	8,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	220	1,200	*0.00045*	0.021	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	2,400	15,000	*3.8*	8.9	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	600	600	13	- -	160,000	160,000	*11,000*	16,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	6.6	19	28	- -	18,000	41,000	*75*	110	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	75	75	17	- -	16,000	74,000	*170*	400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	880	2,500	740	- -	1,000,000	2,300,000	*130*	300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	5	5	360	- -	9,600	59,000	*41*	97	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	7	7	130	- -	200	1,300	*330*	480	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	70	70	620	- -	93,000	210,000	*95*	140	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	100	100	1,500	- -	85,000	200,000	*390*	580	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methylene chloride	5	5	1,500	- -	220,000	1,400,000	*8,400*	12,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	5	5	230	- -	16,000	36,000	*74*	110	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene*	74 (E)	74 (E)	18	**700**	110,000	170,000	*74*	170	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	800	2,300	28	- -	56,000	56,000	*15*	36	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2-Hexanone	1,000	2,900	- -	- -	4,200,000	8,700,000	*20,000*	29,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	20,000,000	20,000,000	*330,000*	330,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	47,000,000	47,000,000	*7,400*	17,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	100	100	80	- -	170,000	310,000	*960*	2,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	12,000	77,000	*71*	170	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	5	5	60	- -	25,000	170,000	*130*	130	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene*	790 (E)	790 (E)	270	**1,000**	530,000	530,000	*41,000*	59,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	70	70	99	- -	300,000	300,000	*110*	160	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	200	200	89	- -	660,000	1,300,000	*14,000*	19,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	5	5	330	- -	17,000	110,000	*14*	20	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	5	5	200	- -	2,200	4,900	*10*	10	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	170,000	170,000	*2,700*	26,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	2	2	13	- -	1,100	13,000	*2.1*	18	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	NA	NA	NA	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	190,000	190,000	*2,000*	3,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

See Notes on last page.

ARCADIS

Location ID: / Date Collected: / Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	INJ-01-17 10/14/20 INJ-01-17_GW10142020	INJ-02-18 10/14/20 INJ-02-18_GW-10142020	MW-01-17 10/15/20 MW-01-17_GW-10152020	MW-03-17 10/13/20 MW-03-17_GW-10132020	MW-04-17 10/13/20 MW-04-17_GW-10132020
Volatile Organics-SIM														
1,4-Dioxane	7.2	350	280	- -	- -	- -	*56,000*	130,000	ug/L	5	NA	8	NA	NA
Inorganics														
Antimony	6	6	130	- -	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Arsenic	10	10	10	- -	- -	- -	- -	- -	ug/L	NA	2	NA	11	6
Barium	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA	265	NA	179	249
Beryllium	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA	< 1 U	NA	< 1 U	< 1 U
Cadmium	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA	< 0.5 U	NA	< 0.5 U	< 0.5 U
Calcium	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	97,300	NA	102,000	106,000
Chromium	100	100	11	- -	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Cobalt	40	100	100	- -	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Copper*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Iron*	300 (E)	300 (E)	- -	**5,600**	- -	- -	- -	- -	ug/L	NA	**15,100**	NA	1,720	**12,400**
Lead	4	4	14	- -	- -	- -	- -	- -	ug/L	NA	< 3 U	NA	< 3 U	< 3 U
Magnesium	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA	27,900	NA	28,300	29,600
Manganese*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA	393	NA	1,330	451
Mercury	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA	< 0.2 U	NA	< 0.2 U	< 0.2 U
Nickel	100	100	73	- -	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Selenium	50	50	5	- -	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Silver	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA	< 0.5 U	NA	< 0.5 U	< 0.5 U
Thallium	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA	< 2 U	NA	< 2 U	< 2 U
Vanadium	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Zinc	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA	< 5 U	NA	< 5 U	< 5 U
Inorganics-Filtered														
Antimony (dissolved)	6	6	130	- -	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Arsenic (dissolved)	10	10	10	- -	- -	- -	- -	- -	ug/L	< 2 U	NA	NA	NA	NA
Barium (dissolved)	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	218	NA	NA	NA	NA
Beryllium (dissolved)	4	4	6.7	- -	- -	- -	- -	- -	ug/L	< 1 U	NA	NA	NA	NA
Cadmium (dissolved)	5	5	2.5	- -	- -	- -	- -	- -	ug/L	< 0.5 U	NA	NA	NA	NA
Calcium (dissolved)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	103,000	NA	NA	NA	NA
Chromium Total (dissolved)	100	100	11	- -	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Cobalt (dissolved)	40	100	100	- -	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Copper (dissolved)*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Iron (dissolved)	300	300	- -	**5,600**	- -	- -	- -	- -	ug/L	2,870	NA	NA	NA	NA
Lead (dissolved)	4	4	14	- -	- -	- -	- -	- -	ug/L	< 3 U	NA	NA	NA	NA
Magnesium (dissolved)	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	29,300	NA	NA	NA	NA
Manganese (dissolved)*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	368	NA	NA	NA	NA
Mercury (dissolved)	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	< 0.2 U	NA	NA	NA	NA
Nickel (dissolved)	100	100	73	- -	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Selenium (dissolved)	50	50	5	- -	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Silver (dissolved)	34	98	0.2	- -	- -	- -	- -	- -	ug/L	< 0.5 U	NA	NA	NA	NA
Thallium (dissolved)	2	2	3.7	- -	- -	- -	- -	- -	ug/L	< 2 U	NA	NA	NA	NA
Vanadium (dissolved)	4.5	62	27	- -	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Zinc (dissolved)	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	< 5 U	NA	NA	NA	NA
Miscellaneous														
Alkalinity, total (as CaCO3)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	416,000	412,000	NA	416,000	428,000
Hardness	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	302,000	280,000	NA	282,000	273,000
Total dissolved solids (TDS)	500,000 (E)	500,000 (E)	500,000	- -	- -	- -	- -	- -	ug/L	1,260,000	1,260,000	NA	1,250,000	1,220,000
Total suspended solids (TSS)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	78,000	34,000	NA	18,000	26,000

See Notes on last page.

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MW-40-99 10/15/20 MW-40-99_GW-10152020	MWM16-02 10/15/20 MWM16-02_GW-10152020	MWM16-30 10/15/20 MWM16-30_GW-10152020	MWM16-31 10/16/20 MWM16-31_GW-10162020	MWM16-37 10/16/20 MWM16-37_GW-10162020
Field Parameters														
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	SU	7.38 [7.38]	7.04	6.83	7.28	7.29 [7.29]
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	NTU	30.8 [30.8]	2.38	0.02	0.02	2.48 [2.48]
PCBs														
Aroclor-1016 (PCB-1016)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Aroclor-1221 (PCB-1221)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Aroclor-1232 (PCB-1232)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Aroclor-1242 (PCB-1242)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Aroclor-1248 (PCB-1248)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Aroclor-1254 (PCB-1254)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Aroclor-1260 (PCB-1260)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Total PCBs	0.5	0.5	0.2	- -	45	45	- -	- -	ug/L	< 0.1 U [< 0.1 U]	NA	NA	NA	NA [NA]
Volatile Organics														
Acetone	730	2,100	1,700	- -	1,000,000,000	1,000,000,000	*40,000,000*	40,000,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Benzene	5	5	200	- -	5,600	35,000	*28*	66	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Bromodichloromethane	80	80	- -	- -	4,800	37,000	*34*	73	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Bromoform	80	80	- -	- -	470,000	3,100,000	*2,700*	6,200	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Bromomethane (Methyl bromide)	10	29	5	- -	4,000	9,000	*55*	80	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	240,000,000	240,000,000	*4,300,000*	4,300,000	ug/L	< 25 U [< 25 U]	< 25 U	< 25 U	< 25 U	< 25 U [< 25 U]
Carbon disulfide	800	2,300	- -	- -	250,000	550,000	*2,100*	3,100	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Carbon tetrachloride	5	5	38	- -	370	2,400	*7.7*	18	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	1,100,000	1,100,000	*190*	560	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	220,000	300,000	*49*	410	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Chlorobenzene	100	100	25	- -	210,000	470,000	*940*	1,400	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Dibromochloromethane	80	80	- -	- -	14,000	110,000	*23*	130	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Chloroethane	430	1,700	1,100	- -	5,700,000	5,700,000	*15,000*	22,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Chloroform (Trichloromethane)	80	80	350	- -	28,000	180,000	*14*	32	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Chloromethane (Methyl chloride)	260	1,100	NA	- -	8,600	45,000	*380*	560	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Cyclohexane	- -	- -	- -	- -	- -	- -	*2,000*	8,100	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	220	1,200	*0.00045*	0.021	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	2,400	15,000	*3.8*	8.9	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,2-Dichlorobenzene	600	600	13	- -	160,000	160,000	*11,000*	16,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,3-Dichlorobenzene	6.6	19	28	- -	18,000	41,000	*75*	110	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,4-Dichlorobenzene	75	75	17	- -	16,000	74,000	*170*	400	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1-Dichloroethane	880	2,500	740	- -	1,000,000	2,300,000	*130*	300	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,2-Dichloroethane	5	5	360	- -	9,600	59,000	*41*	97	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1-Dichloroethene	7	7	130	- -	200	1,300	*330*	480	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
cis-1,2-Dichloroethene	70	70	620	- -	93,000	210,000	*95*	140	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
trans-1,2-Dichloroethene	100	100	1,500	- -	85,000	200,000	*390*	580	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Methylene chloride	5	5	1,500	- -	220,000	1,400,000	*8,400*	12,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,2-Dichloropropane	5	5	230	- -	16,000	36,000	*74*	110	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Ethylbenzene*	74 (E)	74 (E)	18	**700**	110,000	170,000	*74*	170	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Isopropyl benzene	800	2,300	28	- -	56,000	56,000	*15*	36	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 U [< 10 U]	< 10 U	< 10 U	< 10 U	< 10 U [< 10 U]
2-Hexanone	1,000	2,900	- -	- -	4,200,000	8,700,000	*20,000*	29,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	20,000,000	20,000,000	*330,000*	330,000	ug/L	< 50 U [< 50 U]	< 50 U	< 50 U	< 50 U	< 50 U [< 50 U]
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	47,000,000	47,000,000	*7,400*	17,000	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
Styrene	100	100	80	- -	170,000	310,000	*960*	2,300	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	12,000	77,000	*71*	170	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Tetrachloroethene	5	5	60	- -	25,000	170,000	*130*	130	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Toluene*	790 (E)	790 (E)	270	**1,000**	530,000	530,000	*41,000*	59,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
1,2,4-Trichlorobenzene	70	70	99	- -	300,000	300,000	*110*	160	ug/L	< 5 U [< 5 U]	< 5 U	< 5 U	< 5 U	< 5 U [< 5 U]
1,1,1-Trichloroethane	200	200	89	- -	660,000	1,300,000	*14,000*	19,000	ug/L	< 1 U [< 1 U]	< 1 U	6	< 1 U	< 1 U [< 1 U]
1,1,2-Trichloroethane	5	5	330	- -	17,000	110,000	*14*	20	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Trichloroethene	5	5	200	- -	2,200	4,900	*10*	10	ug/L	< 1 U [< 1 U]	< 1 U	*14*	< 1 U	< 1 U [< 1 U]
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	170,000	170,000	*2,700*	26,000	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Vinyl chloride	2	2	13	- -	1,100	13,000	*2.1*	18	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	2	1 [1]
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U [< 2 U]
o-Xylene	NA	NA	NA	- -	- -	- -	- -	- -	ug/L	< 1 U [< 1 U]	< 1 U	< 1 U	< 1 U	< 1 U [< 1 U]
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	190,000	190,000	*2,000*	3,000	ug/L	< 2 U [< 2 U]	< 2 U	< 2 U	< 2 U	< 2 U [< 2 U]

See Notes on last page.

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MW-40-99 10/15/20 MW-40-99_GW-10152020	MWM16-02 10/15/20 MWM16-02_GW-10152020	MWM16-30 10/15/20 MWM16-30_GW-10152020	MWM16-31 10/16/20 MWM16-31_GW-10162020	MWM16-37 10/16/20 MWM16-37_GW-10162020
Volatile Organics-SIM														
1,4-Dioxane	7.2	350	280	- -	- -	- -	*56,000*	130,000	ug/L	6 [9]	NA	NA	NA	NA [NA]
Inorganics														
Antimony	6	6	130	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Arsenic	10	10	10	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Barium	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Beryllium	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Cadmium	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Calcium	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Chromium	100	100	11	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Cobalt	40	100	100	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Copper*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Iron*	300 (E)	300 (E)	- -	**5,600**	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Lead	4	4	14	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Magnesium	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Manganese*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Mercury	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Nickel	100	100	73	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Selenium	50	50	5	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Silver	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Thallium	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Vanadium	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Zinc	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Inorganics-Filtered														
Antimony (dissolved)	6	6	130	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Arsenic (dissolved)	10	10	10	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Barium (dissolved)	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Beryllium (dissolved)	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Cadmium (dissolved)	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Calcium (dissolved)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Chromium Total (dissolved)	100	100	11	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Cobalt (dissolved)	40	100	100	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Copper (dissolved)*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Iron (dissolved)	300	300	- -	**5,600**	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Lead (dissolved)	4	4	14	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Magnesium (dissolved)	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Manganese (dissolved)*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Mercury (dissolved)	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Nickel (dissolved)	100	100	73	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Selenium (dissolved)	50	50	5	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Silver (dissolved)	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Thallium (dissolved)	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Vanadium (dissolved)	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Zinc (dissolved)	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Miscellaneous														
Alkalinity, total (as CaCO3)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Hardness	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Total dissolved solids (TDS)	500,000 (E)	500,000 (E)	500,000	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]
Total suspended solids (TSS)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA [NA]	NA	NA	NA	NA [NA]

See Notes on last page.

