Kaiding, Derek

From: Kaiding, Derek
Sent: Tuesday, December 17, 2013 11:31 AM
To: 'Rudloff, Gregory'
Cc: Dave Favero (dfavero@racertrust.org); Grant Trigger (gtrigger@racertrust.org); Hoertt, Susan; Horch, Christine (CHorch@haleyaldrich.com)
Subject: RE: EPA Comments on RFI Report for Former GMPT - Livonia Project
Attachments: 2013-1216_RACER LivoniaPwrtrn CMP-Revised-D.pdf; 2013-1216_Table I-RACER Livonia Pwrtrn Revised CMP.pdf; Figures-Binder.pdf; Appendices-Binder.pdf

Dear Greg,

On behalf of RACER Trust, attached please find a draft version of the revised RCRA Corrective Measures Proposal for the referenced site. The text of the previously-submitted 8/13/2013 version of this document has been edited, and Table I and Appendices A and B have been added to incorporate information to address USEPA's comments noted below (figures have not been changed). The edits to the text have been made using Track-Change formatting, to show you what has been edited/added. If you find that these edits/additions adequately address your comments, we will finalize and distribute the revised document, accordingly, upon your notice. Otherwise, perhaps we could schedule a call to discuss these edits/comments. Let us know what you think, and we will follow-up, accordingly.

Regards,

Derek C. Kaiding, P.E.
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From: Rudloff, Gregory [mailto:rudloff.gregory@epa.gov]
Sent: Thursday, October 24, 2013 9:48 AM
To: Dave Favero; Grant Trigger
Cc: Kaiding, Derek; Olsberg, Colleen
Subject: RE: EPA Comments on RFI Report for Former GMPT - Livonia Project

The U.S. EPA has completed a review of the CA725 Current Human Exposures Under Control document dated August 2, 2013. Below are EPA's comments:

1. Page 8- The document indicates that exposure risk to off-site receptors is not significant based on the fact that an Internet check revealed no domestic water wells within a half mile radius of the facility and drinking water is being supplied by the City of Livonia. EPA recommends that RACER do some in person checks as to whether additional wells exist and also how groundwater is being used off-site. A simple check of the Internet may not provide an accurate or complete picture.
2. Page 9- The conceptual site model for the human health assessment needs to be expanded. The document should provide information on exposure routes and exposure mediums for all receptor populations both on-site and off-site (current and future land use). Attached is an example of the type of table that RACER should complete in order to include all relevant exposure information regarding receptor populations.

3. Appendix B-2 page 5 shows SVOC concentrations above screening levels at AOI-33. If these contaminants are not a concern, the document should contain text explaining their presence.

Please provide the information requested above to EPA. This information may be provided in a revised version of the RFI Final Report, or in a revision to the Corrective Measures Plan. In addition, EPA approves the abandonment of the 13 temporary monitoring wells installed during the RFI. Feel free to contact me if you have any questions.

Gregory A. Rudloff, P.G.
Corrective Action Section 1
Remediation and Reuse Branch
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(312) 886-0455
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RESOURCE CONSERVATION AND RECOVERY ACT CORRECTIVE MEASURES PROPOSAL FOR THE FORMER GM POWERTRAIN DIVISION LIVONIA 12200 MIDDLEBELT ROAD, LIVONIA, MICHIGAN

USEPA ID #MID000718874

by

Haley & Aldrich of Michigan
Ann Arbor, Michigan

for

Revitalizing Auto Communities
Environmental Response Trust
Detroit, Michigan

File No. 37290-019
3 September 2013
(Revised 16 December 2013)

TABLE OF CONTENTS **Page**

TABLES

LIST OF TABLES

FIGURES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AOI	Area of Interest
AST	Aboveground Storage Tank
BGS	Below Ground Surface
CMP	Corrective Measures Proposal
CSM	Conceptual Site Model
DWC	Drinking Water Criteria
DWPC	Drinking Water Protection Criteria
GM	General Motors LLC
EDR	Environmental Data Recourses, Inc.
EI CA 750	Documentation of Environmental Indicator Determination, RCRA Corrective Action Environmental Indicator RCRIS code CA750 – Migration of Contaminated Groundwater Under Control
Haley & Aldrich	Haley & Aldrich, Inc.
mg/L	Milligrams per Liter
MDEQ	Michigan Department of Environmental Quality
MI	Michigan
Part 201	Part 201 of Michigan's Natural Resources and Environmental Protection Act of 1994 (as amended)
PAHs	Polynuclear Aromatic Hydrocarbons
RACER Trust	Revitalizing Auto Communities Environmental Response Trust
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOCs	Semi-volatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

1.1 General

Haley & Aldrich of Michigan, Inc. (Haley & Aldrich) has prepared this Resource Conservation and Recovery Act (RCRA) Corrective Measures Proposal (CMP) on behalf of Revitalizing Auto Communities Environmental Response Trust (RACER Trust) of Detroit, Michigan, for the former General Motors (GM) Powertrain property located at 12200 Middlebelt Road, Livonia, Wayne County, Michigan (the Site – Figure 1). This document supersedes a previous version, dated August 13, 2013, as it incorporates additional information to address comments received from the United States Environmental Protection Agency (USEPA) on 24 October 2013 concerning documentation of Environmental Indicator Determination, Resource Conservation and Recovery Act (RCRA) Corrective Action Environmental Indicator RCRIS code CA725 – Current Human Exposures Under Control (EI CA725).

Despite no history of hazardous waste being stored at the Site for more than 90 days, and the Site not being subject to interim status operation under ~~the Resource Conservation and Recovery Act (~~RCRA~~)~~, RACER Trust entered into a Performance Based Corrective Action Agreement (Agreement) with ~~Region 5 of the United States Environmental Protection Agency (~~USEPA~~)~~ for the Site, with the effective date of 27 February 2012. Pursuant to the Agreement, RACER Trust has worked in cooperation with USEPA to complete a RCRA Facility Investigation (RFI) of potential releases of hazardous wastes or hazardous constituents at or from the Site (USEPA ID #MID000718874). This CMP has been prepared to fulfill the requirements of Section V.3 in the Agreement. Documents covering RACER Trust's RCRA corrective action program are listed in Section 7.

The *Resource Conservation and Recovery Act (RCRA) Facility Investigation Report* (RFI Report) (Haley & Aldrich, March 2013 [Revised July 2013]) describes the procedures, methods and results of the field investigations conducted during the implementation of the RFI activities proposed in the *RCRA Current Conditions Summary/RFI Work Plan* (Haley & Aldrich, December 2011; Revised May 2012) (RFI Work Plan). The data collected per the RFI have been evaluated to characterize the nature and extent of hazardous constituents in the environmental media at the Site.

This CMP describes the proposed Corrective Measures for the Site. These Corrective Measures involve the establishment of deed restrictions that prohibit potable use of groundwater and limit the on-site property to nonresidential, commercial/industrial uses.

USEPA will select final Corrective Measures for the Site after a public comment period. Various citations are included throughout this CMP that reference information that can be found in the Revised RFI Report and/or other documents submitted to the USEPA during the RFI. A public repository of submitted documents has been maintained at the Livonia Civic Center Library (C/O: Mr. Carl Katafiasz) throughout the RFI.

1.2 Report Organization

This Report is organized as follows:

- Section 1 provides an introduction to this document;
- Section 2 provides a summary of the Site background information;
- Section 3 provides a summary of the RFI and associated data screening;
- Section 4 provides a summary of Site risk;
- Section 5 details the proposed Corrective Measures for the Site;
- Section 6 provides an overview of the schedule for implementation of the Final Corrective Measures; and
- Section 7 provides a list of references.

2. SITE BACKGROUND

2.1 Site Description and History

The Site is located at 12200 Middlebelt Road in Livonia, Michigan and measures approximately 40 acres in size. It is generally a square-shaped tract of land situated in a mixed industrial / commercial / residential area (Figures 1 and 2). The Site is located east of Middlebelt Road between Industrial Road and Plymouth Road, in Wayne County, Michigan. It is bordered on the north by CSX Railroad tracks. Commercial property is located beyond the railroad tracks to the north. The Site is bordered to the east and to the south by residential and commercial areas and to the west by a City of Livonia Fire Station and Middlebelt Road. Beyond Middlebelt Road, to the west, is a large industrial property.

The main structure at the Site is a single story building, which until June 2010, was used for machining and assembly operations associated with automotive manufacturing. Approximately 1.2 million square feet is under roof. Former onsite activities were associated with automotive engine manufacturing and assembly, warehousing, and operation of an air compressor building, as well as an onsite wastewater treatment plant (WWTP) used for management and treatment of process wastewater. An electric utility substation operated by DTE Energy is located on the northeast portion of the Site.

The original Site building was constructed in 1971 and operated as Livonia Machining, which encompassed approximately 20 percent of the existing floor space. In 1984, the facility was expanded to accommodate engine manufacturing operations and a new warehouse.

2.2 Site Geology and Hydrogeology

Site Geologic conditions were characterized during the RFI to a depth of approximately 35 feet below ground surface (bgs). The focus of the RFI was to characterize the nature and extent of any release(s) of hazardous waste and/or hazardous constituents at the Site which may pose an unacceptable risk to human health and the environment. Investigation locations were selected based on field conditions, and were biased based on historical process information, Site-specific physical parameters, observed potential evidence of contamination, and observed potential evidence of preferential pathways.

The Site and surrounding area is flat with layered lacustrine deposits consistent with a lake plain depositional environment. Below a surface dominated by concrete, fill material consists of sandy to clayey-sand. The surface fill material (dominated by sand) is generally encountered less than 10 feet bgs; however, it extends deeper adjacent to subgrade/basement structures. Across the Site, the fill material is underlain by a thick clay/silty-clay layer. Soil descriptions of the clay identify sand and gravel lenses, consistent with glacial tills.

Temporary monitoring wells were installed in soil borings with evidence of sufficient soil moisture likely to yield representative groundwater. Only 13 of the 70 soil borings were converted to temporary monitoring wells, as only these 13 borings exhibited evidence of wet soil conditions during drilling.

One of the 13 temporary monitoring wells was observed to be dry during the second phase RFI activities conducted in November and December 2012. One other temporary monitoring well did not consistently yield groundwater volumes sufficient for sampling. Two of the temporary monitoring wells were installed 10 feet deeper than the other wells due to adjacent building conditions (existing basement). USEPA approved the abandonment of these wells on 24 October 2013; accordingly, a~~A~~ll 13 temporary monitoring wells were~~are planned to be~~ properly abandoned on 10 and 11 December 2013 per the *Resource Conservation and Recovery Act Facility Investigation Field Sampling Plan* (Haley & Aldrich, December 2011)~~(pressure grouting) later this year~~. Associated well abandonment logs are included in Appendix A.

The shallow groundwater encountered at the Site is on average less than 10 feet below ground surface. Shallow groundwater potentiometric surface elevations recorded in December 2012 ranged approximately from 629 to 631 feet above mean sea level in the northeastern portion of the Site near the WWTP, approximately from 627 to 628 in the southwestern portion of the Site, and were nearly flat within the center of the Site at about 626 above mean sea level. These potentiometric surface gradient trends indicate localized flow toward the center of the Site. Although this is plausible, since subsurface structures (e.g., sewers) could be influencing the flow of shallow Site groundwater, it is believed that the flow of shallow Site groundwater would be limited by low hydraulic conductivity of the clay-rich glacial till layer.

2.3 Land Use

The Site and the immediate surrounding area have been significantly developed with much of the ground surface covered by buildings and pavement and consisting of commercial and industrial development, residential development, and public roadways. The Site is located in a mixed industrial, residential and commercial area. Residential neighborhoods are adjacent to the southern boundary of the Site and in the areas east of the Site. Towards the north and west the land is developed with light industrial and commercial properties.

The Site is currently for sale and is mostly inactive, except for approximately 5 percent of the main building, which is leased to Bay Logistics of Spring Lake, Michigan for warehousing uses. The full perimeter of the Site is fenced, and there is 24-hour security on the property.

2.4 Groundwater Use and~~/~~ Water Supply

The potential for groundwater use within an approximate one-mile radius of the Site was evaluated by reviewing publically-available information gathered from the following information sources (select information is included in Appendix B):

- Environmental Data Recourses, Inc. (EDR), 30 September 2011;
- MDEQ On-line Well Inventory Searches (http://wellviewer.rsgis.msu.edu/viewer.htm and http://www.deq.state.mi.us/well-logs/default.asp);

- Telephone interview with the Wayne County Department of Public Health;
- Telephone interviews and electronic mail (e-mail) correspondence with the City of Livonia Finance Department – Water & Sewer Billing and Assessor's Office; and
- Vehicular reconnaissance performed on 10 December 2013.

Based on research of the information sources identified above, it is not expected that groundwater is used for human consumption within at least an approximate one-mile radius of the Site.

The results of the evaluation of groundwater use and water supply for and near the Site are summarized below:

- Drinking water is supplied to the Site and surrounding community by the City of Livonia through the Detroit Water and Sewage Department, with the ultimate source of drinking water to the Site being the Detroit River.
- No groundwater wells have been identified within an approximate one-mile radius of the Site.
  - No well records were identified in MDEQ's database or by EDR, 30 September 2011 for properties within a one-half mile radius of the Site.
  - Two well records were identified in MDEQ's database within approximately 1.1 miles from the Site; however, these wells were determined to be non-existent. The evaluation of these two wells is summarized below:
    - One water well is identified by EDR, 30 September 2011 at a distance of 0.75 miles from the Site; however, area reconnaissance concludes that the location of this well is approximately 1.1 miles from the Site. The MDEQ Water Well and Pump Record and associated Michigan Department of Public Health Water Well Record dated 30 April 1982 for this well, indicate that this well was installed as a household well for domestic use, and is located at 12200 Merriman Road, Livonia, Michigan. Further evaluation of this well was conducted with the City of Livonia through a telephone interview (7 November 2013) and email communication (26 November 2013) with Ms. Susan Myers of the Finance Department – Water & Sewer Billing, and a telephone interview (11 December 2013) with Mr. George Nehasil of the Assessor's Office. Ms. Myers reported that City of Livonia water and sewer services were previously provided to this address; however, according to Ms. Myers, the building at this address was demolished many years ago at which time the City of Livonia water and sewer services were discontinued. According to Mr. Nehasil, this property was vacant in 1999, at which time the associated parcel was combined with an adjacent parcel, and was assigned the address of 12512 Merriman Road. The address 12200 Merriman Road no longer exists, according to Mr. Nehasil. The property at 12512 Merriman Road is a commercial property with City of Livonia water and sewer billing as confirmed by Ms. Laurie Pietrazak with

the City of Livonia Water and Sewer Billing Department (11 December 2013). A vehicular reconnaissance of this property was performed by Haley & Aldrich on 10 December 2013, at which time it was observed that a commercial building is present at this address. No wells were observed to be present at the property from associated driveways and parking areas.

