**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**
**Interim Final 2/5/99**
**RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725)**
**Current Human Exposures Under Control Facility**

| | |
|---|---|
| **Name:** | Former General Motors Corporation Livonia Powertrain Site |
| **Facility Address:** | 12200 Middlebelt Road, Livonia, Wayne County, Michigan |
| **Facility EPA ID #:** | MID000718874 |

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

   _X_ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ If data are not available skip to #6 and enter "IN" (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be**"contaminated"** [1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

| | Yes | No | ? | Rationale/Key Contaminants |
|---|---|---|---|---|
| Groundwater | | X | | See Rationale and Reference Section Below. |
| Air (indoors) [2] | | X | | See Rationale and Reference Section Below. |
| Surface Soil (e.g., <2 ft.) | | X | | See Rationale and Reference Section Below. |
| Surface water | | X | | Not applicable – no surface water at or near Site |
| Sediment | | X | | Not applicable – no surface water at or near Site |
| Subsurf. Soil e.g., >2 ft) | X | | | See Rationale and Reference Section Below. |
| Air (outdoors) | | X | | See Rationale and Reference Section Below. |

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_X___ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

*The presence of "contamination" is identified based on the assessment of regional and local background conditions, as appropriate, relative to Site characterization data for soil and groundwater samples, and the comparison of Site characterization data for soil and groundwater samples with screening criteria developed by the Michigan Department of Environmental Quality (MDEQ) to facilitate implementation of Part 201 of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended (MDEQ, 28 September 2012). The assessment of regional and local background conditions, and the results of the comparison of Site characterization data with the Part 201 screening criteria are discussed in Section 4 of the RCRA Facility Investigation Report (Haley & Aldrich, 15 March 2013) (RFI Report). The following Part 201 screening criteria were used to evaluate the Site characterization data:*

***Soil***

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

***Groundwater***

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

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

*Of the soil screening criteria listed above, only the Part 201 Nonresidential Drinking Water Protections Criterion for arsenic was exceed (two samples at two locations, but not more than two times the criteria).*

*Groundwater sampling was performed at the Site on two occasions, once in August 2012 and once in December 2012. The results of the first round of sampling indicated the presence of arsenic and lead in Site groundwater at concentrations exceeding corresponding Part 201 Nonresidential Drinking Water criteria.*

*It is well known that these constituents are commonly linked to the presence of sediments in the groundwater. Evidence of this is observed with respect to the initial round of Site groundwater results, as filtered sample results are lower than the unfiltered results. Specifically, in all but one case of comparable data sets in which one of these constituents were exceeded in the unfiltered sample, the corresponding filtered concentration was shown to be either "non-detect" or below criteria*

*In cases where constituent presence in groundwater is believed to be attributed to sediment, conditions for obtaining groundwater samples that are more representative and appropriate for risk evaluation are often improved with well surging and further purging, and the employment of ultra-low-flow sampling techniques.*

*As such, in November 2012, prior to initiating the second round of groundwater sample collection, the targeted wells were carefully developed in an attempt to remove soil particles from the wells (gentle surging and low-flow purging). Following this careful development, the December 2012 groundwater samples were collected using ultra-low-flow sampling techniques, with sample withdrawal rates of 80 milliliters per minute or less), as a further measure to obtain more representative groundwater samples.*

*Upon comparing corresponding data for the August 2012 groundwater sampling event to the December 2012 groundwater sampling event, it is observed that in most cases, the concentrations of arsenic increased slightly within the relative same order of magnitude on a well-to-well comparison. It is further observed that lead exceeded the noted criteria in the samples collected in August 2012; however, lead was not detected in the groundwater samples collected from these wells in December 2012. It is believed that the sampling methods, including careful well development techniques and ultra-low-flow sampling, employed in as part of the December 2012 event produced data most representative of Site conditions.*

*The December 2012 data indicate Site groundwater is not contaminated with lead above the associated screening criterion; while, and all but one unfiltered groundwater sample exceeded the Nonresidential Drinking Water Criterion for arsenic. However, the concentrations of arsenic detected in groundwater 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 based on the following points:*

- *Arsenic is not known to be have been used at the Site, nor is it likely to have been a component of Site-related activities;*
- *All but one arsenic exceedance of Nonresidential Drinking Water Criteria are associated 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);*
- *All exceedances of Nonresidential Drinking Water Criteria for arsenic are within the collective range of concentrations typical of well water of Wayne County and the adjacent Washtenau County (greater than 0.05 mg/L), as described in MDEQ public outreach information*[3].

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

3. Are there complete pathways between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

| | Potential **Human Receptors** (Under Current Conditions) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Residents | Workers | Day-Care | Construction | Tresspassers | Recreation | Food[4] |
| ~~Groundwater~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ |
| ~~Air (indoors)~~[2] | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ |
| ~~Surface Soil (e.g., <2 ft.)~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ |
| ~~Surface water~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ |
| ~~Sediment~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | ~~---~~ | |
| Subsurf. Soil e.g., >2 ft) | No | No | No | No | No | No | No |
| ~~Air (outdoors)~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ | ~~—~~ |

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not"contaminated") as identified in #2 above.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- HumanReceptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_X___ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s)in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6and enter "IN" status code

Rationale and Reference(s):

*As discussed in Section 5 of the RFI Report, the only potential pathways of concern involving contaminated media at the Site include the potable use of groundwater at or in the vicinity of the Site (i.e., on-site and off-site routine workers, maintenance workers, and construction, as well as local residents and Site trespassers).*

*Currently there is no evidence of exposure as these pathways are incomplete due to the following reasons:*

- *No current use of groundwater at the Site;*
- *Drinking water is supplied to the Site and the surrounding area 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 water wells present within ½-mile radius of the Site;*

[4] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.).