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MWM31-02 10/16/20 MWM31-02_GW-10162020	MWM32-01 10/16/20 MWM32-01_GW-10162020	MWOS-01 10/16/20 MWOS-01_GW-10162020	MWOS-02 10/16/20 MWOS-02_GW-10162020	MWOS-03 10/16/20 MWOS-03_GW-10162020
Field Parameters														
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	SU	7.03	6.71	7.17	7.18	6.74
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	NTU	0.02	3.48	23.5	10	9.73
PCBs														
Aroclor-1016 (PCB-1016)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Aroclor-1221 (PCB-1221)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Aroclor-1232 (PCB-1232)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Aroclor-1242 (PCB-1242)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Aroclor-1248 (PCB-1248)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Aroclor-1254 (PCB-1254)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Aroclor-1260 (PCB-1260)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Total PCBs	0.5	0.5	0.2	- -	45	45	- -	- -	ug/L	NA	NA	NA	NA	< 0.1 U
Volatile Organics														
Acetone	730	2,100	1,700	- -	1,000,000,000	1,000,000,000	*40,000,000*	40,000,000	ug/L	< 50 U	< 50 U	< 50 U	NA	NA
Benzene	5	5	200	- -	5,600	35,000	*28*	66	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Bromodichloromethane	80	80	- -	- -	4,800	37,000	*34*	73	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Bromoform	80	80	- -	- -	470,000	3,100,000	*2,700*	6,200	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Bromomethane (Methyl bromide)	10	29	5	- -	4,000	9,000	*55*	80	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	240,000,000	240,000,000	*4,300,000*	4,300,000	ug/L	< 25 U	< 25 U	< 25 U	NA	NA
Carbon disulfide	800	2,300	- -	- -	250,000	550,000	*2,100*	3,100	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
Carbon tetrachloride	5	5	38	- -	370	2,400	*7.7*	18	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	1,100,000	1,100,000	*190*	560	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	220,000	300,000	*49*	410	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
Chlorobenzene	100	100	25	- -	210,000	470,000	*940*	1,400	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Dibromochloromethane	80	80	- -	- -	14,000	110,000	*23*	130	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
Chloroethane	430	1,700	1,100	- -	5,700,000	5,700,000	*15,000*	22,000	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
Chloroform (Trichloromethane)	80	80	350	- -	28,000	180,000	*14*	32	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Chloromethane (Methyl chloride)	260	1,100	NA	- -	8,600	45,000	*380*	560	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
Cyclohexane	- -	- -	- -	- -	- -	- -	*2,000*	8,100	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	220	1,200	*0.00045*	0.021	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	2,400	15,000	*3.8*	8.9	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,2-Dichlorobenzene	600	600	13	- -	160,000	160,000	*11,000*	16,000	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,3-Dichlorobenzene	6.6	19	28	- -	18,000	41,000	*75*	110	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,4-Dichlorobenzene	75	75	17	- -	16,000	74,000	*170*	400	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,1-Dichloroethane	880	2,500	740	- -	1,000,000	2,300,000	*130*	300	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,2-Dichloroethane	5	5	360	- -	9,600	59,000	*41*	97	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,1-Dichloroethene	7	7	130	- -	200	1,300	*330*	480	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
cis-1,2-Dichloroethene	70	70	620	- -	93,000	210,000	*95*	140	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
trans-1,2-Dichloroethene	100	100	1,500	- -	85,000	200,000	*390*	580	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Methylene chloride	5	5	1,500	- -	220,000	1,400,000	*8,400*	12,000	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
1,2-Dichloropropane	5	5	230	- -	16,000	36,000	*74*	110	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Ethylbenzene*	74 (E)	74 (E)	18	**700**	110,000	170,000	*74*	170	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Isopropyl benzene	800	2,300	28	- -	56,000	56,000	*15*	36	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 U	< 10 U	< 10 U	NA	NA
2-Hexanone	1,000	2,900	- -	- -	4,200,000	8,700,000	*20,000*	29,000	ug/L	< 50 U	< 50 U	< 50 U	NA	NA
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	20,000,000	20,000,000	*330,000*	330,000	ug/L	< 50 U	< 50 U	< 50 U	NA	NA
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	47,000,000	47,000,000	*7,400*	17,000	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
Styrene	100	100	80	- -	170,000	310,000	*960*	2,300	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	12,000	77,000	*71*	170	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Tetrachloroethene	5	5	60	- -	25,000	170,000	*130*	130	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Toluene*	790 (E)	790 (E)	270	**1,000**	530,000	530,000	*41,000*	59,000	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,2,4-Trichlorobenzene	70	70	99	- -	300,000	300,000	*110*	160	ug/L	< 5 U	< 5 U	< 5 U	NA	NA
1,1,1-Trichloroethane	200	200	89	- -	660,000	1,300,000	*14,000*	19,000	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
1,1,2-Trichloroethane	5	5	330	- -	17,000	110,000	*14*	20	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Trichloroethene	5	5	200	- -	2,200	4,900	*10*	10	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	170,000	170,000	*2,700*	26,000	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Vinyl chloride	2	2	13	- -	1,100	13,000	*2.1*	18	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	< 2 U	NA	NA
o-Xylene	NA	NA	NA	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	NA	NA
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	190,000	190,000	*2,000*	3,000	ug/L	< 2 U	< 2 U	< 2 U	NA	NA

See Notes on last page.

ARCADIS

Location ID: / Date Collected: / Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MWM31-02 10/16/20 MWM31-02_GW-10162020	MWM32-01 10/16/20 MWM32-01_GW-10162020	MWOS-01 10/16/20 MWOS-01_GW-10162020	MWOS-02 10/16/20 MWOS-02_GW-10162020	MWOS-03 10/16/20 MWOS-03_GW-10162020
Volatile Organics-SIM														
1,4-Dioxane	7.2	350	280	- -	- -	- -	*56,000*	130,000	ug/L	NA	NA	NA	NA	NA
Inorganics														
Antimony	6	6	130	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Arsenic	10	10	10	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Barium	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Beryllium	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cadmium	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Calcium	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Chromium	100	100	11	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cobalt	40	100	100	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Copper*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Iron*	300 (E)	300 (E)	- -	**5,600**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Lead	4	4	14	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Magnesium	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Manganese*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA	NA	703	1,210	NA
Mercury	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA	NA	NA	NA	NA
Nickel	100	100	73	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Selenium	50	50	5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Silver	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Thallium	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Vanadium	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 5 U
Zinc	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Inorganics-Filtered														
Antimony (dissolved)	6	6	130	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Arsenic (dissolved)	10	10	10	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Barium (dissolved)	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Beryllium (dissolved)	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cadmium (dissolved)	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Calcium (dissolved)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Chromium Total (dissolved)	100	100	11	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cobalt (dissolved)	40	100	100	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Copper (dissolved)*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Iron (dissolved)	300	300	- -	**5,600**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Lead (dissolved)	4	4	14	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Magnesium (dissolved)	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Manganese (dissolved)*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA	NA	683	298	NA
Mercury (dissolved)	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA	NA	NA	NA	NA
Nickel (dissolved)	100	100	73	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Selenium (dissolved)	50	50	5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Silver (dissolved)	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Thallium (dissolved)	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Vanadium (dissolved)	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	< 5 U
Zinc (dissolved)	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Miscellaneous														
Alkalinity, total (as CaCO3)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Hardness	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Total dissolved solids (TDS)	500,000 (E)	500,000 (E)	500,000	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Total suspended solids (TSS)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA

See Notes on last page.

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MWW01-SEN03 10/15/20 MWW01-SEN03_GW-10152020	MWW01-SEN04 10/13/20 MWW01-SEN04_GW-10132020	MWW10-03 10/14/20 MWW10-03_GW-10142020	MWW1-04 10/16/20 MWW1-04_GW-10162020	MWW10-SEN02 10/16/20 MWW10-SEN02_GW-10162020
Field Parameters														
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	SU	7.22	7.11	7.03 [7.03]	11.55	6.99
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	NTU	5.86	8.23	9.8 [9.8]	6.59	5.3
PCBs														
Aroclor-1016 (PCB-1016)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U [< 0.1 U]	< 0.1 U	NA
Aroclor-1221 (PCB-1221)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U [< 0.1 U]	< 0.1 U	NA
Aroclor-1232 (PCB-1232)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U [< 0.1 U]	< 0.1 U	NA
Aroclor-1242 (PCB-1242)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U [< 0.1 U]	< 0.1 U	NA
Aroclor-1248 (PCB-1248)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	0.2	< 0.1 U [< 0.1 U]	0.2	NA
Aroclor-1254 (PCB-1254)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U [< 0.1 U]	< 0.1 U	NA
Aroclor-1260 (PCB-1260)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U [< 0.1 U]	< 0.1 U	NA
Total PCBs	0.5	0.5	0.2	- -	45	45	- -	- -	ug/L	< 0.1 U	0.2	< 0.1 U [< 0.1 U]	0.2	NA
Volatile Organics														
Acetone	730	2,100	1,700	- -	1,000,000,000	1,000,000,000	*40,000,000*	40,000,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U	< 50 U
Benzene	5	5	200	- -	5,600	35,000	*28*	66	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Bromodichloromethane	80	80	- -	- -	4,800	37,000	*34*	73	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Bromoform	80	80	- -	- -	470,000	3,100,000	*2,700*	6,200	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Bromomethane (Methyl bromide)	10	29	5	- -	4,000	9,000	*55*	80	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	240,000,000	240,000,000	*4,300,000*	4,300,000	ug/L	< 25 U	< 25 U	< 25 U [< 25 U]	< 25 U	< 25 U
Carbon disulfide	800	2,300	- -	- -	250,000	550,000	*2,100*	3,100	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
Carbon tetrachloride	5	5	38	- -	370	2,400	*7.7*	18	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	1,100,000	1,100,000	*190*	560	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	220,000	300,000	*49*	410	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
Chlorobenzene	100	100	25	- -	210,000	470,000	*940*	1,400	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Dibromochloromethane	80	80	- -	- -	14,000	110,000	*23*	130	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
Chloroethane	430	1,700	1,100	- -	5,700,000	5,700,000	*15,000*	22,000	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
Chloroform (Trichloromethane)	80	80	350	- -	28,000	180,000	*14*	32	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Chloromethane (Methyl chloride)	260	1,100	NA	- -	8,600	45,000	*380*	560	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
Cyclohexane	- -	- -	- -	- -	- -	- -	*2,000*	8,100	ug/L	< 2 UX	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	220	1,200	*0.00045*	0.021	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	2,400	15,000	*3.8*	8.9	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,2-Dichlorobenzene	600	600	13	- -	160,000	160,000	*11,000*	16,000	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,3-Dichlorobenzene	6.6	19	28	- -	18,000	41,000	*75*	110	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,4-Dichlorobenzene	75	75	17	- -	16,000	74,000	*170*	400	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,1-Dichloroethane	880	2,500	740	- -	1,000,000	2,300,000	*130*	300	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,2-Dichloroethane	5	5	360	- -	9,600	59,000	*41*	97	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,1-Dichloroethene	7	7	130	- -	200	1,300	*330*	480	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
cis-1,2-Dichloroethene	70	70	620	- -	93,000	210,000	*95*	140	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
trans-1,2-Dichloroethene	100	100	1,500	- -	85,000	200,000	*390*	580	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Methylene chloride	5	5	1,500	- -	220,000	1,400,000	*8,400*	12,000	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
1,2-Dichloropropane	5	5	230	- -	16,000	36,000	*74*	110	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Ethylbenzene*	74 (E)	74 (E)	18	**700**	110,000	170,000	*74*	170	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Isopropyl benzene	800	2,300	28	- -	56,000	56,000	*15*	36	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 U	< 10 U	< 10 U [< 10 U]	< 10 U	< 10 U
2-Hexanone	1,000	2,900	- -	- -	4,200,000	8,700,000	*20,000*	29,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U	< 50 U
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	20,000,000	20,000,000	*330,000*	330,000	ug/L	< 50 U	< 50 U	< 50 U [< 50 U]	< 50 U	< 50 U
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	47,000,000	47,000,000	*7,400*	17,000	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
Styrene	100	100	80	- -	170,000	310,000	*960*	2,300	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	12,000	77,000	*71*	170	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Tetrachloroethene	5	5	60	- -	25,000	170,000	*130*	130	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Toluene*	790 (E)	790 (E)	270	**1,000**	530,000	530,000	*41,000*	59,000	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,2,4-Trichlorobenzene	70	70	99	- -	300,000	300,000	*110*	160	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
1,1,1-Trichloroethane	200	200	89	- -	660,000	1,300,000	*14,000*	19,000	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
1,1,2-Trichloroethane	5	5	330	- -	17,000	110,000	*14*	20	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Trichloroethene	5	5	200	- -	2,200	4,900	*10*	10	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	170,000	170,000	*2,700*	26,000	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Vinyl chloride	2	2	13	- -	1,100	13,000	*2.1*	18	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	< 2 U [< 2 U]	< 2 U	< 2 U
o-Xylene	NA	NA	NA	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	< 1 U	< 1 U
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	190,000	190,000	*2,000*	3,000	ug/L	< 2 U	< 2 U	< 2 U [< 2 U]	< 2 U	< 2 U

See Notes on last page.