- Review of MDEQ's water well database identifies an MDEQ Water Well and Pump Record and associated Michigan Department of Public Health Water Well Record dated 12 August 1967 for a well reportedly installation at 14061 Warner Court, Livonia, Michigan, a residential property located approximately 1.1 miles northwest of the Site. Notes recorded on the associated Public Health Water Well Record describe the well as "*Dry Hole*","*No water*" and "*Plugged from bottom to top*". The log provides no indication that a pump was installed. No other well records were identified for this address. Ms. Susan Myers of the City of Livonia Finance Department – Water & Sewer Billing confirmed in an email correspondence dated 26 November 2013 that the property is served water and sewer services by the City of Livonia. A vehicular reconnaissance of this property was also performed on 10 December 2013, at which time the property appeared to be actively used for residential purposes. No wells were observed to be present at the property from the street.

- The City of Livonia Code of Ordinances governs groundwater use within the City limits, including the Site and surrounding communities. In addition, the State of Michigan requires licensure of all groundwater well drillers operating in the State, and the Wayne County Department of Public Health requires permits be issued for all drinking water well installations. These various overlapping requirements provide strict control over drinking water well installations in this area.

  Chapter 13.40 of Title 13 (Public Services) of the Livonia Code of Ordinances limits use of groundwater within the City limits as follows:

  Section 13.40.010 (Purpose):

  > *The City Council finds that water from the Detroit Water and Sewer Department and delivered by the City of Livonia is the best source of potable water*.

  Section 13.40.030 (Prohibitions) prohibits well installation as follows:

  > *Except as provided in Section 13.40.040, no person shall install, allow, permit or provide for the installation of a well in the City*.

  Section 13.40.40 (Exceptions) establishes the criteria that must be met for the City to provide exception to the prohibition established by Section 13.40.030:

The Inspection Department may issue a permit to a person to install, utilize, allow, permit, or provide for the installation or utilization of a well within the City, if one of the following prerequisites are met:

A. *Determination of non-contamination. If the Michigan Department of Environmental Quality (MDEQ) determines that the use of a well is not influenced or potentially influenced by contaminated groundwater, the use of a well will not influence the migration of contaminated groundwater, and the use of the well will remain unaffected by the future migration of contaminated groundwater, and proof of those determinations is delivered to the Inspection Department;*

B. *Groundwater monitoring. The well is used only for groundwater monitoring and remediation as part of a response activity or remedial activity approved by a regulatory agency;*

C. *Construction De-watering. The well is used for construction de-watering, and the following conditions are satisfied:*

   1. *The use of the de-watering well will not result in unacceptable exposure to contaminated groundwater, possible cross-contamination between saturated zones, or hydrogeological effects on contaminated groundwater plumes; and*

   2. *The water generated by that activity is properly handled and disposed of in compliance with all applicable laws, rules, regulations, permit and license requirements, orders and directives of any governmental entity or agency of competent jurisdiction. Any exacerbation caused by the use of the well under this exception shall be the responsibility of the person operating the de-watering well, as provided in Part 201 of the Natural Resources and Environmental Protection act, being MCL 324.20101 to 324.20142.*

D. *Processing Activities. If the MDEQ determines that the use of a well for non-contact heating, cooling or processing activities will not cause future migration of contaminated groundwater, and proof of that determination is delivered to the Inspection Department, and the well is used for the permitted purposes upon such terms and conditions as the MDEQ identifies;*

E. *Irrigation Wells. If the MDEQ determines that the use of an irrigation well will not cause the future migration of contaminated groundwater and that the intended use is protective of public health, safety, and welfare, and proof of that determination is delivered to the Inspection Department, and*

the well is used for the permitted purposes upon such terms that MDEQ identifies; or

F. Public Emergencies. A well may be used in the event of a public emergency. (Ord. 2823, § 1, 2009)."

According to Section 13.40.060 (Sources of water supplied for human consumption):

Except as provided in Section 13.40.040, water supplied for human consumption in the City shall be delivered only from the City water system or by the use of bottled water purchased at a retail food establishment as that term is defined in Public Act 92 of 2000, as amended, being MCL 289.1101, et seq., or delivered or purchased in containers under conditions approved by the DWRPD or other appropriate agency. (Ord. 2823, § 1, 2009).

According to Ms. Michelle Varran, Environmental Services Supervisor, Wayne County Department of Public Health (telephone interview 4 November 2013), the Wayne County Department of Public Health is responsible for issuance of permits for water well installations within Wayne County; however, due to the City of Livonia's ordinances governing water well installations, the Wayne County Department of Public Health will not accept or review any well permit application for locations within the City of Livonia that have not been previously approved by the City of Livonia. Ms. Varran reported no knowledge of any requests for well installations being received by the Wayne County Department of Public Health during her tenure of approximately 9 years.

~~The City of Livonia prohibits groundwater well installations and potable use of groundwater through its City Ordinance 13.40.030 (Ord. 2823, § 1, 2009). This Ordinance governs groundwater use of the Site and surrounding regions. The State of Michigan requires licensure of all groundwater well drillers operating in the State, and Wayne County requires permits be issued for all drinking water well installations. These various overlapping requirements provided strict control over drinking water well installations in this area.~~

~~Groundwater use near the Site was explored by reviewing publically available information gathered from the Internet. This groundwater use survey was conducted for more than a one-mile radius of the Site in October 2012 (http: // deq.state.mi.us / well-ogs / default.asp and http: // wellviewer.rsgis.msu.edu / viewer.htm). Of the 61 wells identified in the Township and Range of the Site, 12 private wells were identified in the sections adjacent to, or within a one mile radius, of the Site. Of the 12 private wells, 3 were identified as domestic wells, only 1 of which appears to be located potentially downgradient of the Site (approximately 5,500 feet). Drinking water is supplied to the Site by the City of Livonia through the Detroit Water and Sewage Department, with the ultimate source of drinking water to the Site being the Detroit River~~.

2.5 Future Site Redevelopment Plans

The Site is anticipated to remain in its current state until it is sold for future industrial use.

3. SUMMARY OF RFI ACTIVITIES AND ASSOCIATED DATA SCREENING

The RFI identified 36 Areas of Interest (AOIs) at the Site warranting investigation. These areas were identified to have the potential presence of hazardous waste or hazardous constituents due to past release(s) to the environment. For discussion purposes, each AOI was assigned a number. The locations of these AOIs are illustrated on Figure 2, and include the following:

01	Teal Dock/Former Rail/Truck Bay/Chip Bunkers	22	Dump station
02	South Gallery	23	Dump station
04	East Gallery	26	Paint booth area
05	Wash/Dump station	27	Below grade process flumes
06	West Gallery	28	Below grade process waste conveyances
07	Dump station	29	Former Railroad Spur
08	Former paint shop/shed	30	12434 Middlebelt - former gas station
09	Oil sump	31	Fire pump house (post 1989)
10	Equipment pit	32	Former fire pump house (pre-1989)
11	Dump station	33	WWTP main building and exterior wash pad
12	Equipment pits (2) - containment beneath heavy equipment	34	Less than 90-day Hazard Waste Storage Area
13	Wash/Dump station	36	Oil Storage Building
14	Equipment pit - containment beneath heavy equipment	37	ASTs (2)
15	Equipment pit - containment beneath heavy equipment	38	Detroit Edison Substation
16	Dump station	39	Equipment pit
17	Former 750-gallon UST	40	Sump for equipment pit
18	Dump station	41	Equipment pit
19	Trash compactor and oil pump station	42	Dump station

The RFI activities included the drilling of 70 test borings, collection and analysis of 61 soil samples, installation of 13 temporary monitoring wells, and collection and analysis of 11 groundwater water samples.

Analytical results for soil and groundwater samples collected at the Site were compared to conservative screening criteria to determine if potentially significant releases to the environment had occurred, and if the field investigation adequately characterized these potentially significant releases. The screening criteria for each medium are summarized below and were identified to be applicable to the Site based on the conceptual Site model for human exposures discussed in the RFI Report.

Key aspects of the conceptual Site model include the following points:

- There is currently no on-site groundwater use, nor on-site residential land use, and RACER Trust planned at the start of the RFI to establish institutional controls as part of remedial actions for the Site to: 1) prevent any future on-site groundwater use; and 2) prevent any future residential land use.

- Although off-site use of groundwater for potable purposes is not expected, potential exposure risk to off-site residences is mitigated by controls discussed in Section 2.4.

Site characterization data were compared with screening criteria that are developed by the Michigan Department of Environmental Quality (MDEQ) to facilitate implementation of Part 201 (Part 201 Criteria)*.

The following Part 201 Criteria were used to evaluate the Site soil characterization data:

- Part 201 Nonresidential Drinking Water Protection Criteria;
- Part 201 Nonresidential Indoor and Ambient Air Criteria; and
- Part 201 Nonresidential Direct Contact Criteria;

The following Part 201 Criteria were used to evaluate the Site groundwater characterization data:

- Part 201 Nonresidential Drinking Water Criteria;
- Part 201 Nonresidential Volatilization to Indoor Air Inhalation Criteria;
- Part 201 Nonresidential Groundwater Contact Criteria;
- Water Solubility Levels;
- Flammability and Explosivity Levels; and
- Acute Inhalation Levels.

A potentially significant release of hazardous constituents to the environment at an area is considered when the highest site-related concentrations of constituents detected in soil or groundwater at the area are higher than any of the screening criteria.

* Updated by MDEQ on 28 September 2012.

4. SUMMARY OF SITE RISK

As discussed in Section 3.8 of the RFI Report, the Site does not provide naturalized areas for wildlife, and potential receptors are limited to urban wildlife (raccoons, gophers, rodents and various avian species) or transitory presence. The Site does not provide any quality habitat for ecological receptors. Based on current and foreseeable land use of the Site and area, terrestrial and/or aquatic exposure of ecological receptors is considered nominal and/or incomplete. Therefore, further ecological assessment was not required to document no significant risk to ecological receptors.

As for the assessment of human health risk, the entire RFI data set was subject to Part 201 Criteria screening as discussed in Section 3. As noted previously, the RFI was designed to determine if a release of hazardous waste or hazardous constituents had occurred, and where a potentially significant release is identified, to characterize the nature and extent of hazardous constituents in the environmental media. The Site characterization data obtained for each of the AOIs investigated during this RFI were judged to be adequate and appropriate for RCRA Corrective Action decision-making. As noted in Section 4.1 of the RFI Report, the presence of constituent concentrations higher than the Part 201 Criteria may not mean that the media necessarily poses a significant risk to human health or the environment. It only means that the potential to pose a significant risk should be further evaluated with consideration for additional site-specific factors.

As discussed in Section 4.2 of the RFI Report constituents detected at the Site as part of the RFI include primarily select metals at various locations, PAHs at one location, and select VOCs at only seven locations. Arsenic and lead are the only constituents that were exhibited to be present at the Site in soil and/or groundwater at concentrations exceeding corresponding Part 201 Criteria.

Specifically, two soil samples, one each from AOI-04 and AOI-06, exhibited the presence of arsenic above the Part 201 Nonresidential Drinking Water Protection Criterion (DWPC) at depths of 8 to 10 feet and 22 to 24 feet bgs, respectively. The arsenic concentrations found in these samples also exceed the Part 201 State Default Background Screening Criterion for arsenic; however, both of these concentrations fall well below the State-wide maximum arsenic background level determined by MDEQ's *Michigan Background Soil Survey 2005* (2005 Soil Survey [MDEQ, 2005]). Accordingly, these arsenic in soil exceedances are believed to be present as a result of natural conditions (i.e., types of soil deposits), and are not believed to be attributed to Site operations, since arsenic is not known to have been used at the Site, nor is likely to have been a component of Site-related activities.

Arsenic was also detected in groundwater above Part 201 Nonresidential Drinking Water Criterion (DWC) in samples collected from AOI-06, AOI-10, AOI-27, AOI-28, AOI-33, and AOI-40; however, like noted above regarding soil, the concentrations of arsenic detected in groundwater in these areas are also believed to be present as a result of natural conditions (i.e., types of soil deposits), and are not believed to be attributed to Site operations. This conclusion is based on the following points:

- Arsenic is not known to have been used at the Site, nor is likely to have been a component of Site-related activities;
- All but one exceedance of the DWC for arsenic are associated with unfiltered samples, indicating the presence of arsenic in Site groundwater is associated nearly exclusively with filterable soil particulates;
- Variability of arsenic concentrations between sampling events and among samples of each event is low (i.e., similar order of magnitude on a well-to-well comparison); and
- All exceedances of DWC for arsenic are within the collective range of concentrations typical of well water of Wayne County and the adjacent Washtenaw County (greater than 0.05 mg/L), as described in MDEQ public outreach information[†].

Lead was initially detected in groundwater at the Site at select locations in August 2012 exceeding the corresponding DWC, but the subsequent analyses of groundwater samples deemed to be more representative of Site conditions (collected in December 2012), indicated Site groundwater not to be contaminated with lead above the associated Part 201 Criteria.

In context with providing comments on the EI CA725 on 24 October 2013, USEPA indicated that Page 5 of Appendix B-2 of the RFI Report presented concentrations of several semi-volatile organic compounds (SVOC) concentrations, which are indicated to be above screening levels at AOI-33, and requested an explanation of these conditions. Upon review of the associated laboratory reports presented in Appendix D of the RFI Report and associated data validation reports presented in Appendix C of the RFI Report, it is noted that USEPA's comment concerning this matter specifically pertains to SVOC concentrations reported for the groundwater sample that was collected on 8 August 2012 from groundwater monitoring well TW-33-105 in AOI-33. Page 5 of Appendix B-2 of the RFI Report inadvertently reported these concentrations in boldface font, which as noted on Page 6 means that the analytes were "detected" at the concentrations listed. This is not the case. These analytes were not detected, and should not have been reported using boldface font. However, according to the associated validation report provided in Appendix C of the RFI Report, these non-detect data were rejected because the calculated recoveries of the SVOC surrogate compounds did not fall within the laboratory-specific quality control criteria, and the matrix spike/matrix spike duplicate recoveries were also out of range. Thus, these data are R-qualified, but the notes on Page 6 do not indicate what is meant by the R qualifier. A revised version of Appendix B-2, correcting these errors and omissions, is included Appendix D of this document.

Additionally, it is important to note that subsequent to submitting the RFI Report, all Site soil and groundwater data were screened against corresponding nonresidential vapor intrusion screening levels presented in in the MDEQ's May 2013 *Guidance Document for the Vapor Intrusion Pathway*. No constituent concentrations exceeded any of these screening levels.

[†] http://www.michigan.gov/documents/deq/deq-wd-gws-wcu-arsenicwellwater_270592_7.pdf.

Table I summarizes the Conceptual Site Model (CSM) for the Site, and describes the scenarios for potential unacceptable human exposure under current and reasonably expected future conditions at and around the Site in terms of the potentially exposed populations, the environmental media to which they could be exposed, and the potential routes of exposure. The CSM is based on the Site information presented in the RFI Report and the information presented in this CMP.

5. PROPOSED CORRECTIVE MEASURES

Current conditions address all potential unacceptable exposures associated with the Site, because groundwater is not used on-site for any purpose, nor is it used in the surrounding areas due to the controls discussed in Section 2.4, and no part of the Site is used for residential purposes. As discussed in Section 2.5, the Site is expected to remain industrial into the foreseeable future, given its current asset value and marketability.

Corrective Measures are proposed to be implemented at the Site to address the following objectives involving potential future exposures:

- Prohibit future on-site potable use of groundwater; and
- Prohibit future on-site exposure via residential pathways.

Site-wide institutional controls are proposed to be implemented as the overall final corrective action for the Site to address these objectives. These institutional controls will be established through deed restrictions in the form of a Restrictive Covenant which will be recorded with the Wayne County Registry of Deeds. This Restrictive Covenant will run with the property associated with the Site, and will be binding on the property owner; future owners; and their successors and assigns, lessees, easement holders, and any authorized agents, employees, or persons acting under their direction and control. Specifically, controls under the Restrictive Covenant will include restrictions that will maintain continued non-residential, commercial/industrial use of the Site, and will prohibit any future potable use of groundwater. These restrictions would run with the property in perpetuity, unless additional evaluation and/or remediation is approved by USEPA and implemented. The area subject to Site-wide deed restrictions is illustrated as the full perimeter boundary of the Site on Figure 3.

Information collected during the RFI indicates that the proposed Corrective Measures will be sufficient to protect human health and the environment, and will effectively ensure that the human health risk screening assumptions on future on-site land and groundwater use remain valid. The associated effectiveness will be achieved in a short term time frame. RACER Trust is committed to facilitating the redevelopment of the property as a non-residential, commercial/industrial property. Although these proposed Corrective Measures will not reduce toxicity, mobility, or volume of contaminants, this is not necessary, since the contaminant of concern (arsenic) has been linked to natural occurrences.

The proposed Corrective Measures can be implemented via administrative procedures, and with no direct impact to the surrounding community.

The proposed Corrective Measures can be completed with reasonable costs. The estimated costs to implement these measures are summarized as follows:

- **Site-wide Institutional Controls:** **$25,000**
  (Consisting of a Restrictive Covenant that invokes on-site land and groundwater use deed restrictions)

Based on information currently available, the proposed Corrective Measures for the Site represent a reasonable and effective, performance-based final remedy for the Site, which will have no direct impact to the local community, and that can be implemented in less than 180 days at a reasonable cost.

A draft Restrictive Covenant will be submitted under separate cover subsequent to this CMP.

6. SCHEDULE

The following schedule is proposed for Corrective Measures implementation for this Site:

- A draft Restrictive Covenant will be submitted to USEPA under separate cover subsequent to this CMP;
- RACER Trust will finalize the Restrictive Covenant within 30 days of receiving USEPA comments/edits concerning the draft version submitted subsequent to this CMP;
- RACER Trust will facilitate the recording of the final Restrictive Covenant with the Wayne County Registry of Deeds within 30 days upon USEPA's final approval of the Restrictive Covenant and issuance of its Final Decision for the Site;
- Within 60 days upon recording the Restrictive Covenant with the Wayne County Registry of Deeds, RACER Trust will submit to USEPA for review and approval a draft Corrective Action Complete with Controls Determination;
- RACER Trust will finalize the draft Corrective Action Complete with Controls Determination within 30 days upon receiving USEPA comments/edits.

It is anticipated that USEPA will conduct the following activities prior to approving RACER Trust's Corrective Action Complete with Controls Determination:

- Issue a Statement of Basis for the Site following approval of the Restrictive Covenant;
- Publish a Public Notice concerning the Statement of Basis
- Conduct a Public Hearing concerning the Statement of Basis, if needed;
- Publish a Public Notice concerning the Corrective Action Complete with Controls Determination; and
- Conduct a Public Hearing concerning the Corrective Action Complete with Controls Determination, if needed.

RACER Trust will continue to report project updates, including changes to the above schedule of activities, to USEPA via annual reports that are submitted by 15 March each year, until Corrective Measures are complete.

7. REFERENCES

- Environmental Data Recourses, Inc., Radius Map Report With GeoCheck, Inquiry Number 3176438.2s, 30 September 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150,
- Haley & Aldrich of Michigan, Inc., Resource Conservation and Recovery Act Facility Investigation Quality Assurance Project Plan For The Former GM Powertrain Division Livonia 12200 Middlebelt Road, Livonia, Michigan, USEPA ID #MID000718874, 29 December 2011/Revised 31 May 2012).
- Haley & Aldrich of Michigan, Inc., Documentation of Environmental Indicator Determination, RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) – Current Human Exposures Under Control, 15 March 2013.
- Haley & Aldrich of Michigan, Inc., Documentation of Environmental Indicator Determination, RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA750) – Migration of Contaminated Groundwater Under Control, 15 March 2013.
- Haley & Aldrich of Michigan, Inc., Resource Conservation and Recovery Act Facility Investigation Report For The Former GM Powertrain Division Livonia 12200 Middlebelt Road, Livonia, Michigan, USEPA ID #MID000718874, 15 March 2013; Revised 25 July 2013).
- Haley & Aldrich of Michigan, Inc., Resource Conservation and Recovery Act Facility Investigation Field Sampling Plan For The Former GM Powertrain Division Livonia 12200 Middlebelt Road, Livonia, Michigan, USEPA ID #MID000718874, 29 December 2011.
- Michigan Department of Environmental Quality, Arsenic in Well Water, http://www.michigan.gov/documents/deq/deq-wd-gws-wcu-arsenicwellwater_270592_7.pdf.
- Michigan Department of Environmental Quality, Hazardous Waste Technical Support Unit Hazardous Waste Section Waste and Hazardous Materials Division, Michigan Background Soil Survey 2005, MDEQ – MBSS 2005.
- United States Environmental Protection Agency (USEPA) and Revitalizing Auto Communities Environmental Response Trust (RACER), Performance Based Corrective Action Agreement Between The United States Environmental Protection Agency and Revitalizing Auto Communities Environmental Response Trust for GMPT-Livonia Site, signed by Michael O. Hill, Chief Operating Officer and General Counsel, RACER and Margaret M. Guerriero, Director, Land and Chemicals Division, USEPA Region 5, 30 January 2012 and 27 February 2012, respectively.

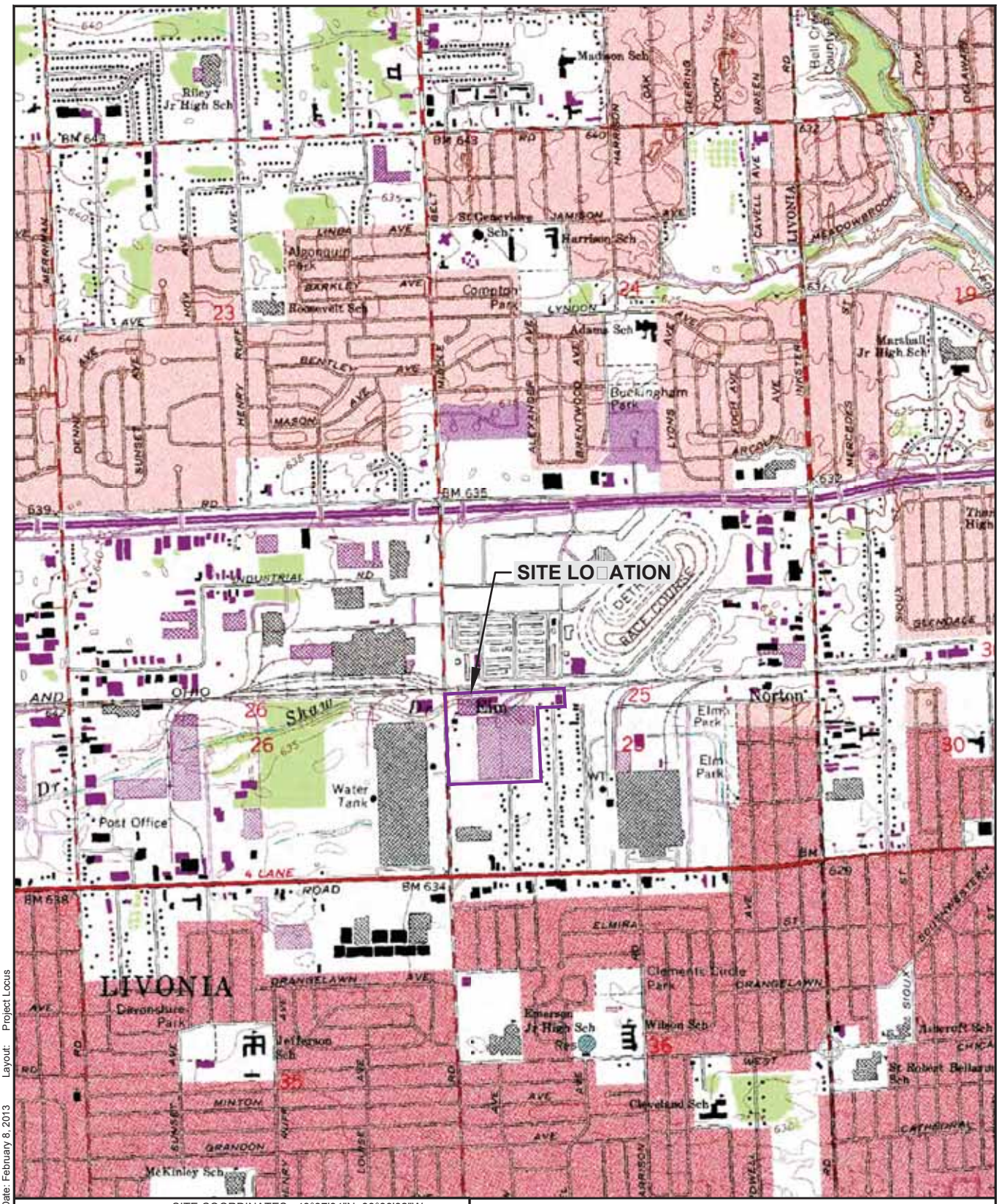
Field Cod

Table I: Conceptual Site Model - Scenarios for Potential Unacceptable Human Exposure - Former General Motors Livonia Powertrain Facility, Livonia Michigan

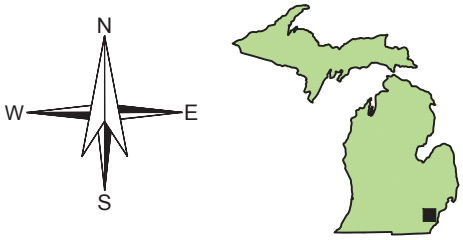
Receptor Population	Exposure Medium	Exposure Route	Possible Currently	Possible Future	Comments
On-Site					
Residents	surface and subsurface soil	ingestion, dermal contact, inhalation of vapors and/or airborne particulates	no	no	No on-site residential property present or planned. Institutional controls are planned to be established as part of remedial actions for the Site to prevent any future residential use of the Site.
	groundwater	ingestion, dermal contact, inhalation of vapors	no	no	
Routine Workers, Construction Workers, Maintenance Workers, and Trespassers	surface and subsurface soil	ingestion, dermal contact, inhalation of vapors and/or airborne particulates	no	no	As part of the RFI, 61 RFI soil samples were collected and analyzed from various depths from 53 locations, and the screening of the results against the Part 201 Criteria indicated the exceedance of only the drinking water protection criterion for arsenic at only two locations. These arsenic in soil exceedances are believed to be present as a result of natural conditions (i.e., types of soil deposits), and are not believ to be attributed to Site operations, since arsenic is not known to have been used at the Site, nor is likely o have been a component of Site-related activities. No other Part 201 Criteria were exceeded, including direct contact, particulate inhalation, and vapor intrusion criteria.
	groundwater	ingestion and dermal contact	no	no	Groundwater is not a current or reasonably expected future drinking water supply. The City of Livonia prohibits groundwater well installations and potable use of groundwater through its City Ordinance 13.40.030 (Ord. 2823, § 1, 2009). This Ordinance governs groundwater use of the Site and surrounding regions. Drinking water is supplied to the Site by the City of Livonia through the Detroit Water and Sewage Department, with the ultimate source of drinking water to the Site being the Detroit River. Institutional controls are planned to be established as part of remedial actions for the Site to prevent any future potable use of on-site groundwater.
		inhalation of vapors	no	no	During the RFI, only limited presence of Site groundwater was encountered. Groundwater water samples were collected from 11 temporary monitoring wells, and the screening of the results against the Part 201 Criteria (including vapor intrusion criteria) indicated the exceedance of only the drinking water criterion for arsenic at select locations.

Table I: Conceptual Site Model - Scenarios for Potential Unnacceptable Human Exposure - Former General Motors Livonia Powertrain Facility, Livonia Michigan (Continued)

Receptor Population	Exposure Medium	Exposure Route	Possible Currently	Possible Future	Comments
Off-Site					
Residents	surface and subsurface soil	inhalation of airborne particulates	no	no	Exposures are only possible if cover (e.g., pavement or building) is removed within contaminated areas and the underlying soil remains exposed and/or is disturbed. However, even if this should were to occur, none of the Site soil data exceed residential Part 201 particulate inhalation criteria.
	groundwater	ingestion and dermal contact	no	yes, but not likely	During the RFI, only limited presence of Site groundwater was encountered. Groundwater water samples were collected from 11 temporary monitoring wells, and only Part 201 drinking water criteria for select constituents at select locations were exceeded. Groundwater is not a current or reasonably expected future drinking water supply. The City of Livonia controls groundwater well installations and potable use of groundwater through its City Ordinance 13.40.030 (Ord. 2823, § 1, 2009). This Ordinance governs groundwater use of the Site and surrounding regions. Drinking water is supplied to the Site and surrounding regions by the City of Livonia through the Detroit Water and Sewage Department, with the ultimate source of drinking water to the Site being the Detroit River.
		inhalation of vapors	no	no	During the RFI, only limited presence of Site groundwater was encountered. Groundwater water samples were collected from 11 temporary monitoring wells, and none of the Site groundwater data exceed residential groundwater volatilization to indoor air inhalation criteria.
Routine Workers, Construction Workers, and Maintenance Workers	surface and subsurface soil	inhalation of airborne particulates	no	no	Exposures are only possible if cover (e.g., pavement or building) is removed within contaminated areas and the underlying soil remains exposed and/or is disturbed. However, even if this should were to occur, none of the Site soil data exceed nonresidential or residential Part 201 particulate inhalation criteria.
	groundwater	ingestion and dermal contact	no	yes, but not likely	During the RFI, only limited presence of Site groundwater was encountered. Groundwater water samples were collected from 11 temporary monitoring wells, and only Part 201 drinking water criteria for select constituents at select locations were exceeded. Groundwater is not a current or reasonably expected future drinking water supply. The City of Livonia controls groundwater well installations and potable use of groundwater through its City Ordinance 13.40.030 (Ord. 2823, § 1, 2009). This Ordinance governs groundwater use of the Site and surrounding regions. Drinking water is supplied to the Site and surrounding regions by the City of Livonia through the Detroit Water and Sewage Department, with the ultimate source of drinking water to the Site being the Detroit River.
		inhalation of vapors	no	no	During the RFI, only limited presence of Site groundwater was encountered. Groundwater water samples were collected from 11 temporary monitoring wells, and none of the Site groundwater data exceed residential groundwater volatilization to indoor air inhalation criteria.