ARCADIS

Location ID: / Date Collected: / Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MWW01-SEN03 10/15/20 MWW01-SEN03_GW-10152020	MWW01-SEN04 10/13/20 MWW01-SEN04_GW-10132020	MWW10-03 10/14/20 MWW10-03_GW-10142020	MWW1-04 10/16/20 MWW1-04_GW-10162020	MWW10-SEN02 10/16/20 MWW10-SEN02_GW-10162020
Volatile Organics-SIM														
1,4-Dioxane	7.2	350	280	- -	- -	- -	*56,000*	130,000	ug/L	12	NA	NA [NA]	< 1 U	NA
Inorganics														
Antimony	6	6	130	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	< 5 U	< 5 U
Arsenic	10	10	10	- -	- -	- -	- -	- -	ug/L	4	5	9 [7]	NA	< 2 U
Barium	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	96	202	132 [132]	NA	69
Beryllium	4	4	6.7	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 0.1 U [< 0.1 U]	NA	< 1 U
Cadmium	5	5	2.5	- -	- -	- -	- -	- -	ug/L	< 0.5 U	< 0.5 U	< 0.5 U [< 0.5 U]	NA	< 0.5 U
Calcium	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	38,600	128,000	NA [NA]	NA	NA
Chromium	100	100	11	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	NA	9
Cobalt	40	100	100	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	NA	< 5 U
Copper*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	< 5 U	9	< 5 U [< 5 U]	NA	< 5 U
Iron*	300 (E)	300 (E)	- -	**5,600**	- -	- -	- -	- -	ug/L	**9,430**	**20,300**	NA [NA]	NA	NA
Lead	4	4	14	- -	- -	- -	- -	- -	ug/L	< 3 U	15	< 3 U [< 3 U]	NA	< 3 U
Magnesium	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	12,900	38,400	NA [NA]	NA	NA
Manganese*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	195	769	132 [114]	NA	< 5 U
Mercury	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	< 0.2 U	< 0.2 U	< 0.2 U [< 0.2 U]	NA	< 0.2 U
Nickel	100	100	73	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	NA	12
Selenium	50	50	5	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	NA	< 5 U
Silver	34	98	0.2	- -	- -	- -	- -	- -	ug/L	< 0.5 U	< 0.5 U	< 0.5 U [< 0.5 U]	NA	< 0.5 U
Thallium	2	2	3.7	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	< 2 U [< 2 U]	NA	< 2 U
Vanadium	4.5	62	27	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	6	< 5 U
Zinc	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U [< 5 U]	NA	< 5 U
Inorganics-Filtered														
Antimony (dissolved)	6	6	130	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Arsenic (dissolved)	10	10	10	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Barium (dissolved)	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Beryllium (dissolved)	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Cadmium (dissolved)	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Calcium (dissolved)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Chromium Total (dissolved)	100	100	11	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Cobalt (dissolved)	40	100	100	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Copper (dissolved)*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Iron (dissolved)	300	300	- -	**5,600**	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Lead (dissolved)	4	4	14	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Magnesium (dissolved)	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Manganese (dissolved)*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Mercury (dissolved)	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA	NA	NA [NA]	NA	NA
Nickel (dissolved)	100	100	73	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Selenium (dissolved)	50	50	5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Silver (dissolved)	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Thallium (dissolved)	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Vanadium (dissolved)	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Zinc (dissolved)	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA	NA	NA [NA]	NA	NA
Miscellaneous														
Alkalinity, total (as CaCO3)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	496,000	356,000	NA [NA]	NA	NA
Hardness	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	101,000	340,000	NA [NA]	NA	NA
Total dissolved solids (TDS)	500,000 (E)	500,000 (E)	500,000	- -	- -	- -	- -	- -	ug/L	846,000	1,360,000	NA [NA]	NA	NA
Total suspended solids (TSS)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	26,000	42,000	NA [NA]	NA	NA

See Notes on last page.

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MWW1-15 10/15/20 MWW1-15_GW-10152020	TW-09-01 10/15/20 TW-09-01_GW-10152020	TW-10-02 10/13/20 TW-10-02_GW-10132020	TW-MD-01 10/15/20 TW-MD-01_GW-10152020	TW-MD-02 10/15/20 TW-MD-02_GW-10152020
Field Parameters														
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	SU	7.65	7.34	6.72	6.93	7.06
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	NTU	9.63	8.09	2.9	0.39	7.27
PCBs														
Aroclor-1016 (PCB-1016)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1221 (PCB-1221)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1232 (PCB-1232)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1242 (PCB-1242)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1248 (PCB-1248)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1254 (PCB-1254)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Aroclor-1260 (PCB-1260)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Total PCBs	0.5	0.5	0.2	- -	45	45	- -	- -	ug/L	< 0.1 U	< 0.1 U	NA	< 0.1 U	< 0.1 U
Volatile Organics														
Acetone	730	2,100	1,700	- -	1,000,000,000	1,000,000,000	*40,000,000*	40,000,000	ug/L	< 50 U	< 50 U	NA	< 50 U	< 50 U
Benzene	5	5	200	- -	5,600	35,000	*28*	66	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Bromodichloromethane	80	80	- -	- -	4,800	37,000	*34*	73	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Bromoform	80	80	- -	- -	470,000	3,100,000	*2,700*	6,200	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Bromomethane (Methyl bromide)	10	29	5	- -	4,000	9,000	*55*	80	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	240,000,000	240,000,000	*4,300,000*	4,300,000	ug/L	< 25 U	< 25 U	NA	< 25 U	< 25 U
Carbon disulfide	800	2,300	- -	- -	250,000	550,000	*2,100*	3,100	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Carbon tetrachloride	5	5	38	- -	370	2,400	*7.7*	18	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	1,100,000	1,100,000	*190*	560	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	220,000	300,000	*49*	410	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Chlorobenzene	100	100	25	- -	210,000	470,000	*940*	1,400	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Dibromochloromethane	80	80	- -	- -	14,000	110,000	*23*	130	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Chloroethane	430	1,700	1,100	- -	5,700,000	5,700,000	*15,000*	22,000	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Chloroform (Trichloromethane)	80	80	350	- -	28,000	180,000	*14*	32	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Chloromethane (Methyl chloride)	260	1,100	NA	- -	8,600	45,000	*380*	560	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Cyclohexane	- -	- -	- -	- -	- -	- -	*2,000*	8,100	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	220	1,200	*0.00045*	0.021	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	2,400	15,000	*3.8*	8.9	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,2-Dichlorobenzene	600	600	13	- -	160,000	160,000	*11,000*	16,000	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,3-Dichlorobenzene	6.6	19	28	- -	18,000	41,000	*75*	110	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,4-Dichlorobenzene	75	75	17	- -	16,000	74,000	*170*	400	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,1-Dichloroethane	880	2,500	740	- -	1,000,000	2,300,000	*130*	300	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,2-Dichloroethane	5	5	360	- -	9,600	59,000	*41*	97	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,1-Dichloroethene	7	7	130	- -	200	1,300	*330*	480	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
cis-1,2-Dichloroethene	70	70	620	- -	93,000	210,000	*95*	140	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
trans-1,2-Dichloroethene	100	100	1,500	- -	85,000	200,000	*390*	580	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Methylene chloride	5	5	1,500	- -	220,000	1,400,000	*8,400*	12,000	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
1,2-Dichloropropane	5	5	230	- -	16,000	36,000	*74*	110	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Ethylbenzene*	74 (E)	74 (E)	18	**700**	110,000	170,000	*74*	170	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Isopropyl benzene	800	2,300	28	- -	56,000	56,000	*15*	36	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 U	< 10 U	NA	< 10 U	< 10 U
2-Hexanone	1,000	2,900	- -	- -	4,200,000	8,700,000	*20,000*	29,000	ug/L	< 50 U	< 50 U	NA	< 50 U	< 50 U
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	20,000,000	20,000,000	*330,000*	330,000	ug/L	< 50 U	< 50 U	NA	< 50 U	< 50 U
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	47,000,000	47,000,000	*7,400*	17,000	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Styrene	100	100	80	- -	170,000	310,000	*960*	2,300	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	12,000	77,000	*71*	170	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Tetrachloroethene	5	5	60	- -	25,000	170,000	*130*	130	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Toluene*	790 (E)	790 (E)	270	**1,000**	530,000	530,000	*41,000*	59,000	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,2,4-Trichlorobenzene	70	70	99	- -	300,000	300,000	*110*	160	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
1,1,1-Trichloroethane	200	200	89	- -	660,000	1,300,000	*14,000*	19,000	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
1,1,2-Trichloroethane	5	5	330	- -	17,000	110,000	*14*	20	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Trichloroethene	5	5	200	- -	2,200	4,900	*10*	10	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	170,000	170,000	*2,700*	26,000	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Vinyl chloride	2	2	13	- -	1,100	13,000	*2.1*	18	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	NA	< 2 U	< 2 U
o-Xylene	NA	NA	NA	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	190,000	190,000	*2,000*	3,000	ug/L	< 2 U	< 2 U	NA	< 2 U	< 2 U

See Notes on last page.

Table 2
Summary of Groundwater Analytical Results
2020 Annual Groundwater Monitoring Report
RACER Trust Pontiac North Campus

ARCADIS

Location ID: / Date Collected: / Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	MWW1-15 10/15/20 MWW1-15_GW-10152020	TW-09-01 10/15/20 TW-09-01_GW-10152020	TW-10-02 10/13/20 TW-10-02_GW-10132020	TW-MD-01 10/15/20 TW-MD-01_GW-10152020	TW-MD-02 10/15/20 TW-MD-02_GW-10152020
Volatile Organics-SIM														
1,4-Dioxane	7.2	350	280	- -	- -	- -	*56,000*	130,000	ug/L	NA	NA	30	< 1 U	NA
Inorganics														
Antimony	6	6	130	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Arsenic	10	10	10	- -	- -	- -	- -	- -	ug/L	2	20	NA	2	5
Barium	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	143	370	NA	83	199
Beryllium	4	4	6.7	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U	< 1 U
Cadmium	5	5	2.5	- -	- -	- -	- -	- -	ug/L	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U
Calcium	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	53,500	112,000	NA	108,000	88,000
Chromium	100	100	11	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Cobalt	40	100	100	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Copper*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Iron*	300 (E)	300 (E)	- -	**5,600**	- -	- -	- -	- -	ug/L	**6,910**	3,000	NA	**8,480**	**13,200**
Lead	4	4	14	- -	- -	- -	- -	- -	ug/L	< 3 U	< 3 U	NA	< 3 U	< 3 U
Magnesium	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	27,400	20,700	NA	31,400	18,900
Manganese*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	216	308	NA	610	854
Mercury	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	< 0.2 U	< 0.2 U	NA	< 0.2 U	< 0.2 U
Nickel	100	100	73	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	7	< 5 U
Selenium	50	50	5	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Silver	34	98	0.2	- -	- -	- -	- -	- -	ug/L	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U
Thallium	2	2	3.7	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	NA	< 2 U	< 2 U
Vanadium	4.5	62	27	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Zinc	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	NA	< 5 U	< 5 U
Inorganics-Filtered														
Antimony (dissolved)	6	6	130	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Arsenic (dissolved)	10	10	10	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Barium (dissolved)	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Beryllium (dissolved)	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cadmium (dissolved)	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Calcium (dissolved)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Chromium Total (dissolved)	100	100	11	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cobalt (dissolved)	40	100	100	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Copper (dissolved)*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Iron (dissolved)	300	300	- -	**5,600**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Lead (dissolved)	4	4	14	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Magnesium (dissolved)	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Manganese (dissolved)*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Mercury (dissolved)	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA	NA	NA	NA	NA
Nickel (dissolved)	100	100	73	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Selenium (dissolved)	50	50	5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Silver (dissolved)	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Thallium (dissolved)	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Vanadium (dissolved)	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Zinc (dissolved)	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Miscellaneous														
Alkalinity, total (as CaCO3)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	514,000	456,000	NA	424,000	500,000
Hardness	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	143,000	303,000	NA	293,000	235,000
Total dissolved solids (TDS)	500,000 (E)	500,000 (E)	500,000	- -	- -	- -	- -	- -	ug/L	654,000	740,000	NA	616,000	774,000
Total suspended solids (TSS)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	15,000	10,000	NA	18,000	29,000

See Notes on last page.