SITE COORDINATES: 43°37'34"N 83°33'32"W



U.S.G.S. QUADRANGLES: REDFORD AND INKSTER, MI.

HALEY & ALDRICH

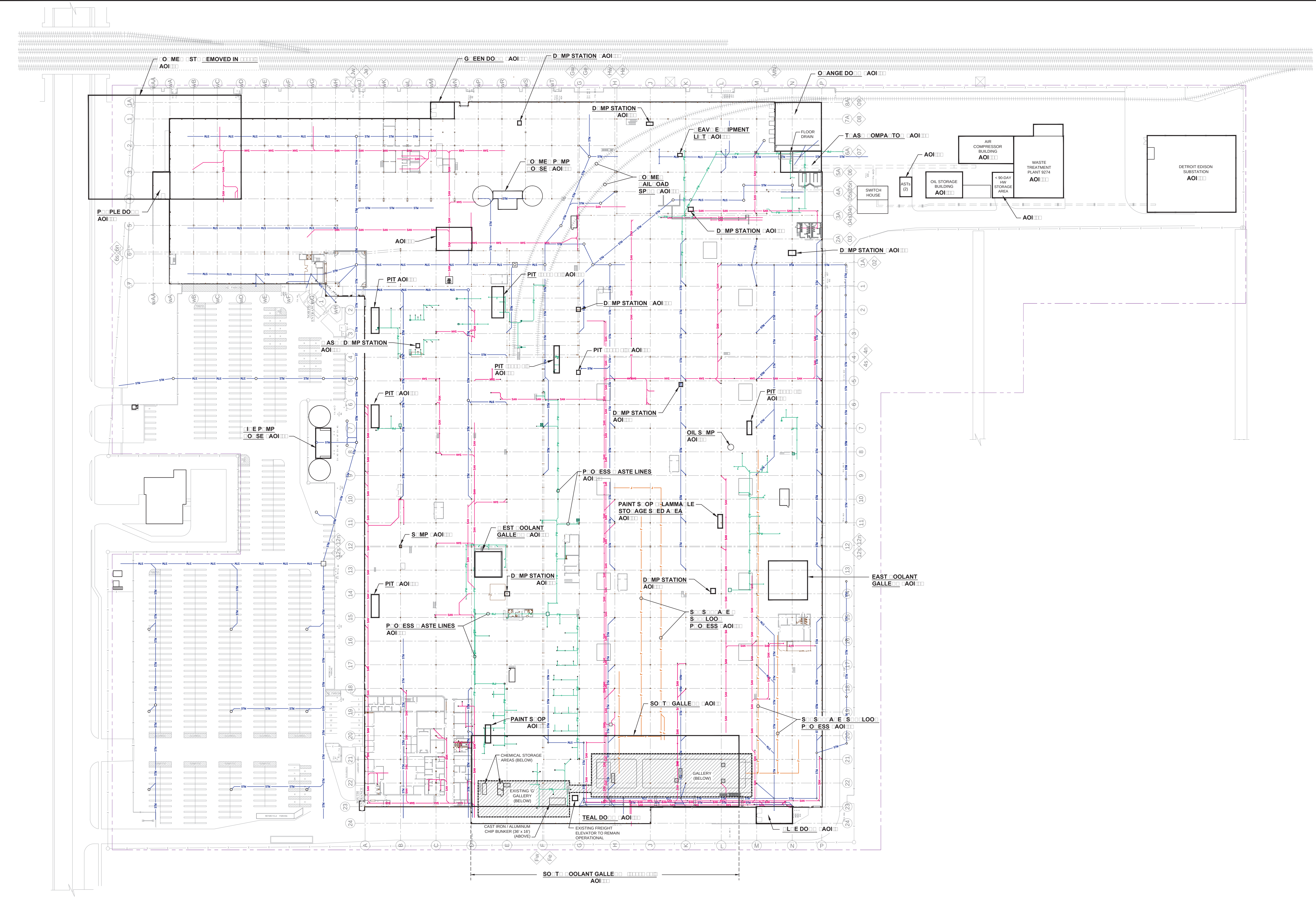
GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

PROJECT LOCUS

SCALE: 1:24000
FEBRUARY 2013

FIGURE 1

Drawing Name: G:\37290-GMPTLivonia\000\CAD\37290-001-Locus.dwg
Operator Name: LUCIDO, SAM Plot Date: February 8, 2013 Layout: Project Locus



NOTES

1. ALL LOCATIONS APRPOXIMATE AND BASED ON ONE OR MORE OF THE FOLLOWING:
   - GMPT - LIVONIA DRAWING NUMBER AE-01, DATED 11-15-2009 (PREPARED BY GENERAL MOTORS CORPORATION)
   - GMPT - LIVONIA DRAWING NUMBER CS1-00, DATED 11-15-2009 (PREPARED BY GENERAL MOTORS CORPORATION)
   - SITE PLAN AND MATERIAL STORAGE AREAS, DRAWING NUMBER 2, DATED 10-22-2007 (PREPARED BY TETRA TECH, INC.)
   - OVERALL PLOT PLAN, DARWING NUMBER P-1, DATED 4-4-1979 (PREPARED BY GENERAL MOTORS CORPORATION)
2. APPROXIMATE LOCATIONS OF AOI AND SITE FEATURES MARKED DURING SITE RECONAISANCE CONDUCTED ON 10/12/2011 - 10/13/2011. ALSO INCLUDES INFORMATION GATHERED FROM SPCC PLAN, DATED FEB 11, 2000 RECEVIED FROM DEQ THROUGH FOIA REQUEST.

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- RAILROAD TRACKS
- STORM SEWER
- SANITARY SEWER
- PROCESS WASTE LINES
- BELOW GROUND FLOOR FLUME

N
W E
S

0 60' 120' 180' 240'
SCALE IN FEET

HALEY& ALDRICH
Haley & Aldrich of Michigan, Inc.
3840 Packard Road, Suite 130
Ann Arbor, MI 48108-2280
Tel: 734.887.4350
Fax: 734.973.7413
www.haleyaldrich.com

LIVONIA ENGINE 1195

KEY PLAN
NOT TO SCALE

Project No.:	37290-009-01_R1
Scale:	AS SHOWN
Date:	01-DEC-2011
Drawn By:	SJL
Designed By:	DK
Checked By:	DK
Approved By:	
Stamp:	

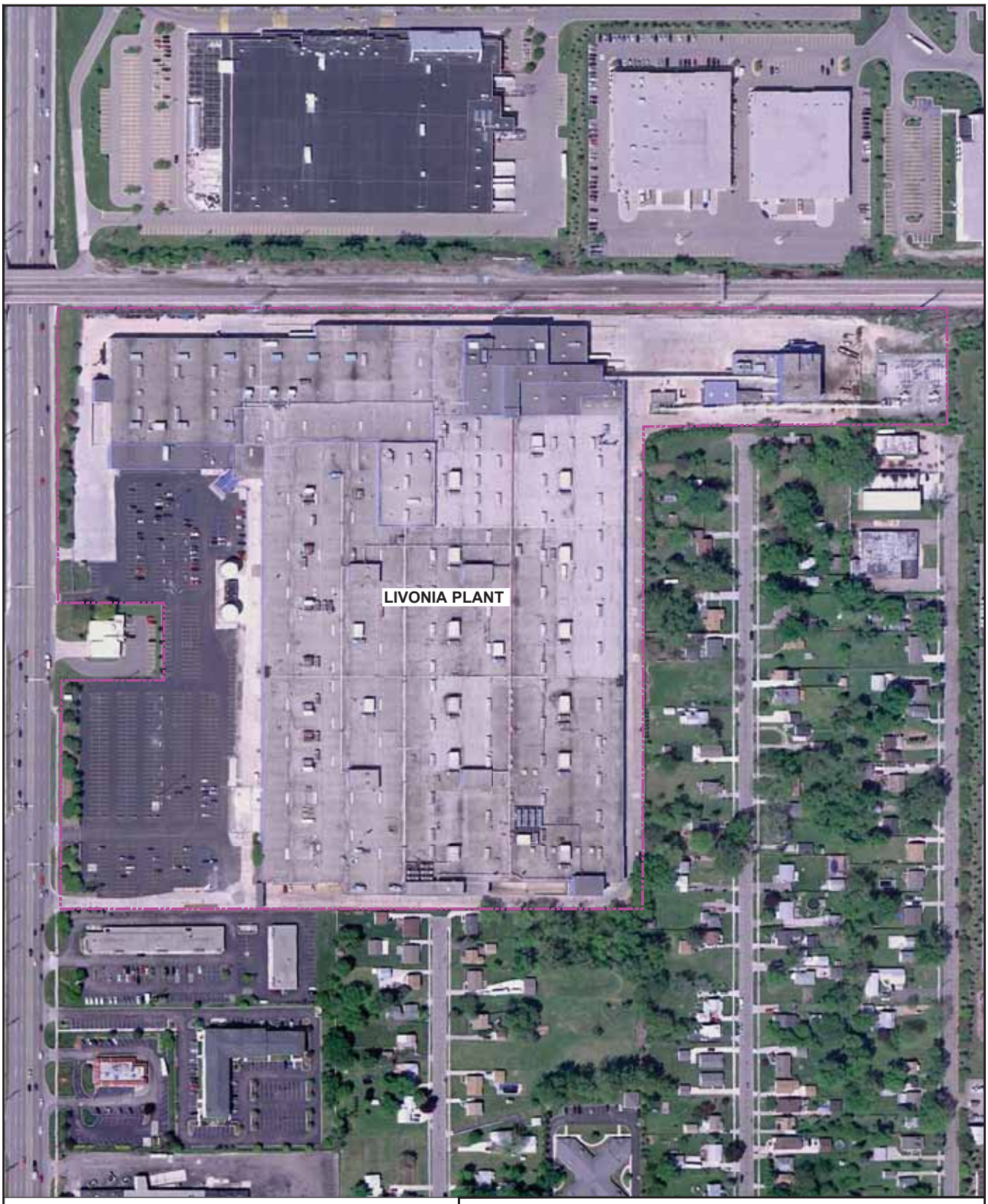
Rev.	Description	By	Date

GMPT - LIVONIA
SITE ID: 1195
LIVONIA, MICHIGAN

SITE PLAN AND AREAS OF INTEREST

2

Sheet: 1 of 1



LEGEND

PROPOSED SITE-WIDE DEED RESTRICTION AREA

NOTES

1. AERIAL PHOTOGRAPH TAKEN FROM GOOGLE EARTH DATED 5-10-2010.
2. COORDINATES 42° 22' 26.44"N 83° 19'46.26"W

N
W E
S

0 300 600
SCALE IN FEET

HALEY & ALDRICH

GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

PROPOSED SITE-WIDE DEED RESTRICTION AREA

SCALE: AS SHOWN
AUGUST 2013

FIGURE 3

\\DTRICOMMON\37290-GMPTLIVONIA\009\CAD\37290-009-03.DWG

APPENDIX A

RFI Monitoring Well Abandonment Logs

STEARNS DRILLING COMPANY

6974 Hammond SE
Dutton, Michigan 49316-9116
616/698-7770
FAX 616/698-9886

Job No. 13-13707-12

LOG OF TEST BORING NO. 02-129

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:

Encountered @	5.40	ft.
After completion		ft.
After hrs.		ft.
Seepage:		ft.
Boring Caved at:		ft.

MONITOR WELL DATA:

Pipe/Type: 1.25" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:

BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet	ABANDONMENT DESCRIPTION	T W
				Abandon 1.5" PVC well in place	
				Cement bentonite tremie grout well in place	
				Casing 1' below surface	
				Restore surface	
			5		
			10		
				Total well depth - 10.0'	
			15		
			20		
			25		
			30		

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Job No. 13-13707-12

LOG OF TEST BORING NO. 06-137

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 11.28 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet		ABANDONMENT DESCRIPTION	T W
					Abandon 1.5" PVC well in place	
					Cement bentonite tremie grout well in place	
					Casing 1' below surface	
					Restore surface	
			5			
			10			
			15			
			20			
					Total well depth - 21.15'	
			25			
			30			

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Job No. 13-13707-12

LOG OF TEST BORING NO. 06-139

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:

Encountered @	11.32	ft.
After completion		ft.
After hrs.		ft.
Seepage:		ft.
Boring Caved at:		ft.

MONITOR WELL DATA:

Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:

BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet	ABANDONMENT DESCRIPTION	T W
				Abandon 1.5" PVC well in place	
				Cement bentonite tremie grout well in place	
				Casing 1' below surface	
				Restore surface	
			5		
			10		
			15		
			20		
				Total well depth - 23.7'	
			25		
			30		

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Job No. 13-13707-12

LOG OF TEST BORING NO. 10-124

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 5.30 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet		ABANDONMENT DESCRIPTION	T W
					Abandon 1.5" PVC well in place Cement bentonite tremie grout well in place Casing 1' below surface Restore surface	
			5			
					Total well depth - 8.24'	
			10			
			15			
			20			
			25			
			30			

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Job No. 13-13707-12

LOG OF TEST BORING NO. 15-150

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:

Encountered @	na	ft.
After completion		ft.
After hrs.		ft.
Seepage:		ft.
Boring Caved at:		ft.

MONITOR WELL DATA:

Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:

BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet		ABANDONMENT DESCRIPTION	T W
					Abandon 1.5" PVC well in place	
					Cement bentonite tremie grout well in place	
					Casing 1' below surface	
					Restore surface	
				5		
					Total well depth - 6.3'	
				10		
				15		
				20		
				25		
				30		

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Job No. 13-13707-12

LOG OF TEST BORING NO. 18-117

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 8.18 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet	ABANDONMENT DESCRIPTION	T W
				Abandon 1.5" PVC well in place	
				Cement bentonite tremie grout well in place	
				Casing 1' below surface	
				Restore surface	
			5		
				Total well depth - 8.18'	
			10		
			15		
			20		
			25		
			30		

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616/698-7770
FAX 616/698-9886

Job No. 13-13707-12

LOG OF TEST BORING NO. 19-115

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 5.25 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet	ABANDONMENT DESCRIPTION	T W
				Abandon 1.5" PVC well in place	
				Cement bentonite tremie grout well in place	
				Casing 1' below surface	
				Restore surface	
			5		
				Total well depth - 8.73'	
			10		
			15		
			20		
			25		
			30		

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Job No. 13-13707-12

LOG OF TEST BORING NO. 27-158

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:

Encountered @	6.40	ft.
After completion		ft.
After hrs.		ft.
Seepage:		ft.
Boring Caved at:		ft.

MONITOR WELL DATA:

Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:

BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet	ABANDONMENT DESCRIPTION
				Abandon 1.5" PVC well in place
				Cement bentonite tremie grout well in place
				Casing 1' below surface
				Restore surface
			5	
			10	
				Total well depth - 9.92'
			15	
			20	
			25	
			30	

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6974 Hammond SE
Dutton, Michigan 49316-9116
616/698-7770
FAX 616/698-9886

Job No. 13-13707-12

LOG OF TEST BORING NO. 28-152

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 10/12/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 6.56 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet		ABANDONMENT DESCRIPTION	T W
					Abandon 1.5" PVC well in place	
					Cement bentonite tremie grout well in place	
					Casing 1' below surface	
					Restore surface	
			5			
			10		Total depth of well is 9.3'	
			15			
			20			
			25			
			30			

STEARNS DRILLING COMPANY

6974 Hammond SE
Dutton, Michigan 49316-9116
616/698-7770
FAX 616/698-9886

Job No. 13-13707-12

LOG OF TEST BORING NO. 28-165

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 5.50 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 2" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet		ABANDONMENT DESCRIPTION	T W
					Abandon 1.5" PVC well in place	
					Cement bentonite tremie grout well in place	
					Casing 1' below surface	
					Restore surface	
			5			
			10			
					Total well depth - 9.92'	
			15			
			20			
			25			
			30			

STEARNS DRILLING COMPANY

6974 Hammond SE
Dutton, Michigan 49316-9116
616/698-7770
FAX 616/698-9886

Job No. 13-13707-12

LOG OF TEST BORING NO. 33-105

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 2.10 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet		ABANDONMENT DESCRIPTION	T W
					Abandon 1.5" PVC well in place	
					Cement bentonite tremie grout well in place	
					Casing 1' below surface	
					Restore surface	
			5			
			10		Total well depth - 9.2'	
			15			
			20			
			25			
			30			

STEARNS DRILLING COMPANY

6974 Hammond SE
Dutton, Michigan 49316-9116
616/698-7770
FAX 616/698-9886

Job No. 13-13707-12

LOG OF TEST BORING NO. 38-101

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 3.20 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet	ABANDONMENT DESCRIPTION	T W
				Abandon 1.5" PVC well in place	
				Cement bentonite tremie grout well in place	
				Casing 1' below surface	
				Restore surface	
			5		
				Total well depth - 8.22'	
			10		
			15		
			20		
			25		
			30		

STEARNS DRILLING COMPANY

6974 Hammond SE
Dutton, Michigan 49316-9116
616/698-7770
FAX 616/698-9886

Job No. 13-13707-12

LOG OF TEST BORING NO. 40-135

Sheet: 1 of 1

Project: Racer Livonia

Location: Livonia, MI

Date Completed: 12/10/13

Crew Chief: Dan Meredith
Drill Rig: Hoist #27
Boring Method:

Hole Plugged With: cement/bentonite

GROUNDWATER:
Encountered @ 4.64 ft.
After completion ft.
After hrs. ft.
Seepage: ft.
Boring Caved at: ft.

MONITOR WELL DATA:
Pipe/Type: 1.5" PVC
Length:
Above Ground:
Cap:

Screen/Type:
Size:
Slot:
Set @
Backfilled:

Bentonite Seal:
Grout/Type:
Depth:
Protective Casing:
Materials Cleaned:
Development:

REMARKS:

LEGEND:
BlowCount/Blows per 6"
w/140# hammer x 30" drop
SS-2" Split Spoon Sampler
LS-Brass Liner Sample
ST-Shelby Tube Sample
SNR-Sample not recovered
LB-Large Bore

Sample Type	REC	Blow Count	Depth Feet		ABANDONMENT DESCRIPTION	T W
					Abandon 1.5" PVC well in place	
					Cement bentonite tremie grout well in place	
					Casing 1' below surface	
					Restore surface	
			5			
			10		Total well depth - 9.74'	
			15			
			20			
			25			
			30			

APPENDIX B

Reference Material Pertaining to Groundwater Use and Water Supply

APPENDIX B-1

Excerpt – Environmental Data Recourses, Inc., Radius Map Report With GeoCheck, Inquiry Number 3176438.2s, 30 September 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

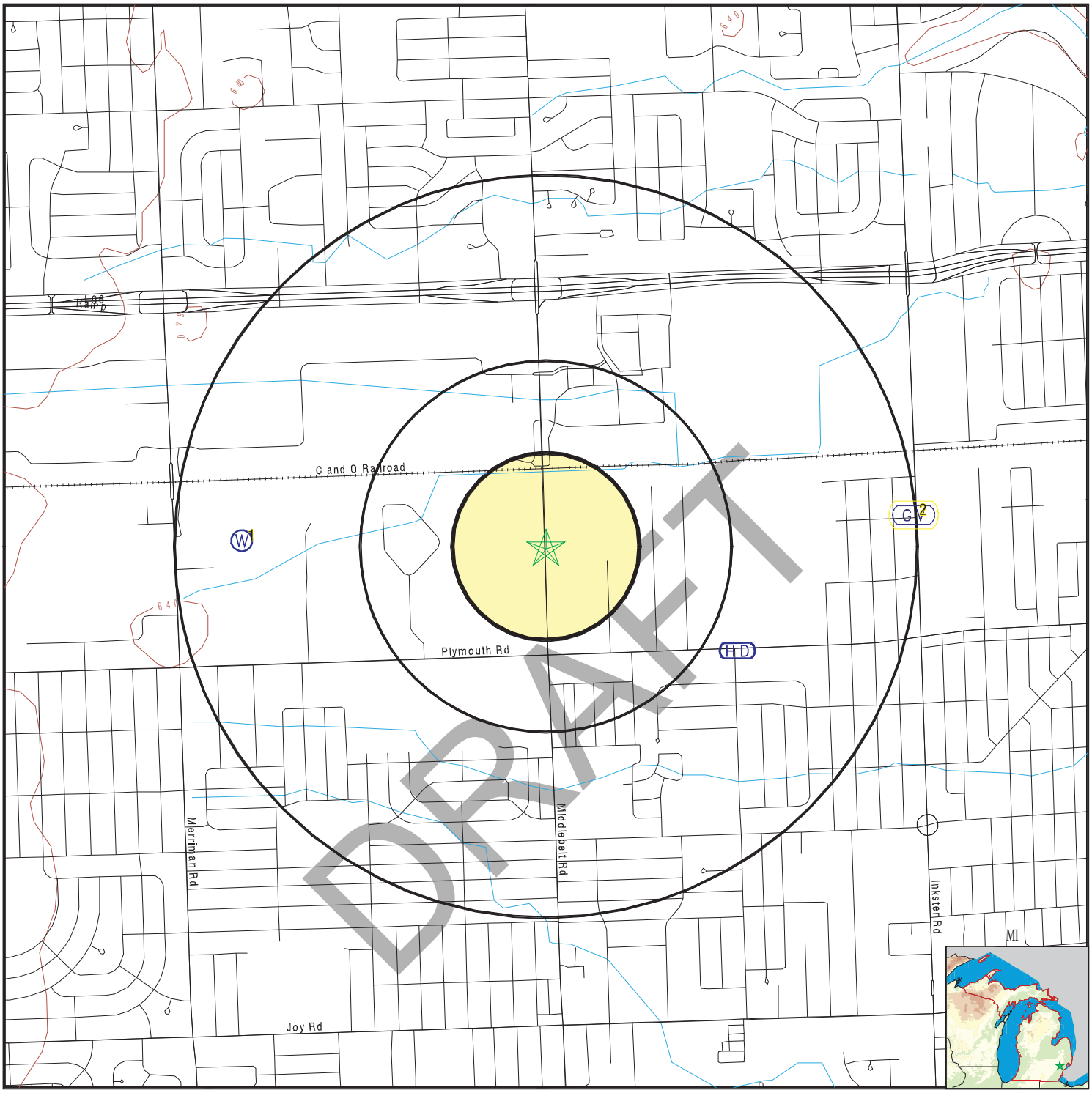
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	MI20323847	1/2 - 1 Mile West

PHYSICAL SETTING SOURCE MAP - 3176438.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

NORTH

SITE NAME:	GMC-Powertrain Livonia Engine	CLIENT:	Haley & Aldrich, Inc.
ADDRESS:	12200 Middlebelt Road	CONTACT:	Marie Rose Javier
	Livonia MI 48150	INQUIRY #:	3176438.2s
LAT/LONG:	42.3734 / 83.3332	DATE:	September 30, 2011 9:19 am

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
1 **West** **1/2 - 1 Mile** **Higher**	**MI WELLS**	**MI20323847**

Wellid:	82000000853	Import id:	82717926001
County:	Wayne	Township:	Livonia
Town range:	01S 09E	Section:	26
Owner name:	LW CUT STONE		
Well addr:	12200 MERRIMAN		
Well depth:	60		
Well type:	Household		
Wssn:	0		
Well num:	Not Reported	Driller id:	1133
Const date:	Not Reported	Case type:	Unknown
Case dia:	4		
Case depth:	60		
Screen frm:	52		
Screen to:	60		
Swl:	12		
Test depth:	50		
Test hours:	2		
Test rate:	75	Test methd:	Unknown
Grouted:	1	Pmp cpcity:	0
Latitude:	42.3736226775		
Longitude:	-83.3491866867		
Methd coll:	Interpolation-Map		
Elevation:	635		
Elev methd:	Topographoc Map Interpolation	Depth flag:	Not Reported
Elev flag:	Not Reported		
Swl flag:	Not Reported		
Elev dem:	633	Elev dif:	2
Elev miv:	635	Aq code:	Drift Well
Aq flag:	Not Reported	Pct aq:	25
Pct aq d:	25	Pct aq r:	0
Pct maq:	0	Pct maq d:	0
Pct maq r:	0	Pct cm:	75
Pct cm d:	75	Pct cm r:	0
Pct pcm:	0	Pct pcm d:	0
Pct pcm r:	0	Pct na:	0
Pct na d:	0	Pct na r:	0
Pct flag:	Not Reported	Rock top:	-1
D r type:	Not Reported	Spc cpcity:	0
A thicknes:	8	A pct aq:	100
A pct maq:	0	A pct pcm:	0
A pct cm:	0	A pct na:	0
A thickns2:	48	A pct aq2:	17
A pct maq2:	0	A pct pcm2:	0
A pct cm2:	83	A pct na2:	0
A hit swl:	F	A hit top:	F
A hit rock:	F	A sc lith1:	Sand
A sc lmod1:	Not Reported	A sc lmaq1:	AQ
A sc lpct1:	100	A sc lith2:	Not Reported
A sc lmod2:	Not Reported	A sc lmaq2:	Not Reported
A sc lpct2:	0	Pct aq 1:	35
Pct maq 1:	0	Pct cm 1:	65
Pct pcm 1:	0	Pct na 1:	0

Pct aq 2:	0	Pct maq 2:	0
Pct cm 2:	100	Pct pcm 2:	0
Pct na 2:	0	Pct aq 3:	40
Pct maq 3:	0	Pct cm 3:	60
Pct pcm 3:	0	Pct na 3:	0
Pct aq 4:	0	Pct maq 4:	0
Pct cm 4:	0	Pct pcm 4:	0
Pct na 4:	0	Pct aq 5:	0
Pct maq 5:	0	Pct cm 5:	0
Pct pcm 5:	0	Pct na 5:	0
Pct aq 6:	0	Pct maq 6:	0
Pct cm 6:	0	Pct pcm 6:	0
Pct na 6:	0	Pct aq 7:	0
Pct maq 7:	0	Pct cm 7:	0
Pct pcm 7:	0	Pct na 7:	0
Pct aq 8:	0	Pct maq 8:	0
Pct cm 8:	0	Pct pcm 8:	0
Pct na 8:	0	Pct aq 9:	0
Pct maq 9:	0	Pct cm 9:	0
Pct pcm 9:	0	Pct na 9:	0
Pct aq 10:	0	Pct maq 10:	0
Pct cm 10:	0	Pct pcm 10:	0
Pct na 10:	0	Pct aq 11:	0
Pct maq 11:	0	Pct cm 11:	0
Pct pcm 11:	0	Pct na 11:	0
Pct aq 12:	0	Pct maq 12:	0
Pct cm 12:	0	Pct pcm 12:	0
Pct na 12:	0	Pct aq 13:	0
Pct maq 13:	0	Pct cm 13:	0
Pct pcm 13:	0	Pct na 13:	0
Within sec:	Y	Loc match:	Y
Aq code 1:	D		
Hit swl:	F		
Athk2:	48		
Horiz Conduct:	16.66675		
Vert Conduct:	.00012		
T2:	800.004		
D50plek:	67.61628		

2
East
1/2 - 1 Mile
Lower

Site ID:	032591
Groundwater Flow:	Varies
Shallowest Water Table Depth:	5-7
Deepest Water Table Depth:	Not Reported
Average Water Table Depth:	Not Reported
Date:	10/19/1993

AQUIFLOW **36157**

APPENDIX B-2

Excerpts – MDEQ On-line Well Inventory Searches:

- http://wellviewer.rsgis.msu.edu/viewer.htm
- http://www.deq.state.mi.us/well-logs/default.asp)

http://wellviewer.rsgis.msu.edu/viewer.htm
10 October 2012

WELLID	SEQNO	PRIMLITH	LITHMOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE
82000000852	1	Clay		31	31	D	CM	0	CM
82000000852	3	Hardpan		65	18	D	CM	0	CM
82000000852	2	Clay	Sandy	47	16	D	CM	-1	PCM
82000000852	4	Shale		100	35	R	CM	0	CM

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID: 82717923001

Tax No: 55091020119000	**Permit No:**	**County:** Wayne			**Township:** Livonia
		Town/Range: 01S 09E	**Section:** 23	**Well Status:**	**WSSN:** / **Source ID/Well No:**

Well ID: 82000000852

Elevation: 636 ft.
Latitude: 42.3848916472
Longitude: -83.3474844978
Method of Collection: Interpolation-Map

Distance and Direction from Road Intersection:
BETWEEN HILLCREST AND SUNSET

Well Owner: VIRGIL STANSFIELD

Well Address:	**Owner Address:**
14061 WARNER CT. LIVONIA, MI	14061 WARNER CT. LIVONIA, MI

Drilling Method: Cable Tool
Well Depth: 100.00 ft. **Well Use:** Household
Well Type: Dry Hole **Date Completed:** 8/12/1967
Casing Type: Unknown **Height:** 0.00 ft. below grade
Casing Joint: Welded
Casing Fitting: Drive shoe

Diameter: 4.00 in. to 0.00 ft. depth

Borehole:

Pump Installed: No
Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 999.99 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown

Screen Installed: No **Intake:** Unknown

Well Grouted: No

Wellhead Completion: Unknown

Formation Description	Thickness	Depth to Bottom
Clay	31.00	31.00
Clay Sandy	16.00	47.00
Hardpan	18.00	65.00
Shale Antrim Shale	35.00	100.00

Geology Remarks:

Nearest Source of Possible Contamination:

Type	Distance	Direction
Unknown	0 ft.	

Abandoned Well Plugged: No

Reason Not Plugged:

Drilling Machine Operator Name:
Employment: Unknown

Contractor Type: Unknown **Reg No:**
Business Name:
Business Address:

Water Well Contractor's Certification

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

Signature of Registered Contractor **Date**

General Remarks:
Other Remarks:

GEOLOGICAL SURVEY SAMPLE No. _____

MDEQ:82000000852

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

1 LOCATION OF WELL

County	Twp.	Fraction	Section No.	Town	Range
Wayne	Livonia	SW ¼ SE ¼ SW ¼	23	1 N	9 E W.