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	TW-MD-03 10/14/20 TW-MD-03_GW-10142020	TW-MD-04 10/14/20 TW-MD-04_GW-10142020	TW-MD-05 10/14/20 TW-MD-05_GW-10142020	TW-MD-06 10/14/20 TW-MD-06_GW-10142020	TW-MD-07 10/14/20 TW-MD-07_GW-10142020
Field Parameters														
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	SU	7.11	6.99	7.17	7.40	6.92
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	NTU	0.98	0.02	7.44	3.59	0.02
PCBs														
Aroclor-1016 (PCB-1016)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U
Aroclor-1221 (PCB-1221)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U
Aroclor-1232 (PCB-1232)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U
Aroclor-1242 (PCB-1242)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U
Aroclor-1248 (PCB-1248)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	0.6	< 0.1 U
Aroclor-1254 (PCB-1254)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U
Aroclor-1260 (PCB-1260)	0.5	0.5	0.2	- -	- -	- -	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U
Total PCBs	0.5	0.5	0.2	- -	45	45	- -	- -	ug/L	< 0.1 U	< 0.1 U	< 0.1 U	0.6	< 0.1 U
Volatile Organics														
Acetone	730	2,100	1,700	- -	1,000,000,000	1,000,000,000	*40,000,000*	40,000,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	5	5	200	- -	5,600	35,000	*28*	66	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	80	80	- -	- -	4,800	37,000	*34*	73	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	80	80	- -	- -	470,000	3,100,000	*2,700*	6,200	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane (Methyl bromide)	10	29	5	- -	4,000	9,000	*55*	80	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	240,000,000	240,000,000	*4,300,000*	4,300,000	ug/L	< 25 U	< 25 U	< 25 U	< 25 U	< 25 U
Carbon disulfide	800	2,300	- -	- -	250,000	550,000	*2,100*	3,100	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	5	5	38	- -	370	2,400	*7.7*	18	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	1,100,000	1,100,000	*190*	560	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	220,000	300,000	*49*	410	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	100	100	25	- -	210,000	470,000	*940*	1,400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dibromochloromethane	80	80	- -	- -	14,000	110,000	*23*	130	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	430	1,700	1,100	- -	5,700,000	5,700,000	*15,000*	22,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform (Trichloromethane)	80	80	350	- -	28,000	180,000	*14*	32	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane (Methyl chloride)	260	1,100	NA	- -	8,600	45,000	*380*	560	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	- -	- -	- -	- -	- -	- -	*2,000*	8,100	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	220	1,200	*0.00045*	0.021	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	2,400	15,000	*3.8*	8.9	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	600	600	13	- -	160,000	160,000	*11,000*	16,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	6.6	19	28	- -	18,000	41,000	*75*	110	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	75	75	17	- -	16,000	74,000	*170*	400	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	880	2,500	740	- -	1,000,000	2,300,000	*130*	300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	5	5	360	- -	9,600	59,000	*41*	97	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	7	7	130	- -	200	1,300	*330*	480	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	70	70	620	- -	93,000	210,000	*95*	140	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	100	100	1,500	- -	85,000	200,000	*390*	580	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methylene chloride	5	5	1,500	- -	220,000	1,400,000	*8,400*	12,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	5	5	230	- -	16,000	36,000	*74*	110	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene*	74 (E)	74 (E)	18	**700**	110,000	170,000	*74*	170	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	800	2,300	28	- -	56,000	56,000	*15*	36	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2-Hexanone	1,000	2,900	- -	- -	4,200,000	8,700,000	*20,000*	29,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	20,000,000	20,000,000	*330,000*	330,000	ug/L	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	47,000,000	47,000,000	*7,400*	17,000	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	100	100	80	- -	170,000	310,000	*960*	2,300	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	12,000	77,000	*71*	170	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	5	5	60	- -	25,000	170,000	*130*	130	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene*	790 (E)	790 (E)	270	**1,000**	530,000	530,000	*41,000*	59,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	70	70	99	- -	300,000	300,000	*110*	160	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	200	200	89	- -	660,000	1,300,000	*14,000*	19,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	5	5	330	- -	17,000	110,000	*14*	20	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	5	5	200	- -	2,200	4,900	*10*	10	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	170,000	170,000	*2,700*	26,000	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	2	2	13	- -	1,100	13,000	*2.1*	18	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	NA	NA	NA	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	190,000	190,000	*2,000*	3,000	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

See Notes on last page.

ARCADIS

Location ID: / Date Collected: / Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Residential GVIIC	Non-Residential GVIIC	Residential VIAP	Nonresidential VIAP	Units	TW-MD-03 10/14/20 TW-MD-03_GW-10142020	TW-MD-04 10/14/20 TW-MD-04_GW-10142020	TW-MD-05 10/14/20 TW-MD-05_GW-10142020	TW-MD-06 10/14/20 TW-MD-06_GW-10142020	TW-MD-07 10/14/20 TW-MD-07_GW-10142020
Volatile Organics-SIM														
1,4-Dioxane	7.2	350	280	- -	- -	- -	*56,000*	130,000	ug/L	NA	NA	NA	NA	2
Inorganics														
Antimony	6	6	130	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Arsenic	10	10	10	- -	- -	- -	- -	- -	ug/L	3	3	5	7	3
Barium	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	142	120	97	101	246
Beryllium	4	4	6.7	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Cadmium	5	5	2.5	- -	- -	- -	- -	- -	ug/L	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Calcium	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	58,000	63,300	50,800	66,500	134,000
Chromium	100	100	11	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Cobalt	40	100	100	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Copper*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Iron*	300 (E)	300 (E)	- -	**5,600**	- -	- -	- -	- -	ug/L	**8,580**	**11,800**	**9,240**	**8,200**	**24,300**
Lead	4	4	14	- -	- -	- -	- -	- -	ug/L	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U
Magnesium	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	15,300	17,200	23,000	22,300	30,200
Manganese*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	288	440	313	276	470
Mercury	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Nickel	100	100	73	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Selenium	50	50	5	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Silver	34	98	0.2	- -	- -	- -	- -	- -	ug/L	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Thallium	2	2	3.7	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Vanadium	4.5	62	27	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Zinc	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Inorganics-Filtered														
Antimony (dissolved)	6	6	130	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Arsenic (dissolved)	10	10	10	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Barium (dissolved)	2,000	2,000	670	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Beryllium (dissolved)	4	4	6.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cadmium (dissolved)	5	5	2.5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Calcium (dissolved)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Chromium Total (dissolved)	100	100	11	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Cobalt (dissolved)	40	100	100	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Copper (dissolved)*	1,000 (E)	1,000 (E)	13	**4,000**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Iron (dissolved)	300	300	- -	**5,600**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Lead (dissolved)	4	4	14	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Magnesium (dissolved)	400,000	1,100,000	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Manganese (dissolved)*	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Mercury (dissolved)	2	2	0.0013	- -	56	56	*2.5*	3.7	ug/L	NA	NA	NA	NA	NA
Nickel (dissolved)	100	100	73	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Selenium (dissolved)	50	50	5	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Silver (dissolved)	34	98	0.2	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Thallium (dissolved)	2	2	3.7	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Vanadium (dissolved)	4.5	62	27	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Zinc (dissolved)	2,400	5,000 (E)	170	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Miscellaneous														
Alkalinity, total (as CaCO3)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	424,000	424,000	402,000	390,000	388,000
Hardness	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	159,000	168,000	135,000	194,000	369,000
Total dissolved solids (TDS)	500,000 (E)	500,000 (E)	500,000	- -	- -	- -	- -	- -	ug/L	694,000	658,000	638,000	678,000	1,820,000
Total suspended solids (TSS)	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	22,000	26,000	24,000	18,000	48,000

See Notes on last page.

Notes:

1) Criteria listed are from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Clean Up Criteria Requirements Table 1: Groundwater: Residential and Nonresidential, Part 201 Generic Cleanup Criteria and Screening Levels, December 21, 2020.

2) Residential and Nonresidential Volatilization to Indoor Air Pathway Screening Levels (Groundwater Not in Contact) are from the DEQ Guidance Document for the Vapor Intrusion Pathway, Appendix C - Tables 1 and 2, September 4, 2020.

3) Groundwater Surface Water Interface Criteria listed for barium, beryllium, cadmium, chromium, copper, lead, manganese, nickel and zinc are calculated based on a hardness of 150 mg/L-CaCO3 for southern Lower Peninsula protected as a drinking water source.

4) Yellow highlighted values denotes exceedance and/or equal to Michigan Residential Drinking Water.
5) Orange highlighted values denotes exceedance and/or equal to Non-Residential Drinking Water.
6) Grey shaded values denotes exceedance and/or equal to Michigan Groundwater Surface Water Interface.
7) Bold values denotes exceedance and/or equal to Non-Residential Health Based Drinking Water Value.
8) Values in italics denotes exceedance and/or equal to Residential Groundwater Volatilization to Indoor Air Pathway Screening Levels (Groundwater Not in Contact).
9) Values in red type denotes exceedance and/or equal to Non-Residential Groundwater Volatilization to Indoor Air Pathway Screening Levels (Groundwater Not in Contact).
10) Underlined values denotes exceedance and/or equal to Residential Groundwater Volatilization to Indoor Air Inhalation criteria.
11) Bold boxed values denotes exceedance and/or equal to Non-Residential Groundwater Volatilization to Indoor Air Inhalation criteria.
12) Duplicate analyses are presented in brackets.
13) Constituents flagged with an (*) symbol have Residential and Non-Residential Drinking Water criteria which represent aesthetic drinking water values. The Non-Residential Health Based Drinking Water Value associated with these constituents will be utilized for Site comparison as is more applicable.

Abbreviations:

ug/L	Micrograms per liter.
E	Criterion is the aesthetic drinking water value, as required by Section 20120a(5) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).
GVIIC	Groundwater Volatization to Indoor Air Critera
NA	Not Analyzed
NTU	Nephelometric Turbidity Unit
SU	Standard Unit
U	Compound was analyzed for but not detected. The associated value is the compound quantitation limit.
VIAP	Volatization to Indoor Air Pathway

Table 3
Summary of Groundwater Analytical Results - Fiero
2020 Annual Groundwater Monitoring Report
RACER Trust Pontiac North Campus

ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MW-02-17 10/13/20 MW-02-17_GW-10132020	MW-05-18 10/13/20 MW-05-18_GW-10132020	MWF12-01R 10/13/20 MWF12-01R_GW-10132020	MWF12-02 10/13/20 MWF12-02_GW-10132020
Field Parameters															
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	- -	- -	SU	7.19	7.06	7.03	7.11 [7.11]
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	NTU	0.58	0.02	0.02	0.08 [0.08]
Volatile Organics															
Acetone	730	2,100	1,700	- -	*32,000,000*	*18,000,000*	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 U	< 50 U	NA	< 50 U [< 50 U]
Benzene	5	5	200	- -	*34*	*18*	1,100	510	1,700	760	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Bromodichloromethane	80	80	- -	- -	*60*	*31*	1,700	760	2,600	1,100	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Bromoform	80	80	- -	- -	*6,400*	*3,200*	200,000	83,000	300,000	120,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Bromomethane (Methyl bromide)	10	29	5	- -	*59*	*33*	1,200	580	1,900	860	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	*4,000,000*	*2,200,000*	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 U	< 25 U	NA	< 25 U [< 25 U]
Carbon disulfide	800	2,300	- -	- -	*2,200*	*1,200*	46,000	22,000	70,000	33,000	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
Carbon tetrachloride	5	5	38	- -	*14*	*7.2*	440	190	650	290	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	*300*	*160*	6,000	2,700	9,000	4,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	*71*	*38*	1,400	640	2,100	960	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
Chlorobenzene	100	100	25	- -	*1,300*	*720*	27,000	12,000	41,000	18,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Dibromochloromethane	80	80	- -	- -	*58*	*29*	4,400	1,800	6,600	2,800	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
Chloroethane	430	1,700	1,100	- -	*15,000*	*8,600*	320,000	150,000	490,000	230,000	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
Chloroform (Trichloromethane)	80	80	350	- -	*19*	*10*	610	270	910	410	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Chloromethane (Methyl chloride)	260	1,100	- -	- -	*340*	*200*	7,400	3,500	11,000	5,300	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
Cyclohexane	- -	- -	- -	- -	*2,600*	*1,400*	53,000	24,000	55,000	36,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	*0.00045*	*0.00045*	0.042	0.029	0.061	0.042	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	*8*	*4*	250	110	370	160	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,2-Dichlorobenzene	600	600	13	- -	*19,000*	*9,900*	160,000	160,000	160,000	160,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,3-Dichlorobenzene	6.6	19	28	- -	*130*	*70*	2,700	1,200	4,000	1,700	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,4-Dichlorobenzene	75	75	17	- -	*310*	*160*	9,800	4,300	15,000	6,400	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,1-Dichloroethane	880	2,500	740	- -	*160*	*88*	5,300	2,400	8,000	3,600	ug/L	< 1 U	7	NA	2 [2]
1,2-Dichloroethane	5	5	360	- -	*50*	*27*	1,600	750	2,500	1,100	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,1-Dichloroethene	7	7	130	- -	*410*	*220*	8,300	3,800	13,000	5,700	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
cis-1,2-Dichloroethene	70	70	620	- -	*110*	*62*	2,300	1,100	3,500	1,600	ug/L	< 1 U	12	NA	< 1 U [< 1 U]
trans-1,2-Dichloroethene	100	100	1,500	- -	*480*	*260*	9,800	4,500	15,000	6,700	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Methylene chloride	5	5	1,500	- -	*9,100*	*5,000*	190,000	88,000	280,000	130,000	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
1,2-Dichloropropane	5	5	230	- -	*100*	*56*	2,100	950	3,200	1,400	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Ethylbenzene*	74 (E)	74 (E)	18	**700**	*110*	*60*	3,600	1,600	5,400	2,400	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Isopropyl benzene	800	2300	28	- -	*26*	*13*	810	360	1,200	540	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 U	< 10 U	NA	< 10 U [< 10 U]
2-Hexanone	1,000	2,900	- -	- -	*24,000*	*12,000*	490,000	220,000	740,000	320,000	ug/L	< 50 U	< 50 U	NA	< 50 U [< 50 U]
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	*1,600,000*	*810,000*	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 U	< 50 U	NA	< 50 U [< 50 U]
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	*10,000*	*5,300*	320,000	150,000	490,000	220,000	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
Styrene	100	100	80	- -	*1,400*	*740*	45,000	20,000	67,000	30,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	*130*	*66*	4,100	1,800	6,200	2,600	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Tetrachloroethene	5	5	60	- -	*250*	*130*	3,400	1,500	5,000	2,200	ug/L	3	< 1 U	NA	< 1 U [< 1 U]
Toluene*	790 (E)	790 (E)	270	**1,000**	*56,000*	*30,000*	530,000	250,000	530,000	380,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
1,2,4-Trichlorobenzene	70	70	99	- -	*270*	*130*	5,100	2,200	7,700	3,300	ug/L	< 5 U	< 5 U	NA	< 5 U [< 5 U]
1,1,1-Trichloroethane	200	200	89	- -	*22,000*	*11,000*	210,000	92,000	310,000	140,000	ug/L	6	7	NA	< 1 U [< 1 U]
1,1,2-Trichloroethane	5	5	330	- -	*21*	*11*	410	180	620	280	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Trichloroethene	5	5	200	- -	*15*	*8.1*	210	93	310	140	ug/L	2	< 1 U	NA	< 1 U [< 1 U]
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	*7,100*	*3,600*	140,000	58,000	170,000	88,000	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Vinyl chloride	2	2	13	- -	*2.2*	*1.2*	260	120	390	180	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 U	< 2 U	NA	< 2 U [< 2 U]
o-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 U	< 1 U	NA	< 1 U [< 1 U]
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	*3,000*	*1,600*	60,000	27,000	91,000	41,000	ug/L	< 2 U	< 2 U	NA	< 2 U [< 2 U]
Volatile Organics-SIM															
1,4-Dioxane	7.2	350	280	- -	*43,000*	*22,000*	1,500,000	670,000	2,300,000	1,000,000	ug/L	30	3	107	NA [NA]
Inorganics															
Manganese	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	190	868 [1,000]
Inorganics-Filtered															
Manganese (dissolved)	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	194	NA [NA]