Distance And Direction from Road Intersections: Between Hillcrest and Sunset

Street address & City of Well Location: 14061 Warner Ct.

OWNER No. _____

3 OWNER OF WELL: Virgil Stansfield

Address: 14061 Warner Ct. Livonia, Michigan

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
DRY HOLE		
Clay		31
Sandy clay		47
Hardpan		65
Antrim shale		100
No Water.		
Plugged from bottom to top		

4 WELL DEPTH: (completed) 100 ft. Date of Completion 8-12-67

5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ _____

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ _____

7 CASING: Diam. 4 in. to _____ ft. Depth; _____ in. to _____ ft. Depth. Threaded ☐ Welded ☒. Height: Above/Below surface _____ ft. Weight 11 lbs/ft. Drive Shoe? Yes ☐ No ☐

8 SCREEN: Type: _____ Dia.: _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. Fittings:

9 STATIC WATER LEVEL _____ ft. below land surface

10 PUMPING LEVEL below land surface _____ ft. after _____ hrs. pumping _____ g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☐ 12" Above Grade

13 GROUTING: Well Grouted? ☐ Yes ☐ No Material: ☐ Neat Cement ☐ _____ Depth: From _____ ft. to _____ ft.

14 SANITARY: Nearest Source of possible contamination _____ feet _____ Direction _____ Type _____ Well disinfected upon completion ☐ Yes ☐ No

15 PUMP: Manufacturer's Name _____ Model Number _____ HP _____ Length of Drop Pipe _____ ft. capacity _____ G.P.M. Type: ☐ Submersible ☐ _____ ☐ Jet ☐ Reciprocating

16 Remarks, elevation, source of data, etc.

ADDED INFO. BY DRILLER, ITEM NO.

*CORRECTED BY:

**ADDITION BY:

17 WATER WELL CONTRACTOR'S CERTIFICATION:

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

WAYNE W. CLAYPOOL — REGISTERED BUSINESS NAME

0111 — REGISTRATION NO.

Address: 41074 W. 7 Mile Rd. Northville, Mich.

Signed _____ Date _____

D67D 100M 6-66

MAR 4 1968

GEOLOGICAL SURVEY COPY

WELLID	SEQNO	PRIMLITH	LITHMOD	DEPTH	THICKNESS	AQTYPE	CLASS	EFFECT	MAQTYPE
82000000853	1	Clay		5	5	D	CM	0	CM
82000000853	3	Clay		52	40	D	CM	0	CM
82000000853	2	Sand		12	7	D	AQ	0	AQ
82000000853	4	Sand		60	8	D	AQ	0	AQ

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Import ID: 82717926001

Tax No: 55103990006003 | **Permit No:** | **County:** Wayne | **Township:** Livonia

Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
01S 09E	26			

Well ID: 82000000853

Elevation: 635 ft.
Latitude: 42.3736226775
Longitude: -83.3491866867
Method of Collection: Interpolation-Map

Distance and Direction from Road Intersection:
.5 MILE S OF SCHOOLCRAFT 500' E OF MERRIMAN

Well Owner: LW CUT STONE

Well Address:
12200 MERRIMAN
LIVONIA, MI

Owner Address:
12200 MERRIMAN
LIVONIA, MI

Drilling Method: Cable Tool
Well Depth: 60.00 ft. **Well Use:** Household
Well Type: New **Date Completed:**

Casing Type: Unknown **Height:**
Casing Joint: Welded
Casing Fitting: Drive shoe

Diameter: 4.00 in. to 60.00 ft. depth

Borehole:

Pump Installed: Yes **Pump Installation Only:** No
Pump Installation Date: **HP:**
Manufacturer: Sta-Rite **Pump Type:** Submersible
Model Number: **Pump Capacity:** 0 GPM
Drop Pipe Length: 42.00 ft. **Pump Voltage:**
Drop Pipe Diameter: **Drilling Record ID:**
Draw Down Seal Used: No

Pressure Tank Installed: No
Pressure Relief Valve Installed: No

Static Water Level: 12.00 ft. Below Grade
Well Yield Test: **Yield Test Method:** Unknown
Pumping level 50.00 ft. after 2.00 hrs. at 75 GPM

Formation Description	Thickness	Depth to Bottom
Blue Clay	5.00	5.00
Brown Sand	7.00	12.00
Blue Clay	40.00	52.00
Gray Sand	8.00	60.00

Screen Installed: Yes **Filter Packed:** No
Screen Diameter: 4.00 in. **Blank:** 0.00 ft. Above
Screen Material Type:

Slot	Length	Set Between
15.00	8.00 ft.	52.00 ft. and 60.00 ft.

Fittings: Neoprene packer

Well Grouted: Yes **Grouting Method:** Unknown

Grouting Material	Bags	Additives	Depth
Unknown	0.00	None	0.00 ft. to 0.00 ft.

Wellhead Completion: Unknown

Geology Remarks:

Nearest Source of Possible Contamination:

Type	Distance	Direction
Unknown	0 ft.	

Drilling Machine Operator Name:
Employment: Unknown

Contractor Type: Unknown **Reg No:** 63-1133
Business Name:
Business Address:

Water Well Contractor's Certification

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

Signature of Registered Contractor **Date**

General Remarks:
Other Remarks:

GEOLOGICAL SURVEY SAMPLE No. APR 30 1982

MDEQ:82000000853
EDR: MI20323847

WATER WELL RECORD
ACT 294 PA 1965

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

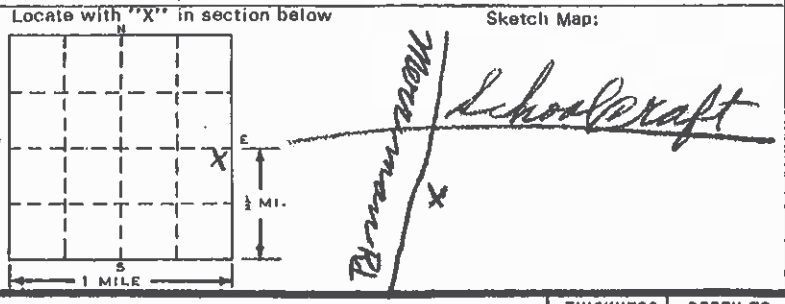
1 LOCATION OF WELL

County	Township Name	Fraction	Section Number	Town Number	Range Number
Wayne	Livonia	S E¼ NE¼ NE¼	27-26	1 N/S.	9 E/W.

Distance And Direction from Road Intersections: 0.5 Mile S. of Schoolcraft 500' E. of Merriman

Street address & City of Well Location

Locate with "X" in section below — Sketch Map:



3 OWNER OF WELL: Kw. Cut Stone

Address 12200 Merriman Livonia Mi.

4 WELL DEPTH: (completed) 60 ft. Date of Completion Dec 81

5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐ ____

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐ ____

7 CASING: Threaded ☐ Welded ☒ Diam. 4 in. to 60 ft. Depth; ____ in. to ____ ft. Depth. Height: Above/Below Surface 1 ft. Weight 11 lbs./ft. Drive Shoe? Yes ☒ No ☐

2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
blue clay	5	5
brown sand	7	12
blue clay	40	52
gray sand	8	60

8 SCREEN: Type: Stainless Dia.: 4" Slot ~~Gauze~~ 15-13 Length 5' Set between 52 ft. and 60 ft. Fittings: X Packer 3'X1' nipple

9 STATIC WATER LEVEL 12 ft. below land surface

10 PUMPING LEVEL below land surface 50 ft. after 2 hrs. pumping 75 g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

11 WATER QUALITY in Parts Per Million: Iron (Fe) ____ Chlorides (Cl) ____ Hardness ____ Other ____

12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☐ 12" Above Grade

13 Well Grouted? ☐ Yes ☐ No ☐ Neat Cement ☐ Bentonite ☐ ____ Depth: From ____ ft. to ____ ft.

14 Nearest Source of possible contamination ____ feet ____ Direction ____ Type ____ Well disinfected upon completion ☐ Yes ☐ No

15 PUMP: ☒ Not Installed Manufacturer's Name Starite Model Number ____ HP 1/2 Volts 230 Length of Drop Pipe 42 ft. capacity 50 G.P.M. Type: ☒ Submersible ☐ Jet ☐ Reciprocating

USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc. ADDED INFO BY DRILLER, ITEM NO.
*CORRECTED BY
**ADDITION BY
ELEVATION
DEPTH TO ROCK

17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Smith Well Drilling 1133
REGISTERED BUSINESS NAME — REGISTRATION NO.

Address 21210 Waldron Farmington

Signed D. D. Smith Date 4-7-82
AUTHORIZED REPRESENTATIVE

D67d 100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

APPENDIX B-3

Telephone Interview Logs and Electronic Email Correspondences:

- **Wayne County Department of Public Health**
- **City of Livonia Finance Department – Water & Sewer Billing and Assessor's Office**

HALEY & ALDRICH

SUMMARY OF TELEPHONE CALL

Route To: File

Name	Michelle Varran	Tel. No.	734.727.7448
Company	Wayne County Department of Public Health		
Project	Response to USEPA Comments - Former GM Powertrain Livonia Site		
Client	RACER		

File No. 37290

Page 1 of 1

Type of call ☐ Incoming ☐ Outgoing ☒ Return ☐ Voicemail

Date 4 November 2013

Time 9:00 AM

Summary of call

Return telephone call from Michelle Varran, Environmental Services Supervisor, Wayne County Department of Public Health.
Subject of discussion: Haley & Aldrich's inquiry concerning the groundwater well permitting process in Wayne County and Livonia Michigan.

According to Ms. Varran, Wayne County Department of Public Health is responsible for issuing permits and assuring proper installation of groundwater wells in accordance with State Health Department and MDEQ regulations. Wayne County Department of Public Health will not accept any permit applications for well locations within the City of Livonia without the City of Livonia previously approving those well locations. This is due to the City having enacted an ordinance governing groundwater use within the City's limits.

Wayne County Department of Public Health
Environmental Health Section
5454 S. Venoy
Wayne, MI 48184
Telephone: 734.272.7400

Action required by H&A

Action taken

Name Susan J. Hoertt

HALEY & ALDRICH

SUMMARY OF TELEPHONE CALL

Route To	File		
Name	Susan Myers	Tel. No.	734.466.2272
Company	City of Livonia Water and Sewer Billing Department		
Project	Response to USEPA Comments - Former GM Powertrain Livonia Site	File No.	37290
Client	RACER	Page	1 of 1
Type of call	☐ Incoming ☒ Outgoing ☐ Return ☐ Voicemail	Date	8 November 2013
		Time	3:30 PM

Summary of call

Outgoing telephone call to Susan Myers, City of Livonia Water Billing. Ms. Myers is responsible for managing water and sewer billings for the City of Livonia.

Water use is metered. A fixe fee has been established based on meter size (0-1M gallons). Water rate is $1.69/unit (measurement in cubic feet, possibly per 1 or 100 ft^3, according to Ms. Myers). Sewer rate is $1.82/unit (similar unit to water rate).

Ms. Myers was asked for information on water billings and whether she could identify properties for which there were sewer only billings and/or no billings within a 1-mile radius of the Livonia site. Ms. Myers was provided the address of the Livonia site, 12200 Middlebelt Road.

Ms. Myers identified only 3 locations in the communities neighboring the site for which only sewer billings were issued: 15041 Fairlane, 16607 Rougeway, 33501 8 mile. Using Google Earth, the distance of each of these addresses from the Livonia site was approximated as the following, respectively: greater than 3 miles, greater than 2 miles, and greater than 5 miles. She said because of the requirement for City water, no one in the area should be using water wells for their drinking water.

Ms. Myers was asked if she could confirm whether water billing existed for give addresses. She said she could and requested email communication of those addresses. Ms. Myers said she was available to support this request after November 15, 2013. She said she would be changing jobs before the end of November and could not support the request after that timeframe. She provided an email address of: smyers@ci.livonia.mi.us.

Ms. Myers initiated review of water billing records for the Livonia site and indicated they are paying for meters they don't sue. She said the site is charged a maintenance fee relative to the Detroit water plant infrastructure. She reported an 8 in. meter and a 4 in. meter for the site, indicating that they likely support fire suppression systems at the site and are assessed a fixed monthly fee. She said three additional 3 in. meters show no usage and are billed at $226/mo. each. She further stated if the site wished to discontinue billings for the unused meters, it would be necessary to pull the meters and cap the lines. A fee would be assessed for this activity, and a fee would be assessed to restore water supply to the site.

Action required by H&A

Send email to Susan Myers. Provide addresses for locations identified in MDEQ well database search within approximately 1 mile radius of the Livonia site. Request information on status of water billing for the addresses.

Action taken

Email sent to Susan Myers on 26 November 2013 requesting information on water billing for 12200 Merriman and 14061 Warner Court. Ms. Myers responded via email that 12200 Merriman had been provided water/sewer service; however, the property had been demolished and water/sewer service discontinued at that time. Note: additional follow-up was conducted with the City of Livonia Assessor's Office to confirm status of the property. Ms. Myers confirmed water billing records for 14061 Warner Court.

Name Susan J. Hoertt

Hoertt, Susan

From: Myers, Susan <SMyers@ci.livonia.mi.us>
Sent: Tuesday, November 26, 2013 9:00 AM
To: Hoertt, Susan
Subject: RE: Addresses for Water Billing Record Search

Good morning,

We do bill 14061 Warner Court for water and sewer.

We do not bill 12200 Merriman for anything. The building was demolished years ago and the service to that specific address was stopped.

I will be taking another position within the City of Livonia Finance Department and will no longer be addressing Water Billing issues.

In the future, in order to receive a more timely response to your request, please direct any inquiries to our general mailbox at wateracct@ci.livonia.mi.us .

Thank you,

Susan Myers
Water & Sewer Billing, Finance Department
City of Livonia
734-466-2272

From: Hoertt, Susan [mailto:SHoertt@haleyaldrich.com]
Sent: Monday, November 25, 2013 12:55 PM
To: Myers, Susan
Subject: Addresses for Water Billing Record Search

Susan,
Can you please review billing records to determine whether the following addresses are billed for water and/or sewer?

14061 Warner Court
12200 Merriman

Thank you for your assistance.

Susan Hoertt, R.S., CPEA
Senior Scientist | Client Specialist

Haley & Aldrich
8899 Gander Creek Drive
Miamisburg, OH 45342-5432
+1 937.530.1408 Office
+1 937.620.3799 Cellular
+1 937.530.1458 Fax
SHoertt@HaleyAldrich.com

HALEY & ALDRICH

SUMMARY OF TELEPHONE CALL

Route To	File		
Name	George Nehasil	Tel. No.	734.466.2220
Company	City of Livonia Assessor's Office		
Project	Response to USEPA Comments - Former GM Powertrain Livonia Site	File No.	37290
Client	RACER	Page	1 of 1
Type of call	☐ Incoming ☒ Outgoing ☐ Return ☐ Voicemail	Date	11 December 2013
		Time	1:30 PM

Summary of call

Outgoing telephone call to City of Livonia Assessor's Office. Reached George Nehasil. Mr. Nehasil provided information concerning 12200 Merriman Road. According to Mr. Nehasil, the property was vacant in 1999. At that time the parcel associated with 12200 Merriman Road was combined with an adjacent parcel and the newly combined parcel was designated with address 12151 Merriman. Mr. Nehasil stated that 12200 Merriman Road no longer exists as an address in Livonia. 12512 Merriman is owned by Guthrie Realty. Several businesses are associated with the property, including Guthrie Lumber.