See Notes on Last Page.

Table 3
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ARCADIS

Location ID: Date Collected: Sample Name:	Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface	Non-Residential Health Based Drinking Water Value	Res Fiero SSVIAC SOG	Res Fiero SSVIAC BASE	NR Fiero SSVIAC <50k SOG	NR Fiero SSVIAC <50k BASE	NR Fiero SSVIAC >50k SOG	NR Fiero SSVIAC >50k BASE	Units	MWF16-06 10/15/20 MWF16-06_GW-10152020	MWF16-23 10/15/20 MWF16-23_GW-10152020	MWF16-25 10/15/20 MWF16-25_GW-10152020	MWF7-02 10/13/20 MWF7-02_GW-10132020	MWF8-01 10/15/20 MWF8-01_GW-10152020
Field Parameters																
pH	6.5-8.5 (E)	6.5-8.5 (E)	6.5-9.0	- -	- -	- -	- -	- -	- -	- -	SU	7.41	6.96	7.11	7.01	6.83
Turbidity	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	NTU	0.02	9.76	4.66	0.02	0.02
Volatile Organics																
Acetone	730	2,100	1,700	- -	*32,000,000*	*18,000,000*	240,000,000	110,000,000	360,000,000	160,000,000	ug/L	< 50 Ur	< 50 U	< 50 U	< 50 U	< 50 U
Benzene	5	5	200	- -	*34*	*18*	1,100	510	1,700	760	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	80	80	- -	- -	*60*	*31*	1,700	760	2,600	1,100	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	80	80	- -	- -	*6,400*	*3,200*	200,000	83,000	300,000	120,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane (Methyl bromide)	10	29	5	- -	*59*	*33*	1,200	580	1,900	860	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	38,000	2,200	- -	*4,000,000*	*2,200,000*	59,000,000	27,000,000	88,000,000	40,000,000	ug/L	< 25 Ur	< 25 U	< 25 U	< 25 U	< 25 U
Carbon disulfide	800	2,300	- -	- -	*2,200*	*1,200*	46,000	22,000	70,000	33,000	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
Carbon tetrachloride	5	5	38	- -	*14*	*7.2*	440	190	650	290	ug/L	*13 r*	< 1 U	1	< 1 U	< 1 U
Trichlorofluoromethane (CFC-11)	2,600	7,300	- -	- -	*300*	*160*	6,000	2,700	9,000	4,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Dichlorodifluoromethane (CFC-12)	1,700	4,800	- -	- -	*71*	*38*	1,400	640	2,100	960	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
Chlorobenzene	100	100	25	- -	*1,300*	*720*	27,000	12,000	41,000	18,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Dibromochloromethane	80	80	- -	- -	*58*	*29*	4,400	1,800	6,600	2,800	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
Chloroethane	430	1,700	1,100	- -	*15,000*	*8,600*	320,000	150,000	490,000	230,000	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
Chloroform (Trichloromethane)	80	80	350	- -	*19*	*10*	610	270	910	410	ug/L	*34 r*	1	6	1	2
Chloromethane (Methyl chloride)	260	1,100	- -	- -	*340*	*200*	7,400	3,500	11,000	5,300	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
Cyclohexane	- -	- -	- -	- -	*2,600*	*1,400*	53,000	24,000	55,000	36,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane (DBCP)	0.2	0.2	- -	- -	*0.00045*	*0.00045*	0.042	0.029	0.061	0.042	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane (Ethylene dibromide)	0.05	0.05	5.7	- -	*8*	*4*	250	110	370	160	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	600	600	13	- -	*19,000*	*9,900*	160,000	160,000	160,000	160,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	6.6	19	28	- -	*130*	*70*	2,700	1,200	4,000	1,700	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	75	75	17	- -	*310*	*160*	9,800	4,300	15,000	6,400	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	880	2,500	740	- -	*160*	*88*	5,300	2,400	8,000	3,600	ug/L	*210 Yr*	6	4	24	< 1 U
1,2-Dichloroethane	5	5	360	- -	*50*	*27*	1,600	750	2,500	1,100	ug/L	4 r	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	7	7	130	- -	*410*	*220*	8,300	3,800	13,000	5,700	ug/L	23 r	< 1 U	< 1 U	15	< 1 U
cis-1,2-Dichloroethene	70	70	620	- -	*110*	*62*	2,300	1,100	3,500	1,600	ug/L	*82 r*	10	9	3	< 1 U
trans-1,2-Dichloroethene	100	100	1,500	- -	*480*	*260*	9,800	4,500	15,000	6,700	ug/L	2 r	1	< 1 U	< 1 U	< 1 U
Methylene chloride	5	5	1,500	- -	*9,100*	*5,000*	190,000	88,000	280,000	130,000	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dichloropropane	5	5	230	- -	*100*	*56*	2,100	950	3,200	1,400	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene*	74 (E)	74 (E)	18	**700**	*110*	*60*	3,600	1,600	5,400	2,400	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Isopropyl benzene	800	2300	28	- -	*26*	*13*	810	360	1,200	540	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Methyl acetate	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 10 Ur	< 10 U	< 10 U	< 10 U	< 10 U
2-Hexanone	1,000	2,900	- -	- -	*24,000*	*12,000*	490,000	220,000	740,000	320,000	ug/L	< 50 Ur	< 50 U	< 50 U	< 50 U	< 50 U
Methyl cyclohexane	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	5,200	- -	- -	*1,600,000*	*810,000*	19,000,000	9,500,000	19,000,000	14,000,000	ug/L	< 50 Ur	< 50 U	< 50 U	< 50 U	< 50 U
Methyl tert butyl ether (MTBE)*	40 (E)	40 (E)	7,100	**690**	*10,000*	*5,300*	320,000	150,000	490,000	220,000	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
Styrene	100	100	80	- -	*1,400*	*740*	45,000	20,000	67,000	30,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	8.5	35	78	- -	*130*	*66*	4,100	1,800	6,200	2,600	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	5	5	60	- -	*250*	*130*	3,400	1,500	5,000	2,200	ug/L	127 r	< 1 U	< 1 U	70	< 1 U
Toluene*	790 (E)	790 (E)	270	**1,000**	*56,000*	*30,000*	530,000	250,000	530,000	380,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	70	70	99	- -	*270*	*130*	5,100	2,200	7,700	3,300	ug/L	< 5 Ur	< 5 U	< 5 U	< 5 U	< 5 U
1,1,1-Trichloroethane	200	200	89	- -	*22,000*	*11,000*	210,000	92,000	310,000	140,000	ug/L	170 Yr	10	4	77	< 1 U
1,1,2-Trichloroethane	5	5	330	- -	*21*	*11*	410	180	620	280	ug/L	< 1 Ur	< 1 U	< 1 U	1	< 1 U
Trichloroethene	5	5	200	- -	*15*	*8.1*	210	93	310	140	ug/L	*24 r*	*21*	< 1 U	3	< 1 U
Trifluorotrichloroethane (Freon 113)	170,000	170,000	32	- -	*7,100*	*3,600*	140,000	58,000	170,000	88,000	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	2	2	13	- -	*2.2*	*1.2*	260	120	390	180	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 2 Ur	< 2 U	< 2 U	< 2 U	< 2 U
o-Xylene	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	ug/L	< 1 Ur	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes*	280 (E)	280 (E)	49	**10,000**	*3,000*	*1,600*	60,000	27,000	91,000	41,000	ug/L	< 2 Ur	< 2 U	< 2 U	< 2 U	< 2 U
Volatile Organics-SIM																
1,4-Dioxane	7.2	350	280	- -	*43,000*	*22,000*	1,500,000	670,000	2,300,000	1,000,000	ug/L	20	1	< 1 U	530 Y	NA
Inorganics																
Manganese	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA
Inorganics-Filtered																
Manganese (dissolved)	50 (E)	50 (E)	1,300	**2,500**	- -	- -	- -	- -	- -	- -	ug/L	NA	NA	NA	NA	NA

See Notes on Last Page.

Notes:

1) Criteria listed are from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Clean Up Criteria Requirements Table 1: Groundwater: Residential and Nonresidential, Part 201 Generic Cleanup Criteria and Screening Levels, December 21, 2020.

2) Department of Environment, Great Lakes and Energy (EGLE) developed Site-Specific Volatization to Indoor Air Critera for the Former Fiero Assembly, April 21, 2020

3) Groundwater Surface Water Interface Criteria listed for barium, beryllium, cadmium, chromium, copper, lead, manganese, nickel and zinc are calculated based on a hardness of 150 mg/L-CaCO3 for southern Lower Peninsula protected as a drinking water source.

4) Yellow highlighted values denotes exceedance and/or equal to Michigan Residential Drinking Water.
5) Orange highlighted values denotes exceedance and/or equal to Non-Residential Drinking Water.
6) Grey shaded values denotes exceedance and/or equal to Michigan Groundwater Surface Water Interface.
7) Bold values denotes exceedance and/or equal to Non-Residential Health Based Drinking Water Value.
8) Values in italics denotes exceedance and/or equal to Residential Site-Specific Volatilization to Indoor Air criteria for basement and/or slab-on-grade.
9) Values in red denotes exceedance and/or equal to Nonresidential Site-Specific Volatilization to Indoor Air criteria for basement and/or slab-on-grade.
10) Duplicate analyses are presented in brackets.
11) Constituents flagged with an (*) symbol have Residential and Non-Residential Drinking Water criteria which represent aesthetic drinking water values. The Non-Residential Health Based Drinking Water Value associated with these constituents will be utilized for Site comparison as is more applicable.

Abbreviations:

BASE	Basement
E	Criterion is the aesthetic drinking water value, as required by Section 20120a(5) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).
NTU	Nephelometric Turbidity Unit
r	This analyte is being reported as the best results from multiple runs
Res	Residential
SOG	Slab on Grade
SSVIAC	Site-Specific Volatization to Inddoor Air Criteria
SU	Standard Unit
U	Compound was analyzed for but not detected. The associated value is the compound quantitation limit.
Y	Elevated reporting limit due to high target concentrations.
NA	Not analyzed.
ug/L	Micrograms per liter.
>/<50k	Greater than 50,000 or less than 50,000

APPENDIX A

2009 GMP Request and USEPA Approval

Transmitted Via Email

October 30, 2009

Mr. Nate Nemani
United States Environmental Protection Agency
Region V, LU-9J
77 West Jackson Street
Chicago, IL 60604-3590
LU-9J

Re: GM Pontiac North Campus – Semi-Annual Groundwater Monitoring Program Proposed Modifications

Dear Mr. Nemani:

The purpose of this letter is to request approval from the United States Environmental Protection Agency (U.S. EPA) to modify the Groundwater Monitoring Program (GMP) for the General Motors Pontiac North Campus Facility (Facility) located in Pontiac, Michigan.

GM Corporation filed for Chapter 11 protection on June 1, 2009 under the Bankruptcy Code. On July 10, 2009, GM Company (since renamed GM LLC) was created through the sale of certain GM Corporation assets pursuant to Section 363 of the Bankruptcy Code. General Motors Corporation (renamed MLC) remains in Chapter 11 bankruptcy protection and is managing the assets that were not sold to GM Company (now GM LLC). A portion of the Pontiac North Campus is part of GM LLC and a portion remains with MLC. GM LLC and MLC are jointly submitting this request until the facility separation discussions (e.g., utility splits) are completed and we have an agreement with U.S. EPA on managing the Corrective Action in the future.

Attachment A details the proposed changes to the GMP and provides supporting information. These include the elimination of select monitoring wells and parameters, a change in monitoring frequency and terminating the program after 2 additional years of sampling.

We are requesting U.S. EPA approval of the proposed modifications to the GMP provided in Attachment A, including termination of the program after an additional 2 years (ending in November 2011) if concentrations remain stable or decline. MLC and GM LLC feel that a 2 year timeframe is appropriate given the quantity of groundwater data that has been generated since 2001. Based on the extensive database of analytical data, and the observed stability of groundwater conditions at the Facility, the proposed modifications present a modest reduction in monitoring that will continue to demonstrate that the conditions at the Facility are adequately assessed.

The next semi-annual groundwater sampling event is scheduled for early December 2009. We would appreciate your expeditious review of these modifications so we can eliminate unnecessary sampling during the December monitoring event. To facilitate your review, GM LLC and MLC propose a conference call on Thursday November 5th or Friday November 6th, 2009 to discuss these proposed modifications to the Groundwater Monitoring Program. In the meantime, if you have any questions please feel free to contact the undersigned.

Sincerely,

Robert Hare
MLC Project Manager
248-225-3277

Jean Caufield
GM LLC Project Manager
313-506-9468

cc: John McKenna, ARCADIS
Gavin O'Neill, CRA
Francis Ramacciotti, ENVIRON

Attachment A
Proposed Modifications
Semi-Annual Groundwater Monitoring Program

On October 10, 2000, GM Corporation (now MLC) and the U.S. EPA entered into a Performance Based Corrective Action Agreement for the Pontiac North Campus Site. The Site encompasses approximately 595 acres in the northwest quadrant of the City of Pontiac. Groundwater samples have been collected from select monitoring wells on a semi-annual basis since 2002 as part of the GMP to demonstrate that constituent concentrations in groundwater are stable and that migration of contaminated groundwater is not occurring. The Groundwater Monitoring Program (GMP) was presented as part of the Environmental Indicators (EI) CA750 determination (ENVIRON, 2002). Since 2002, GM Corporation added several additional monitoring wells to the GMP at the request of the U.S. EPA. Following each monitoring event a report summarizing the results was prepared and submitted to U.S. EPA. Following the semi-annual sampling events of 2008, the groundwater monitoring program was evaluated to determine if modifications to the plan are warranted.

Two initial rounds of sampling were completed at each monitoring well that was installed as part of the RFI Work Plan (ENCORE, 2001). Monitoring wells included in the GMP have been sampled on a semi-annual basis since 2002. Additional wells were added to the GMP as additional RFI activities were completed or additional groundwater monitoring was required as a provision for completed Interim Measures (IM). When the analytical data from the semi-annual sampling appeared to be anomalous an additional groundwater sample was immediately collected from that individual well to verify the results for individual constituent(s). These confirmation samples are identified as a Partial Sample Event.

A comprehensive database of these analytical results has been developed over the past eight years. Even though groundwater at the Facility is not used as a drinking water source, analytical results were compared against both Michigan Department of Environmental Quality (MDEQ) Part 201 Residential Drinking Water criteria (RDW) and Industrial Drinking Water (IDW) criteria. Stable or reducing conditions have been observed in at least four sampling events in the analytical results at several locations included in the GMP.

This submittal proposes the following:

1) Elimination of select monitoring wells and parameters from the GMP,
2) Change the frequency of monitoring from semi-annual to annual; and
3) Implement the GMP for 2 more years and terminate it after that provided the data continue to show stable or decreasing trends.

The attached Table 1 provides an evaluation of each monitoring well in the semi-annual sampling program, and indicates modifications being proposed to the sample collection frequency and associated groundwater analysis.

SEMI-VOLATILE ORGANIC COMPOUNDS

Semi-volatile organic compounds (SVOCs) were analyzed for at the majority of the monitoring wells in the GMP. Two SVOCs were only detected above drinking water criteria in three monitoring wells, IWD7, MWW1-02 and MWW1-04. Bis (2-Ethylhexyl)phthalate was detected above the screening criteria once (January 2002) out of 16 sampling events at monitoring well IWD7 and once (October 2004) out of 14 sampling events at well MWW1-02 Bis (2-Ethylhexyl)phthalate is a common laboratory contaminant. Pentachlorophenol was detected above the screening criteria in monitoring well MWW1-04 four (November 2005, February 2006, May 2006, and November 2007) out of 15 samples collected. Based on this evaluation, it is proposed that SVOCs be removed from the analytical parameter list for the GMP.

SHALLOW MONITORING WELLS

For shallow monitoring wells (designated MW) at the Facility, 8 monitoring wells are proposed for elimination from the sampling program. Sample frequency for the remaining monitoring wells is proposed to be reduced from semi-annual to annual for two more years, ending in November 2011 (see Table 1A). The eight monitoring wells (MWD6, MWW1-02, MWW1-03, MWW1-06, MWF12-02, MWM16-05, MWM16-22, and MWM16-54) are proposed to be removed from the GMP because the analytical results have either not exceeded drinking water criteria, were non-detect, or if constituents were detected above criteria the concentrations have stabilized.

Monitoring wells located downgradient of light non-aqueous phase liquid (LNAPL) Area Nos. 1, 2, 3, and 9/10 will continue to be sampled to monitor the upgradient LNAPL areas. Monitoring wells MW40-99 and MWW9-01 are all located downgradient of LNAPL areas. These monitoring locations have not exhibited elevated concentrations of volatile organic compounds (VOCs), PCBs, or site specific parameter list (SSPL) metals and detected concentrations have stabilized. However, they will continue to be sampled to monitor the upgradient LNAPL areas. We propose that these wells be sampled annually instead of the current semi-annual monitoring.

For shallow monitoring wells that have a limited number of sample events (MWW5-01, MWM16-21, MWM16-43, and MWW8-65) the sample frequency will be reduced to annually. Some of these wells have only been sampled three to five times, thus precluding observation of contaminant concentration trends.

Five shallow monitoring wells have been sampled for total dioxins (MWW1-02, MWW1-03, MWW1-04, MWW1-06, and MW40-99). Exceedances of the screening criteria were observed at MWW1-03, MWW1-04 and MW40-99. Dioxins have been reported exceeding criteria three times (15 total samples collected) in monitoring well MWW1-03 and have not been detected above criteria since May 2008. Following the detection of dioxins exceeding criteria in May 2008 a confirmatory sample was collected and the results were non-detect. Dioxins have been reported exceeding criteria once (15 total samples) in monitoring well MWW1-04 and have not been reported exceeding criteria since May 2006. Dioxins have been reported exceeding criteria twice (14 total samples) in monitoring well MW40-99 and have not been reported exceeding criteria since May 2007. We are proposing that dioxins be removed from the sampling program due to the low levels observed and stability of the analytical results.

INTERMEDIATE MONITORING WELLS

We are proposing that intermediate monitoring wells (designated IW) at the Facility be removed from the groundwater sampling program, as shown on Table 1B. Groundwater samples have been collected from monitoring well IWP5 a total of 15 times. Thallium (dissolved) was detected in this well above screening criteria in January 2001 and has not exceeded the screening criteria since (15 sample events). Acetone has also been detected above the screening criteria; however it was reported in the RFI Report (ENCORE 2002) that it has been documented that bentonite pellets, which were used in the well construction, have been known to contain acetone. Acetone is also a common laboratory contaminant Acetone has not been detected above criteria since November 2002 (12 sample events). Groundwater samples have also been collected 15 times from monitoring well IWD7. Bis (2-Ethylhexyl)phthalate, lead, and vanadium were detected above the screening criteria once in January 2002. Since that time these three constituents have not been detected above screening criteria (13 sample events). Arsenic was detected twice above screening criteria (May and November 2007 sampling events) in this well. In both subsequent sampling events (October 2007 and November 2008) arsenic did not exceed the screening criteria.

Groundwater samples have never been collected from monitoring well IWP2, due to insufficient water in the well to collect a sample. For this reason, this well should be removed from the GMP and abandoned.

DEEP MONITORING WELLS

We are proposing that deep monitoring wells (designated GW and DW) be removed from the groundwater sampling program (Table 1C). As part of the original RFI activities, groundwater monitoring wells were installed into two deeper groundwater bearing units (outwash deposits) at the Facility. Deep monitoring wells designated as GW (e.g. GWD8) were installed between 878 and 893 feet above mean sea level (AMSL) in a sand zone (upper outwash deposits). The depth of the GW wells range from 55 to 107 feet below ground surface. Monitoring wells were also installed in a deeper groundwater bearing zone (lower outwash deposits) to determine if a downward vertical hydraulic gradient existed at the Facility and if constituents detected in the shallower water bearing units had migrated to the lower water bearing units. These monitoring wells installed in the lower outwash deposits were designated as DW (e.g. DWD10) and were installed between 808 and 858 AMSL in a sand and gravel zone. The depth of the DW wells range from 115 to 150 feet below ground surface.

Chromium has been detected twice and vanadium once exceeding criteria in monitoring well GWP6. Neither has been detected above criteria since November 2007. Lead and vanadium have been detected once each exceeding criteria in monitoring well GWP3; neither has been detected above criteria since May 2005. The only other two constituents detected above criteria were methylene chloride in monitoring well DWD12 in (May 2003) and acetone in monitoring wells GWD8 (September 2001), GWD9 (May and December 2003), GWP3 (September 2001, and GWP6 (September 2001 and January 2002). Both of these constituents are common laboratory contaminants and acetone has also been documented to be contained in bentonite pellets.

Arsenic is the only other constituent observed above screening criteria in the lower outwash deposits at the Facility. The concentrations of arsenic in the monitoring wells installed in both the upper (GW) and

lower (DW) outwash deposits have been consistent over time. Elevated arsenic concentrations in groundwater in southeastern Michigan are well documented and it is believed that the concentrations detected in these deep monitoring wells are associated with regional background levels. In addition, for monitoring wells were arsenic has been detected above criteria the concentrations have stabilized.

Due to the lack of reported exceedances of VOCs, SVOCs, and PCBs in the deep saturated groundwater zone, it is proposed that the deep monitoring wells be removed from the groundwater monitoring program.

Tables 1A through 1C provide a detailed summary of the proposed changes to the groundwater monitoring program. Appendix A provides the complete set of the semi-annual groundwater sampling analytical tables.

Subject: FW: GM Pontiac North Campus - Semi-Annual Groundwater Monitoring Program Proposed Modifications
Attachments: PNC GMP Moficication Proposal 10-30-09.pdf

-----Original Message-----
From: Nemani.Nate@epamail.epa.gov [mailto:Nemani.Nate@epamail.epa.gov]
Sent: Monday, November 23, 2009 2:59 PM
To: Hare, Robert
Cc: Landale, Beth; jean.e.caufield@gm.com; McKenna, John; O'Neill, Gavin
Subject: Re: GM Pontiac North Campus - Semi-Annual Groundwater Monitoring Program Proposed Modifications

Bob:

The proposal modifications to the semi-annual Groundwater Monitoring Program (GMP) outlined in the October 30, 2009 e-mail w/ attachments for the subject facility have been reviewed.

The submittal requested approval for the following provisions.

a) Elimination of select monitoring wells and parameters from the GMP .

b) Change of frequency of monitoring from semi-annual to annual for certain wells.

c) Implement the GMP for two (2) more years and terminate it after that provided the data continue to show stable or decreasing trends.

Based on the review and the justifications offered for the changes, the above provisions a) and b) are hereby approved.

Regarding the provision c), to terminate the GW monitoring after 2 years, a separate request , will need to be submitted at the of the 2-year period with pertinent documentation.

If you have any questions, please contact me.

Nate

NATE NEMANI, P.E.
RCRA CORRECTIVE ACTION PROJECT MANAGER
LAND AND CHEMICALS DIVISION
REMEDIATION AND REUSE BRANCH,
U. S.EPA, REGION 5 ,
77 W JACKSON Blvd, CHICAGO,ILLINOIS,60604, Mail Code: LU-9J
(312) 886-3224 (PHONE)
(312) 692-2176 (FAX)
nemani.nate@epa.gov (e-mail address)

From: "O'Neill, Gavin" <goneill@craworld.com>

To: Nate Nemani/R5/USEPA/US@EPA

Cc: "Hare, Robert" <rhare@alixpartners.com>, <jean.e.caufield@gm.com>, "Landale, Beth"
<blandale@craworld.com>, "McKenna, John" <John.McKenna@arcadis-us.com>

Date: 10/30/2009 01:02 PM

Subject: GM Pontiac North Campus - Semi-Annual Groundwater Monitoring Program Proposed Modifications

Mr. Nemani

Please find attached a joint request from GM LLC and MLC to modify the Semi-Annual Groundwater Monitoring Program for the GM Pontiac North Campus. As presented in the attached letter, we are proposing a conference call next week on either November 5 or 6, 2009 to discuss the proposed modifications. Please let us know at your earliest convenience your availability for those dates.