Action required by H&A

Action taken

Name Susan J. Hoertt

HALEY & ALDRICH

SUMMARY OF TELEPHONE CALL

Route To	File		
Name	Laurie Pietrzak	Tel. No.	734.466.2272
Company	City of Livonia Water and Sewer Billing Department		
Project	Response to USEPA Comments - Former GM Powertrain Livonia Site	File No.	37290
Client	RACER	Page	1 of 1
Type of call	☐ Incoming ☒ Outgoing ☐ Return ☐ Voicemail	Date	11 December 2013
		Time	1:50 PM

Summary of call

Outgoing telephone call to City of Livonia Water Billing. Reached Laurie Pietrzak. Ms. Pietrzak provided information concerning 12152 Merriman Road. She confirmed the property is commercial and is billed for City water and sewer services.

Action required by H&A

Action taken

Name Susan J. Hoertt

APPENDIX C

RFI Report Appendix B-2 – Revised

APPENDIX B-2
SUMMARY OF GROUNDWATER ANALYTICAL
RACER GMPT LIVONIA
LIVONIA, MI

AOI		AOI-02	AOI-02	AOI-06	AOI-06	AOI-06	AOI-06	AOI-06	AOI-10
Location Name		TW-02-129	TW-02-129	TW-06-137	TW-06-137	TW-06-139	TW-06-139	TW-06-139	TW-10-124
Sample Name		MW129(08-08-2012)(1250)	TW129(12-11-2012)(1305)	MW137(08-09-2012)(1215)	TW137(12-12-2012)(1445)	DUP-01(08-09-12)	MW139(08-09-2012)(0915)	TW139(12-12-2012)(1650)	MW124(08-09-2012)(1630)
Sample Date		8/8/2012	12/11/2012	8/9/2012	12/12/2012	8/9/2012	8/9/2012	12/12/2012	8/9/2012
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate	Normal	Normal	Normal
Sample Depth (bgs)	Analytical	5 - 10 (ft)	5 - 10 (ft)	16 - 21 (ft)	16 - 21 (ft)	18.5 - 23.5 (ft)	18.5 - 23.5 (ft)	18.5 - 23.5 (ft)	3 - 8 (ft)
Sample Matrix	Method	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Inorganic Compounds (mg/L)									
Arsenic, Dissolved	E200.8	**0.003**	-	-	-	**0.011 J**	**0.006 J**	**0.008**	**0.007**
Arsenic, Total	E200.8	**0.004**	-	0.002 U	-	**0.037 J**	**0.028 J**	**0.036**	**0.071**
Barium, Dissolved	E200.8	**0.602**	-	-	-	**0.11**	**0.11**	-	**0.193**
Barium, Total	E200.8	**0.614**	-	**0.316**	-	**0.154**	**0.154**	-	**0.238**
Cadmium, Dissolved	E200.8	0.0005 U	-	-	-	0.0005 U	0.0005 U	-	0.0005 U
Cadmium, Total	E200.8	**0.0005**	-	**0.0006**	-	0.0005 U	0.0005 U	-	0.0005 U
Chromium, Dissolved	E200.8	0.005 U	-	-	-	0.005 U	0.005 U	-	0.005 U
Chromium, Total	E200.8	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-	0.005 U
Copper, Dissolved	E200.8	0.004 U	-	-	-	0.004 U	0.004 U	-	0.004 U
Copper, Total	E200.8	0.004 U	-	**0.035**	-	0.004 U	0.004 U	-	**0.008**
Lead, Dissolved	E200.8	**0.022**	0.003 U	-	0.003 U	0.003 U	0.003 U	-	0.003 U
Lead, Total	E200.8	**0.005**	0.003 U	**0.005**	0.003 U	0.003 U	0.003 U	-	**0.006**
Mercury, Dissolved	E245.1	0.0002 U	-	-	-	0.0002 U	0.0002 U	-	0.0002 U
Mercury, Total	E245.1	0.0002 U	-	0.0002 U	-	0.0002 U	0.0002 U	-	0.0002 U
Selenium, Dissolved	E200.8	0.005 U	-	-	-	0.005 U	0.005 U	-	0.005 U
Selenium, Total	E200.8	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-	0.005 U
Silver, Dissolved	E200.8	0.0002 U	-	-	-	0.0002 U	0.0002 U	-	0.0002 U
Silver, Total	E200.8	0.0002 U	-	0.0002 U	-	0.0002 U	0.0002 U	-	0.0002 U
Zinc, Dissolved	E200.8	**0.051**	-	-	-	**0.029**	**0.036**	-	**0.026**
Zinc, Total	E200.8	**0.008**	-	**0.028**	-	0.005 U	**0.005**	-	**0.024**
Semi-Volatile Organic Compounds (mg/L)									
1-Methylnaphthalene	SW8270C	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-	0.005 U
2-Methylnaphthalene	SW8270C	0.005 UJ	-	0.005 U	-	0.005 UJ	0.005 UJ	-	0.005 U
Acenaphthene	SW8270C	0.005 UJ	-	0.005 U	-	0.005 UJ	0.005 UJ	-	0.005 U
Acenaphthylene	SW8270C	0.005 UJ	-	0.005 U	-	0.005 UJ	0.005 UJ	-	0.005 U
Anthracene	SW8270C	0.005 UJ	-	0.005 U	-	0.005 UJ	0.005 UJ	-	0.005 U
Benzo(a)anthracene	SW8270C	0.001 UJ	-	0.001 U	-	0.001 UJ	0.001 UJ	-	0.004 U
Benzo(a)pyrene	SW8270C	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.004 U
Benzo(b)fluoranthene	SW8270C	0.001 UJ	-	0.001 U	-	0.001 UJ	0.001 UJ	-	0.004 U
Benzo(g,h,i)perylene	SW8270C	0.001 UJ	-	0.001 U	-	0.001 UJ	0.001 UJ	-	0.004 U
Benzo(k)fluoranthene	SW8270C	0.001 UJ	-	0.001 U	-	0.001 UJ	0.001 UJ	-	0.004 U
Chrysene	SW8270C	0.001 UJ	-	0.001 U	-	0.001 UJ	0.001 UJ	-	0.004 U
Dibenz(a,h)anthracene	SW8270C	0.002 UJ	-	0.002 U	-	0.002 UJ	0.002 UJ	-	0.004 U
Fluoranthene	SW8270C	0.001 UJ	-	0.001 U	-	0.001 UJ	0.001 UJ	-	0.004 U
Fluorene	SW8270C	0.005 UJ	-	0.005 U	-	0.005 UJ	0.005 UJ	-	0.005 U
Indeno(1,2,3-cd)pyrene	SW8270C	0.002 UJ	-	0.002 U	-	0.002 UJ	0.002 UJ	-	0.004 U
Naphthalene	SW8270C	0.005 UJ	-	0.005 U	-	0.005 UJ	0.005 UJ	-	0.005 U
Phenanthrene	SW8270C	0.002 UJ	-	0.002 U	-	0.002 UJ	0.002 UJ	-	0.004 U
Pyrene	SW8270C	0.005 UJ	-	0.005 U	-	0.005 UJ	0.005 UJ	-	0.005 U
Volatile Organic Compounds (mg/L)									
1,1,1-Trichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,1,2,2-Tetrachloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,1,2-Trichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,1-Dichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,1-Dichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,2,4-Trichlorobenzene	SW8260B	0.002 U	-	0.002 U	-	0.002 U	0.002 U	-	0.002 U
1,2-Dibromo-3-chloropropane (DBCP)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,2-Dibromoethane (Ethylene Dibromide)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,2-Dichlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,2-Dichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,2-Dichloropropane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
1,3-Dichlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U

APPENDIX B-2
SUMMARY OF GROUNDWATER ANALYTICAL
RACER GMPT LIVONIA
LIVONIA, MI

AOI		AOI-02	AOI-02	AOI-06	AOI-06	AOI-06	AOI-06	AOI-06	AOI-10
Location Name		TW-02-129	TW-02-129	TW-06-137	TW-06-137	TW-06-139	TW-06-139	TW-06-139	TW-10-124
Sample Name		MW129(08-08-2012)(1250)	TW129(12-11-2012)(1305)	MW137(08-09-2012)(1215)	TW137(12-12-2012)(1445)	DUP-01(08-09-12)	MW139(08-09-2012)(0915)	TW139(12-12-2012)(1650)	MW124(08-09-2012)(1630)
Sample Date		8/8/2012	12/11/2012	8/9/2012	12/12/2012	8/9/2012	8/9/2012	12/12/2012	8/9/2012
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate	Normal	Normal	Normal
Sample Depth (bgs)	Analytical	5 - 10 (ft)	5 - 10 (ft)	16 - 21 (ft)	16 - 21 (ft)	18.5 - 23.5 (ft)	18.5 - 23.5 (ft)	18.5 - 23.5 (ft)	3 - 8 (ft)
Sample Matrix	Method	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Volatile Organic Compounds (mg/L) (con't)									
1,4-Dichlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
2-Butanone (Methyl Ethyl Ketone)	SW8260B	0.02 U	-	0.02 U	-	0.02 U	0.02 U	-	0.02 U
2-Hexanone	SW8260B	0.05 U	-	0.05 U	-	0.05 U	0.05 U	-	0.05 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	SW8260B	0.01 U	-	0.01 U	-	0.01 U	0.01 U	-	0.01 U
Acetone	SW8260B	0.02 U	-	0.02 U	-	0.02 U	0.02 U	-	0.02 U
Benzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Bromodichloromethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Bromoform	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Bromomethane (Methyl Bromide)	SW8260B	0.002 U	-	0.002 U	-	0.002 U	0.002 U	-	0.002 U
Carbon disulfide	SW8260B	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-	0.005 U
Carbon tetrachloride	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Chlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Chloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Chloroform (Trichloromethane)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Chloromethane (Methyl Chloride)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
cis-1,2-Dichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
cis-1,3-Dichloropropene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Cyclohexane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Dibromochloromethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Dichlorodifluoromethane (CFC-12)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Ethylbenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Isopropylbenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
m&p-Xylene	SW8260B	0.002 U	-	0.002 U	-	0.002 U	0.002 U	-	0.002 U
Methyl acetate	SW8260B	0.01 U	-	0.01 U	-	0.01 U	0.01 U	-	0.01 U
Methyl cyclohexane	SW8260B	0.02 U	-	0.02 U	-	0.02 U	0.02 U	-	0.02 U
Methyl Tert Butyl Ether	SW8260B	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-	0.005 U
Methylene chloride	SW8260B	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-	0.005 U
o-Xylene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Styrene	SW8260B	0.001 UJ	-	0.001 U	-	0.001 UJ	0.001 UJ	-	0.001 U
Tetrachloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Toluene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
trans-1,2-Dichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
trans-1,3-Dichloropropene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Trichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Trichlorofluoromethane (CFC-11)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U
Trifluorotrichloroethane (Freon 113)	SW8260B	0.03 U	-	0.03 U	-	0.03 U	0.03 U	-	0.03 U
Vinyl chloride	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-	0.001 U

Notes and Abbreviations:

1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
   R - Rejected by validator, original result was not detected
2. Result in **bold** were detected.

APPENDIX B-2
SUMMARY OF GROUNDWATER ANALYTICAL
RACER GMPT LIVONIA
LIVONIA, MI

AOI		AOI-10	AOI-19	AOI-27	AOI-27	AOI-27	AOI-28	AOI-28	AOI-28
Location Name		TW-10-124	TW-19-115	TW-27-158	TW-27-158	TW-27-158	TW-28-152	TW-28-152	TW-28-165
Sample Name		TW124(12-12-2012)(1340)	MW115(08-10-2012)(0845)	DUP-01(12-11-2012)	MW158(08-09-2012)(1515)	TW158(12-11-2012)(1610)	MW152(08-10-2012)(1035)	TW152(12-11-2012)(1410)	MW165(08-09-2012)(0825)
Sample Date		12/12/2012	8/10/2012	12/11/2012	8/9/2012	12/11/2012	8/10/2012	12/11/2012	8/9/2012
Sample Type		Normal	Normal	Field Duplicate	Normal	Normal	Normal	Normal	Normal
Sample Depth (bgs)	Analytical	3 - 8 (ft)	4 - 9 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)
Sample Matrix	Method	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Inorganic Compounds (mg/L)									
Arsenic, Dissolved	E200.8	**0.009**	-	**0.009**	**0.003**	**0.01**	-	**0.038**	-
Arsenic, Total	E200.8	**0.091**	**0.004**	**0.019**	**0.018**	**0.019**	**0.027**	**0.035**	0.002 U
Barium, Dissolved	E200.8	-	-	-	**0.137**	-	-	-	-
Barium, Total	E200.8	-	**0.172**	-	**0.169**	-	**0.138**	-	**0.266**
Cadmium, Dissolved	E200.8	-	-	-	0.0005 U	-	-	-	-
Cadmium, Total	E200.8	-	0.0005 U	-	0.0005 U	-	0.0005 U	-	0.0005 U
Chromium, Dissolved	E200.8	-	-	-	0.005 U	-	-	-	-
Chromium, Total	E200.8	-	0.005 U	-	0.005 U	-	0.005 U	-	0.005 U
Copper, Dissolved	E200.8	-	-	-	0.004 U	-	-	-	-
Copper, Total	E200.8	-	**0.005**	-	**0.013**	-	**0.016**	-	0.004 U
Lead, Dissolved	E200.8	0.003 U	-	0.003 U	0.003 U	0.003 U	-	-	-
Lead, Total	E200.8	0.003 U	**0.004**	0.003 U	**0.012**	0.003 U	0.003 U	-	0.003 U
Mercury, Dissolved	E245.1	-	-	-	0.0002 U	-	-	-	-
Mercury, Total	E245.1	-	0.0002 U	-	0.0002 U	-	0.0002 U	-	0.0002 U
Selenium, Dissolved	E200.8	-	-	-	0.005 U	-	-	-	-
Selenium, Total	E200.8	-	0.005 U	-	0.005 U	-	**0.007**	-	0.005 U
Silver, Dissolved	E200.8	-	-	-	0.0002 U	-	-	-	-
Silver, Total	E200.8	-	0.0002 U	-	0.0002 U	-	0.0002 U	-	0.0002 U
Zinc, Dissolved	E200.8	-	-	-	**0.022**	-	-	-	-
Zinc, Total	E200.8	-	**0.013**	-	**0.034**	-	**0.011**	-	0.005 U
Semi-Volatile Organic Compounds (mg/L)									
1-Methylnaphthalene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 U
2-Methylnaphthalene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 UJ
Acenaphthene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 UJ
Acenaphthylene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 UJ
Anthracene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 UJ
Benzo(a)anthracene	SW8270C	-	0.001 U	-	0.001 U	-	0.008 U	-	0.001 UJ
Benzo(a)pyrene	SW8270C	-	0.001 U	-	0.001 U	-	0.008 U	-	0.001 U
Benzo(b)fluoranthene	SW8270C	-	0.001 U	-	0.001 U	-	0.008 U	-	0.001 UJ
Benzo(g,h,i)perylene	SW8270C	-	0.001 U	-	0.001 U	-	0.008 U	-	0.001 UJ
Benzo(k)fluoranthene	SW8270C	-	0.001 U	-	0.001 U	-	0.008 U	-	0.001 UJ
Chrysene	SW8270C	-	0.001 U	-	0.001 U	-	0.008 U	-	0.001 UJ
Dibenz(a,h)anthracene	SW8270C	-	0.002 U	-	0.002 U	-	0.008 U	-	0.002 UJ
Fluoranthene	SW8270C	-	0.001 U	-	0.001 U	-	0.008 U	-	0.001 UJ
Fluorene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 UJ
Indeno(1,2,3-cd)pyrene	SW8270C	-	0.002 U	-	0.002 U	-	0.008 U	-	0.002 UJ
Naphthalene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 UJ
Phenanthrene	SW8270C	-	0.002 U	-	0.002 U	-	0.008 U	-	0.002 UJ
Pyrene	SW8270C	-	0.005 U	-	0.005 U	-	0.008 U	-	0.005 UJ
Volatile Organic Compounds (mg/L)									
1,1,1-Trichloroethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,1,2,2-Tetrachloroethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,1,2-Trichloroethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,1-Dichloroethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,1-Dichloroethene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,2,4-Trichlorobenzene	SW8260B	-	0.002 U	-	0.002 U	-	0.1 U	-	0.002 U
1,2-Dibromo-3-chloropropane (DBCP)	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,2-Dibromoethane (Ethylene Dibromide)	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,2-Dichlorobenzene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,2-Dichloroethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,2-Dichloropropane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
1,3-Dichlorobenzene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U