Should you have any questions or require additional information, please contact our office.

_____--------_____
Gavin O'Neill
Conestoga-Rovers & Associates (CRA)

1880 Assumption St., Unit 200
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[attachment "PNC Proposed Modifications to GMP.pdf" deleted by Nate Nemani/R5/USEPA/US]

APPENDIX B

2018 GMP Request and USEPA Approval

MEMO

ARCADIS Design & Consultancy for natural and built assets

To:

Nate Nemani

USEPA Region 5

77 West Jackson Boulevard

Mail Code: LU-9J

Chicago, Illinois 60604-3507

Copies:

Dave Favero, RACER

Arcadis File

Arcadis of Michigan, LLC
28550 Cabot Drive
Suite 500
Novi
Michigan 48377
Tel 248 994 2240
Fax 248 994 2241

From:

Brad Saunders, P.E.

Date:

August 27, 2018

Arcadis Project No.:

B0064607.2018

Subject:

RACER Pontiac North Campus – Groundwater Monitoring Program Modification Request

---

On behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust, Arcadis of Michigan, LLC (Arcadis) is requesting approval from the United States Environmental Protection Agency (USEPA) to modify the annual groundwater monitoring program at the Pontiac North Campus Site (the Site) located in Pontiac, Michigan (**Figure 1**).

The purpose of this request is to revise the program to incorporate recommended analysis and/or gauging of certain monitoring wells based on the results of continued investigation activities and recommendations pertaining to proposed corrective measures being implemented at the facility.

Based on the results of groundwater investigation activities for 1,4-dioxane and volatile organic compounds (VOCs) at the southwestern Fiero boundary, the following modifications are proposed:

- Add monitoring well MW-02-17 to the annual groundwater sampling list in lieu of monitoring well MWF1R, add both monitoring wells MW-16-23 and MW-16-25, and add new monitoring well MW-05-18 (installed August 2018) to monitor trends in VOCs and 1,4-dioxane concentrations.
- In addition to recommendations above and to facilitate future monitoring for trends in VOCs and 1,4-dioxane concentrations, add monitoring wells MWF7-02, MWF16-06, MW-01-17, TW-MD-01 and TW-MD-07 to the list of monitoring wells gauged and sampled for VOCs and 1,4-dioxane analysis. Also add 1,4-dioxane to the list of analytical parameters for monitoring wells MWF12-01, MWW01-SEN03, MWW1-04, MW40-99, and TW-10-02, and add VOCs to the list of analytical parameters for MWOS-01.

Based on the results of ongoing LNAPL investigation and testing activities, the following modifications are proposed:

- Add annual groundwater and LNAPL gauging of monitoring wells SB-08-14, SB-25-14, SB-43-14, and maintain annual gauging of groundwater and LNAPL of monitoring wells MWW8-65 and TWW8-01.

Based on the approved Proposed Monitoring Well Network (Table 4 in the Montcalm Seep Interim Measures Work Plan), the following modifications are proposed to incorporate baseline (2018) and future annual monitoring requirements:

- Maintenance of gauging for monitoring wells TW-01-03, TW-10-01, and TW-10-02, and expansion of monitoring wells MWW01-SEN03, MWW01-SEN04, MWW5-01, TW-09-01, MWW10-SEN02 which are already on the annual gauging list to include sampling for analysis of specified parameters.
- Addition of injection wells INJ-01-17 and INJ-02-18 (installed August 2018) and monitoring wells MW-03-17, MW-04-17, TW-MD-01, TW-MD-02, TW-MD-03, TW-MD-04, TW-MD-05, TW-MD-06, TW-MD-07, and MWW1-15 to include annual gauging and sampling for specified parameters.

Based on a combination of past analytical results and the availability of data from other nearby monitoring wells and due to complications related to accessibility:

- Remove MWF16-17, MWW8-34, MWW8-45, MWW8-48, RWW8-119, RWW8-124, RWW8-125, RWW8-130, RWW8-131, RWW8-132, TWM2-04, TWMW-05, MWM16-15 and MWM16-45 from the list of monitoring wells which are gauged annually. Also remove MWF1R, MWM16-29, and MWM16-36 from the list of monitoring wells gauged and sampled for VOC analysis annually, and remove annual analysis of VOCs and inorganics from monitoring well MWF12-01.

In conclusion, USEPA approval of the is requested. Please contact us if you have any questions regarding this memo or its attachments.

Sincerely,

Arcadis of Michigan, LLC

Brad Saunders, P.E.
Principal Engineer/ Certified Project Manager

Table

Table 1 Annual GW Monitoring List (Rev 2018)

Figures

Figure 1 Site Location

Figure 2 Annual Groundwater Monitoring Wells

Table 1
Annual Groundwater Monitoring List
RACER Trust Pontiac North Campus

Well ID	Annual Gauging	Annual Sampling	VOCs	1,4-dioxane	Inorganics	PCBs	Geochemical per Montcalm Seep IMWP	Notes
SITEWIDE								
MWF1R				--	--	--	--	--
OFFSITE								
MWOS-01	X	X	X	--	--	--	--	--
MWOS-02	X	--	--	--	--	--	--	--
MWOS-03	X	--	--	--	--	--	--	--
MWOS-04	X	--	--	--	--	--	--	--
MWOS-06	X	--	--	--	--	--	--	--
FIERO								
F-7								
MWF7-01				--	--	--	--	--
MWF7-02	X	X	X	X	--	--	--	--
F-8								
MWF8-01	X	X	X	--	--	--	--	--
F-12								
MWF12-01	X	X		X		--	--	--
MWF12-02	X	X	X	--	Mn	--	--	--
F-16								
MWF16-10	X	--	--	--	--	--	--	--
MWF16-11	X	--	--	--	--	--	--	--
MWF16-05	X	--	--	--	--	--	--	--
MWF16-06	X	X	X	X	--	--	--	--
MWF16-17		--	--	--	--	--	--	--
MWF16-16	X	--	--	--	--	--	--	--
MWF16-23	X	X	X	X	--	--	--	--
MWF16-25	X	X	X	X	--	--	--	--
MW-02-17	X	X	X	X	--	--	--	--
MW-05-18	X	X	X	X	--	--	--	Installed August 2018

Abbreviations
Mn - Manganese
Pb - Lead
PCBs - Polychlorinated biphenyls
Sb - Antimony
V - Vanadium
VOCs - Volatile organic compounds

Footnotes:
Geochemical sampling per the Montcalm Seep IMWP includes: calcium, iron, manganese, magnesium, alkalinity, hardness, dissolved and suspended solids.

No change in annual gauging and/or sampling.
Well and/or associated test parameters are proposed to be added to annual gauging and/or sampling.
Well has become subject to an annual gauging and sampling requirement relevant to the Montcalm Seep IMWP baseline and annual monitoring program.
Well and/or associated test parameters are proposed to be removed from annual gauging and/or sampling.

Well ID	Annual Gauging	Annual Sampling	VOCs	1,4-dioxane	Inorganics	PCBs	Geochemical per Montcalm Seep IMWP	Notes
PONTIAC SCHOOL BOARD PROPERTY RIGHT-OF-WAY								
MWPS-02	X	--	--	--	--	--	--	--
DEMOLITION AREA								
W-1								
MWW01-SEN03	X	X	X	X	X	X	X	Previously annual gauging only; subject to Montcalm seep monitoring
MWW01-SEN04	X	X	X	--	X	X	X	Previously annual gauging only; subject to Montcalm seep monitoring
MWW1-04	X	X	X	X	Sb, V	X	--	--
MWW1-06	X	--	--	--	--	--	--	--
MW-40-99	X	X	X	X	--	X	--	--
MW-01-17	X	X	X	X	--	--	--	
TW-01-01	X	--	--	--	--	--	--	--
TW-01-02	X	--	--	--	--	--	--	--
TW-01-03	X	--	--	--	--	--	--	Previously annual gauging; also subject per Montcalm Seep IMWP
SB-43-14	X	--	--	--	--	--	--	--
W-5								
MWW5-01	X	X	X	--	X	X	X	Previously annual gauging only; subject to Montcalm seep monitoring
W-8								
TW-03-01	X	--	--	--	--	--	--	--
MWW8-34		--	--	--	--	--	--	--
MWW8-45		--	--	--	--	--	--	--
MWW8-48		--	--	--	--	--	--	--
MWW8-65	X	--	--	--	--	--	--	--
RWW8-119		--	--	--	--	--	--	--
RWW8-124		--	--	--	--	--	--	--
RWW8-125		--	--	--	--	--	--	--
RWW8-129	X	--	--	--	--	--	--	--
RWW8-130		--	--	--	--	--	--	--
RWW8-131		--	--	--	--	--	--	--
RWW8-132		--	--	--	--	--	--	--
RWW8-133	X	--	--	--	--	--	--	--

Abbreviations
Mn - Manganese
Pb - Lead
PCBs - Polychlorinated biphenyls
Sb - Antimony
V - Vanadium
VOCs - Volatile organic compounds

Footnotes:
Geochemical sampling per the Montcalm Seep IMWP includes: calcium, iron, manganese, magnesium, alkalinity, hardness, dissolved and suspended solids.

No change in annual gauging and/or sampling.
Well and/or associated test parameters are proposed to be added to annual gauging and/or sampling.
Well has become subject to an annual gauging and sampling requirement relevant to the Montcalm Seep IMWP baseline and annual monitoring program.
Well and/or associated test parameters are proposed to be removed from annual gauging and/or sampling.

Well ID	Annual Gauging	Annual Sampling	VOCs	1,4-dioxane	Inorganics	PCBs	Geochemical per Montcalm Seep IMWP	Notes
W-8								
TW-11-01	X	--	--	--	--	--	--	--
TW-11-02	X	--	--	--	--	--	--	--
TW-09-01	X	X	X	--	X	X	X	Previously annual gauging only; subject to Montcalm seep monitoring
TW-10-01	X	--	--	--	--	--	--	Previously annual gauging; also subject per Montcalm Seep IMWP
TW-10-02	X	--	--	X	--	--	--	Previously annual gauging; also subject per Montcalm Seep IMWP
TWW8-01	X	--	--	--	--	--	--	--
W-10								
MWW10-03	X	X	X	--	Pb, Mn	X	--	--
MWW10-SEN01	X	--	--	--	--	--	--	--
MWW10-SEN02	X	X	X	--	X	X	X	Previously annual gauging only; subject to Montcalm seep monitoring
SB-25-14	X	--	--	--	--	--	--	--
SB-08-14	X	--	--	--	--	--	--	--
MFD								
M-2								
MWM2-22	X	--	--	--	--	--	--	--
MWM2-28	X	--	--	--	--	--	--	--
MWM2-37	X	--	--	--	--	--	--	--
TWM2-04		--	--	--	--	--	--	No longer present, accessible or necessary
TWM2-05		--	--	--	--	--	--	No longer present, accessible or necessary
M-4								
MWM4-05	X	--	--	--	--	--	--	--
MWM4-06R	X	--	--	--	--	--	--	--
M-5								
MWM5-02	X	--	--	--	--	--	--	--
MWM5-03	X	--	--	--	--	--	--	--

Abbreviations
Mn - Manganese
Pb - Lead
PCBs - Polychlorinated biphenyls
Sb - Antimony
V - Vanadium
VOCs - Volatile organic compounds

Footnotes:
Geochemical sampling per the Montcalm Seep IMWP includes: calcium, iron, manganese, magnesium, alkalinity, hardness, dissolved and suspended solids.

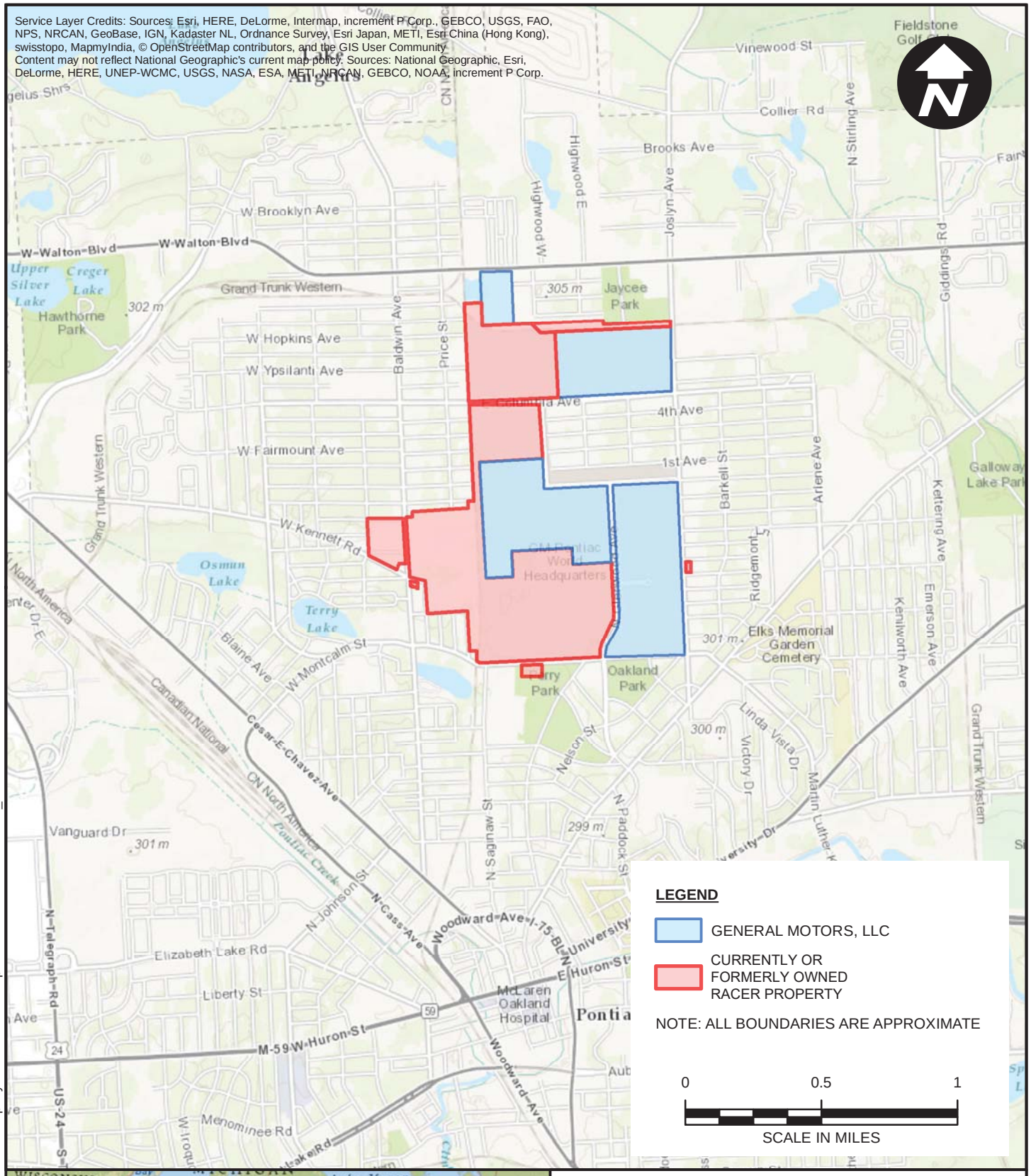
No change in annual gauging and/or sampling.
Well and/or associated test parameters are proposed to be added to annual gauging and/or sampling.
Well has become subject to an annual gauging and sampling requirement relevant to the Montcalm Seep IMWP baseline and annual monitoring program.
Well and/or associated test parameters are proposed to be removed from annual gauging and/or sampling.

Well ID	Annual Gauging	Annual Sampling	VOCs	1,4-dioxane	Inorganics	PCBs	Geochemical per Montcalm Seep IMWP	Notes
M-16								
MWM16-02	X	X	X	--	--	--	--	--
MWM16-15		--	--	--	--	--	--	--
MWM16-29				--	--	--	--	--
MWM16-30	X	X	X	--	--	--	--	--
MWM16-31	X	X	X	--	--	--	--	--
MWM16-36				--	--	--	--	--
MWM16-37	X	X	X	--	--	--	--	--
MWM16-45		--	--	--	--	--	--	--
M-31/M-32								
MWM31-02	X	X	X	--	--	--	--	--
MWM32-01	X	X	X	--	--	--	--	--
Montcalm Seep Monitoring								
INJ-01-17	X	X	X	--	X	X	X	--
INJ-02-18	X	X	X	--	X	X	X	Installed August 2018
MW-03-17	X	X	X	--	X	X	X	--
MW-04-17	X	X	X	--	X	X	X	--
TW-MD-01	X	X	X	X	X	X	X	--
TW-MD-02	X	X	X	--	X	X	X	--
TW-MD-03	X	X	X	--	X	X	X	--
TW-MD-04	X	X	X	--	X	X	X	--
TW-MD-05	X	X	X	--	X	X	X	--
TW-MD-06	X	X	X	--	X	X	X	--
TW-MD-07	X	X	X	X	X	X	X	--
MWW1-15	X	X	X	--	X	X	X	--

Abbreviations
Mn - Manganese
Pb - Lead
PCBs - Polychlorinated biphenyls
Sb - Antimony
V - Vanadium
VOCs - Volatile organic compounds

Footnotes:
Geochemical sampling per the Montcalm Seep IMWP includes: calcium, iron, manganese, magnesium, alkalinity, hardness, dissolved and suspended solids.

No change in annual gauging and/or sampling.
Well and/or associated test parameters are proposed to be added to annual gauging and/or sampling.
Well has become subject to an annual gauging and sampling requirement relevant to the Montcalm Seep IMWP baseline and annual monitoring program.
Well and/or associated test parameters are proposed to be removed from annual gauging and/or sampling.



RACER TRUST
PONTIAC NORTH CAMPUS
PONTIAC, MICHIGAN

SITE LOCATION

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

PROJECT NUMBER: B0064411.0001.00145
CITY:NOVI DIV/GROUP:ENV DB: PIC: PM: TM: TR:
Path: D:\GIS\Project Files\MotorsLiquidationCompany\PontiacNorthCampus\Documents\SiteLocation_AOC.mxd

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

MWM4-05
MWM4-06R
MWM16-15
MWM16-45
MWM16-30
MWM16-29
MWM5-02
MWM5-03
MWM16-02
MWM16-31
MWM16-37
MWM16-36
MWM31-02
MWM32-01
MWF8-01
MWF16-10
MWF16-17
MWF16-11
MWF16-05
MWF16-06
MWF16-16
MWF16-25
MWF16-23
MWF7-01
MWF7-02
MW-05-18
MWF12-01
MWF1R
MW-02-17
MWF12-02
MWW10-03
SB-08-14
MWM2-22
MWM2-28
TWM2-04
TWM2-05
INJ-01-17
MW-04-17
MW-03-17
INJ-02-18
RWW8-124
RWW8-125
MWW8-45
RWW8-129
RWW8-130
RWW8-131
RWW8-132
MWW8-34
RWW8-133
RWW8-119
MWW8-48
TW-10-01
TW-10-02
TW-09-01
TW-03-01
TW-11-01
TW-11-02
TWW8-01
MWW8-65
MWW5-01
SB-25-14
MWW10-SEN01
TW-01-01
TW-01-03
TW-01-02
SB-43-14
MWW10-SEN02
TW-MD-01
TW-MD-02
TW-MD-03
MWW01-SEN03
MWW01-SEN04
MWW1-15
MW-40-99
TW-MD-07
MWW1-04
MW-01-17
MWOS-01
MWOS-02
MWOS-03
MWW1-06
MWOS-04
MWOS-06
TW-MD-06
TW-MD-05
TW-MD-04
MWPS-02

LEGEND

- ▲ INJECTION WELL
- ◭ MONITORING WELL
- ● SOIL BORING/MONITORING WELL
- WELL AND/OR ASSOCIATED TEST PARAMETERS ARE PROPOSED TO BE ADDED TO ANNUAL GAUGING AND/OR SAMPLING.
- NO CHANGE IN ANNUAL GAUGING AND/OR SAMPLING.
- WELL HAS BECOME SUBJECT TO AN ANNUAL GAUGING AND SAMPLING REQUIREMENT RELEVANT TO THE MONTCALM SEEP IMWP BASELINE AND ANNUAL MONITORING PROGRAM.
- WELL AND/OR ASSOCIATED TEST PARAMETERS ARE PROPOSED TO BE REMOVED FROM ANNUAL GAUGING AND/OR SAMPLING.

0 500 1,000
SCALE IN FEET

RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

ANNUAL GROUNDWATER MONITORING WELLS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

CITY: NOVI, MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
D:\GIS\Project Files\MotorsLiquidationCompany\PontiacNorthCampus\Documents\Annual GW MonitoringWells 2018.mxd PLOTTED: 8/23/2018 11:35:58 AM BY: TYarbrough

Saunders, Brad

From: Nemani, Nate <nemani.nate@epa.gov>
Sent: Monday, September 17, 2018 2:48 PM
To: Saunders, Brad
Cc: Dave Favero
Subject: RE: RACER PNC - Annual Groundwater Program Modification Memorandum Report / Approval Request

Brad:

EPA hereby grants approval to implement the Annual Groundwater Monitoring with the modifications as outlined in the August 27, 2018 memo/report.

If there are any questions, feel free to contact me.

Nate

NATE NEMANI, P.E.
RCRA CORRECTIVE ACTION PROJECT MANAGER
LAND AND CHEMICALS DIVISION
REMEDIATION AND REUSE BRANCH,
U. S.EPA, REGION 5 ,
77 W JACKSON Blvd, CHICAGO,ILLINOIS,60604, Mail Code: LU-9J
(312) 886-3224 (PHONE)
(312) 692-2176 (FAX)
nemani.nate@epa.gov (e-mail address)

From: Saunders, Brad [mailto:Brad.Saunders@arcadis.com]
Sent: Monday, August 27, 2018 6:28 PM
To: Nemani, Nate <nemani.nate@epa.gov>
Cc: Dave Favero <dfavero@racertrust.org>
Subject: RACER PNC - Annual Groundwater Program Modification Memorandum Report / Approval Request

Nate,

As follow-up to the proposed modifications to the annual groundwater monitoring program which were discussed during our monthly update call today, attached is an electronic version of the memo report and associated table and figures prepared to summarize and highlight/depict changes to the list of monitoring wells proposed to be gauged and sampled during the annual event. Arcadis will also forward two hard copies of the report to your attention.

Upon review, please provide back any questions, or otherwise your approval for implementing changes which are planned for the event scheduled from October 1-5, 2018.

Thanks,

Brad

Brad Saunders P.E. | Principal Engineer | brad.saunders@arcadis.com
Arcadis | Arcadis U.S., Inc. **|** Arcadis of Michigan, LLC
M. +1 517 974 4441

Professional Engineer / PE-MI, 6201050540

APPENDIX C

MWF12-01R BORING AND WELL CONSTRUCTION LOG

Date Start: 7/20/2020 **Date Finish:** 7/20/2020 **Drilling Company:** Terra Probe Environmental **Driller's Name:** S. Seals **Drilling Method:** Hand Auger/Direct Push **Sampling Method:** Continuous **Rig Type:** Direct Push **Water Level Start (ft. bgs.):** 17.0 **Water Level Finish (ft. btoc.):** NA	**Northing:** 424231.57 **Easting:** 13411145.50 **Casing Elevation:** 967.99 **Borehole Depth (ft. bgs.):** 20.0 **Surface Elevation:** 964.97 **Descriptions By:** C. Weaver	**Well/Boring ID:** MWF12-01R **Client:** RACER **Location:** RACER PNC **Weather Conditions:** Sunny, 80F

DEPTH (feet bgl.) / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0 / 0	1	0.0-4.0'	2.4	NM NM 0.0 0.0			(0.0-3.0') COBBLES, small to large, subrounded to subangular; well sorted; dry; gray (10YR 5/1). NOTE: Asphalt; mix of back fill.		Cement Grout (0.0 to 1.0' bgs)
							(3.0-7.0') CLAY, medium plasticity, slow dilatancy; some silt; trace fine sand; moist; soft; yellowish brown (10YR 5/6).		
5 / -5	2	4.0-8.0'	2.9	0.0 0.0 0.0 0.0			(7.0-10.0') SILT, non-plastic, rapid dilatancy; trace fine sand; moist; soft; yellowish brown (10YR 5/6).		2' PVC Well Casing (0.0 to 15.0' bgs) Bentonite Pellets (1.0 to 13.0' bgs)
10 / -10	3	8.0-12.0'	2.4	0.0 0.0 0.0 0.0			(10.0-10.5') CLAY, medium plasticity, slow dilatancy; some silt; trace fine sand; moist; soft; yellowish brown (10YR 5/6). (10.5-14.2') SILT, non-plastic, rapid dilatancy; trace fine to medium sand, subrounded to subangular; dry; soft; yellowish rown (10YR 5/6).		
	4	12.0-16.0'	3.0	0.0 0.0 0.0 0.0			(14.2-14.4') COBBLES, small, subangular; well sorted; dry; brown (10YR 5/3). (14.4-20.0') SAND, fine to medium, subrounded to subangular; trace small pebbles, subangular; moist to wet; well sorted; dark yellowish brown (10YR 4/6).		
15 / -15	5	16.0-20.0	NA	0.0 0.0 0.0 0.0			NOTE: Color change to strong brown (7.5YR, 7/8) from 15.5 to 15.8 ft. bgs. NOTE: Wet at 17 ft bgs.		Sand Pack (13.0 to 20.0) 2' PVC 10 Slot Screen (15.0 to 20.0' bgs)
20 / -20							End of boring at 20.0' bgs.		

ARCADIS Design & Consultancy for natural and built assets

Remarks: bgs = below ground surface
Boring diameter: 8"

APPENDIX D

CHEMICAL CONCENTRATION GRAPHS

APPENDIX D
RACER TRUST PONTIAC NORTH CAMPUS
2020 ANNUAL GROUNDWATER MONITORING REPORT
CHEMICAL CONCENTRATION GRAPHS