APPENDIX B-2
SUMMARY OF GROUNDWATER ANALYTICAL
RACER GMPT LIVONIA
LIVONIA, MI

AOI		AOI-10	AOI-19	AOI-27	AOI-27	AOI-27	AOI-28	AOI-28	AOI-28
Location Name		TW-10-124	TW-19-115	TW-27-158	TW-27-158	TW-27-158	TW-28-152	TW-28-152	TW-28-165
Sample Name		TW124(12-12-2012)(1340)	MW115(08-10-2012)(0845)	DUP-01(12-11-2012)	MW158(08-09-2012)(1515)	TW158(12-11-2012)(1610)	MW152(08-10-2012)(1035)	TW152(12-11-2012)(1410)	MW165(08-09-2012)(0825)
Sample Date		12/12/2012	8/10/2012	12/11/2012	8/9/2012	12/11/2012	8/10/2012	12/11/2012	8/9/2012
Sample Type		Normal	Normal	Field Duplicate	Normal	Normal	Normal	Normal	Normal
Sample Depth (bgs)	Analytical	3 - 8 (ft)	4 - 9 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)
Sample Matrix	Method	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Volatile Organic Compounds (mg/L) (con't)									
1,4-Dichlorobenzene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
2-Butanone (Methyl Ethyl Ketone)	SW8260B	-	0.02 U	-	0.02 U	-	1 U	-	0.02 U
2-Hexanone	SW8260B	-	0.05 U	-	0.05 U	-	3 U	-	0.05 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	SW8260B	-	0.01 U	-	0.01 U	-	0.5 U	-	0.01 U
Acetone	SW8260B	-	0.02 U	-	0.02 U	-	**2**	-	0.02 U
Benzene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Bromodichloromethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Bromoform	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Bromomethane (Methyl Bromide)	SW8260B	-	0.002 U	-	0.002 U	-	0.1 U	-	0.002 U
Carbon disulfide	SW8260B	-	0.005 U	-	0.005 U	-	0.3 U	-	0.005 U
Carbon tetrachloride	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Chlorobenzene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Chloroethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Chloroform (Trichloromethane)	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Chloromethane (Methyl Chloride)	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
cis-1,2-Dichloroethene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
cis-1,3-Dichloropropene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Cyclohexane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Dibromochloromethane	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Dichlorodifluoromethane (CFC-12)	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Ethylbenzene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Isopropylbenzene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
m&p-Xylene	SW8260B	-	0.002 U	-	0.002 U	-	0.1 U	-	0.002 U
Methyl acetate	SW8260B	-	0.01 U	-	0.01 U	-	0.5 U	-	0.01 U
Methyl cyclohexane	SW8260B	-	0.02 U	-	0.02 U	-	1 U	-	0.02 U
Methyl Tert Butyl Ether	SW8260B	-	0.005 U	-	0.005 U	-	0.3 U	-	0.005 U
Methylene chloride	SW8260B	-	0.005 U	-	0.005 U	-	0.3 U	-	0.005 U
o-Xylene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Styrene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 UJ
Tetrachloroethene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Toluene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
trans-1,2-Dichloroethene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
trans-1,3-Dichloropropene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Trichloroethene	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Trichlorofluoromethane (CFC-11)	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U
Trifluorotrichloroethane (Freon 113)	SW8260B	-	0.03 U	-	0.03 U	-	2 U	-	0.03 U
Vinyl chloride	SW8260B	-	0.001 U	-	0.001 U	-	0.05 U	-	0.001 U

Notes and Abbreviations:

1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
   R - Rejected by validator, original result was not detected
2. Result in **bold** were detected.

APPENDIX B-2
SUMMARY OF GROUNDWATER ANALYTICAL
RACER GMPT LIVONIA
LIVONIA, MI

AOI		AOI-33	AOI-33	AOI-38	AOI-38	AOI-40	AOI-40	AOI-40
Location Name		TW-33-105	TW-33-105	TW-38-101	TW-38-101	TW-40-135	TW-40-135	TW-40-135
Sample Name		MW105(08-08-2012)(1445)	TW105(12-10-2012)(1415)	MW101(08-08-2012)(1615)	TW101(12-12-2012)(1100)	DUP-02(08-09-12)	MW135(08-09-2012)(1320)	TW135(12-10-2012)(1600)
Sample Date		8/8/2012	12/10/2012	8/8/2012	12/12/2012	8/9/2012	8/9/2012	12/10/2012
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate	Normal	Normal
Sample Depth (bgs)	Analytical	4 - 9 (ft)	4 - 9 (ft)	2.5 - 7.5 (ft)	2.5 - 7.5 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)
Sample Matrix	Method	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Inorganic Compounds (mg/L)								
Arsenic, Dissolved	E200.8	**0.008**	**0.004**	**0.005**	-	**0.009**	**0.009**	**0.006**
Arsenic, Total	E200.8	**0.015**	**0.0072**	**0.005**	-	**0.011**	**0.011**	**0.015**
Barium, Dissolved	E200.8	**0.03**	-	**0.046**	-	**0.066**	**0.067**	-
Barium, Total	E200.8	**0.129**	-	**0.048**	-	**0.076**	**0.072**	-
Cadmium, Dissolved	E200.8	0.0005 U	-	0.0005 U	-	0.0005 U	0.0005 U	-
Cadmium, Total	E200.8	**0.0014**	-	0.0005 U	-	0.0005 U	0.0005 U	-
Chromium, Dissolved	E200.8	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-
Chromium, Total	E200.8	**0.007**	-	0.005 U	-	0.005 U	0.005 U	-
Copper, Dissolved	E200.8	**0.007**	-	**0.013**	-	0.004 U	0.004 U	-
Copper, Total	E200.8	**0.048**	-	**0.013**	-	0.004 U	0.004 U	-
Lead, Dissolved	E200.8	0.003 U	0.003 U	0.003 U	0.003 U	**0.003**	**0.003**	-
Lead, Total	E200.8	**0.029**	0.003 U	**0.007**	0.003 U	**0.003**	**0.004**	-
Mercury, Dissolved	E245.1	0.0002 U	-	0.0002 U	-	0.0002 U	0.0002 U	-
Mercury, Total	E245.1	0.0002 U	-	0.0002 U	-	0.0002 U	0.0002 U	-
Selenium, Dissolved	E200.8	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-
Selenium, Total	E200.8	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-
Silver, Dissolved	E200.8	0.0002 U	-	0.0002 U	-	0.0002 U	0.0002 U	-
Silver, Total	E200.8	0.0002 U	-	0.0002 U	-	0.0002 U	0.0002 U	-
Zinc, Dissolved	E200.8	**0.022**	-	**0.005**	-	**0.016**	**0.016**	-
Zinc, Total	E200.8	**0.044**	-	0.005 U	-	0.005 U	0.005 U	-
Semi-Volatile Organic Compounds (mg/L)								
1-Methylnaphthalene	SW8270C	0.005 R	-	0.005 U	-	0.005 U	0.005 U	-
2-Methylnaphthalene	SW8270C	0.005 R	-	0.005 UJ	-	0.005 U	0.005 U	-
Acenaphthene	SW8270C	0.005 R	-	0.005 UJ	-	0.005 U	0.005 U	-
Acenaphthylene	SW8270C	0.005 R	-	0.005 UJ	-	0.005 U	0.005 U	-
Anthracene	SW8270C	0.005 R	-	0.005 UJ	-	0.005 U	0.005 U	-
Benzo(a)anthracene	SW8270C	0.001 R	-	0.001 UJ	-	0.001 U	0.001 U	-
Benzo(a)pyrene	SW8270C	0.001 R	-	0.001 U	-	0.001 U	0.001 U	-
Benzo(b)fluoranthene	SW8270C	0.001 R	-	0.001 UJ	-	0.001 U	0.001 U	-
Benzo(g,h,i)perylene	SW8270C	0.001 R	-	0.001 UJ	-	0.001 U	0.001 U	-
Benzo(k)fluoranthene	SW8270C	0.001 R	-	0.001 UJ	-	0.001 U	0.001 U	-
Chrysene	SW8270C	0.001 R	-	0.001 UJ	-	0.001 U	0.001 U	-
Dibenz(a,h)anthracene	SW8270C	0.002 R	-	0.002 UJ	-	0.002 U	0.002 U	-
Fluoranthene	SW8270C	0.001 R	-	0.001 UJ	-	0.001 U	0.001 U	-
Fluorene	SW8270C	0.005 R	-	0.005 UJ	-	0.005 U	0.005 U	-
Indeno(1,2,3-cd)pyrene	SW8270C	0.002 R	-	0.002 UJ	-	0.002 U	0.002 U	-
Naphthalene	SW8270C	0.005 R	-	0.005 UJ	-	0.005 U	0.005 U	-
Phenanthrene	SW8270C	0.002 R	-	0.002 UJ	-	0.002 U	0.002 U	-
Pyrene	SW8270C	0.005 R	-	0.005 UJ	-	0.005 U	0.005 U	-
Volatile Organic Compounds (mg/L)								
1,1,1-Trichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,1,2,2-Tetrachloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,1,2-Trichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,1-Dichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,1-Dichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,2,4-Trichlorobenzene	SW8260B	0.002 U	-	0.002 U	-	0.002 U	0.002 U	-
1,2-Dibromo-3-chloropropane (DBCP)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,2-Dibromoethane (Ethylene Dibromide)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,2-Dichlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,2-Dichloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,2-Dichloropropane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
1,3-Dichlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-

APPENDIX B-2
SUMMARY OF GROUNDWATER ANALYTICAL
RACER GMPT LIVONIA
LIVONIA, MI

AOI		AOI-33	AOI-33	AOI-38	AOI-38	AOI-40	AOI-40	AOI-40
Location Name		TW-33-105	TW-33-105	TW-38-101	TW-38-101	TW-40-135	TW-40-135	TW-40-135
Sample Name		MW105(08-08-2012)(1445)	TW105(12-10-2012)(1415)	MW101(08-08-2012)(1615)	TW101(12-12-2012)(1100)	DUP-02(08-09-12)	MW135(08-09-2012)(1320)	TW135(12-10-2012)(1600)
Sample Date		8/8/2012	12/10/2012	8/8/2012	12/12/2012	8/9/2012	8/9/2012	12/10/2012
Sample Type		Normal	Normal	Normal	Normal	Field Duplicate	Normal	Normal
Sample Depth (bgs)	Analytical	4 - 9 (ft)	4 - 9 (ft)	2.5 - 7.5 (ft)	2.5 - 7.5 (ft)	5 - 10 (ft)	5 - 10 (ft)	5 - 10 (ft)
Sample Matrix	Method	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Volatile Organic Compounds (mg/L) (con't)								
1,4-Dichlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
2-Butanone (Methyl Ethyl Ketone)	SW8260B	0.02 U	-	0.02 U	-	0.02 U	0.02 U	-
2-Hexanone	SW8260B	0.05 U	-	0.05 U	-	0.05 U	0.05 U	-
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	SW8260B	0.01 U	-	0.01 U	-	0.01 U	0.01 U	-
Acetone	SW8260B	0.02 U	-	0.02 U	-	0.02 U	0.02 U	-
Benzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Bromodichloromethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Bromoform	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Bromomethane (Methyl Bromide)	SW8260B	0.002 U	-	0.002 U	-	0.002 U	0.002 U	-
Carbon disulfide	SW8260B	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-
Carbon tetrachloride	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Chlorobenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Chloroethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Chloroform (Trichloromethane)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Chloromethane (Methyl Chloride)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
cis-1,2-Dichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
cis-1,3-Dichloropropene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Cyclohexane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Dibromochloromethane	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Dichlorodifluoromethane (CFC-12)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Ethylbenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Isopropylbenzene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
m&p-Xylene	SW8260B	0.002 U	-	0.002 U	-	0.002 U	0.002 U	-
Methyl acetate	SW8260B	0.01 U	-	0.01 U	-	0.01 U	0.01 U	-
Methyl cyclohexane	SW8260B	0.02 U	-	0.02 U	-	0.02 U	0.02 U	-
Methyl Tert Butyl Ether	SW8260B	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-
Methylene chloride	SW8260B	0.005 U	-	0.005 U	-	0.005 U	0.005 U	-
o-Xylene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Styrene	SW8260B	0.001 UJ	-	0.001 UJ	-	0.001 U	0.001 U	-
Tetrachloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Toluene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
trans-1,2-Dichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
trans-1,3-Dichloropropene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Trichloroethene	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Trichlorofluoromethane (CFC-11)	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-
Trifluorotrichloroethane (Freon 113)	SW8260B	0.03 U	-	0.03 U	-	0.03 U	0.03 U	-
Vinyl chloride	SW8260B	0.001 U	-	0.001 U	-	0.001 U	0.001 U	-

Notes and Abbreviations:

1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
   R - Rejected by validator, original result was not detected
2. Result in **bold** were detected.