- *City of Livonia prohibits groundwater well installations and potable use of groundwater through its City Ordinance 13.40.030 (Ord. 2823, § 1, 2009);*
- *Wayne County requires permits be issued for all drinking water well installations; and*
- *State of Michigan requires licensure of all groundwater well drillers operating in the State.*

*As such there is no evidence of exposure at the Site.*

4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be"significant"[5] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude(perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

   _____ If no (exposures cannot be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures(from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

   _____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

   _____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

   Rationale and Reference(s):

[5] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

   _____ If yes (all "significant" exposures have been shown to be within acceptable limits) -continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

   _____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

   _____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)


6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code(CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

__X__ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the *Former General Motors Corporation Livonia Powertrain* facility, EPA ID # *MID000718874* , located at *12200 Middlebelt Road, Livonia, Wayne County, Michigan* under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date_____
(print)_____
(title)_____

Supervisor (signature)_____ Date_____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

*Livonia Civic Center Library*
*32777 5 Mile Road*
*Livonia, Michigan 48154*
*Attention: Mr. Carl Katafiasz*
*(734) 466-2491*

*Corrective Action Section*
*Waste Management Branch*
*Land and Chemicals Division*
*Region 5, U.S. EPA*
*Attention: Gregory A. Rudloff, P.G.*
*(312) 886-0455*
*rudloff.gregory@epa.gov*

Contact telephone and e-mail numbers

(name)_____
(phone #)_____
(e-mail)_____

**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

*Submittal Date: (version date: 03/15/2013)*

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**
Interim Final 2/5/99
**RCRA Corrective Action**
**Environmental Indicator (EI) RCRIS code (CA750)**

**Migration of Contaminated Groundwater Under Control**

| | |
|---|---|
| **Name:** | Former General Motors Corporation Livonia Powertrain Site |
| **Facility Address:** | 12200 Middlebelt Road, Livonia, Wayne County, Michigan |
| **Facility EPA ID #:** | MID000718874 |

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

__X__ If yes - check here and continue with #2 below.

_____ If no - re-evaluate existing data, or

_____ If data are not available skip to #6 and enter "IN" (more information needed) status code.

## BACKGROUND

### Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

### Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

### Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

### Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

__X__ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

*The presence of "contamination" has been assess through the review of regional and local background conditions, as appropriate, relative to Site characterization data for soil and groundwater samples, and the comparison of Site characterization data for soil and groundwater samples with screening criteria developed by the Michigan Department of Environmental Quality (MDEQ) to facilitate implementation of Part 201 of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended (MDEQ, 28 September 2012). The assessment of regional and local background conditions, and the results of the comparison of Site characterization data with the Part 201 screening criteria are discussed in Section 4 of the RCRA Facility Investigation Report (Haley & Aldrich, 15 March 2013) (RFI Report). The following Part 201 screening criteria were used to evaluate the Site characterization data:*

***Soil***

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

***Groundwater***

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

*Of the soil screening criteria listed above, only the Part 201 Nonresidential Drinking Water Protections Criterion for arsenic was exceed (two samples at two locations, but not more than two times the criteria).*

*Groundwater sampling was performed at the Site on two occasions, once in August 2012 and once in December 2012. The results of the first round of sampling indicated the presence of arsenic and lead in Site groundwater at concentrations exceeding corresponding Part 201 Nonresidential Drinking Water criteria.*

*It is well known that these constituents are commonly linked to the presence of sediments in the groundwater. Evidence of this is observed with respect to the initial round of Site groundwater results, as filtered sample results are lower than the unfiltered results. Specifically, in all but one case of comparable data sets in which*

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

*one of these constituents were exceeded in the unfiltered sample, the corresponding filtered concentration was shown to be either "non-detect" or below criteria*

*In cases where constituent presence in groundwater is believed to be attributed to sediment, conditions for obtaining groundwater samples that are more representative and appropriate for risk evaluation are often improved with well surging and further purging, and the employment of ultra-low-flow sampling techniques.*

*As such, in November 2012, prior to initiating the second round of groundwater sample collection, the targeted wells were carefully developed in an attempt to remove soil particles from the wells (gentle surging and low-flow purging). Following this careful development, the December 2012 groundwater samples were collected using ultra-low-flow sampling techniques, with sample withdrawal rates of 80 milliliters per minute or less), as a further measure to obtain more representative groundwater samples.*

*Upon comparing corresponding data for the August 2012 groundwater sampling event to the December 2012 groundwater sampling event, it is observed that in most cases, the concentrations of arsenic increased slightly within the relative same order of magnitude on a well-to-well comparison. It is further observed that lead exceeded the noted criteria in the samples collected in August 2012; however, lead was not detected in the groundwater samples collected from these wells in December 2012. It is believed that the sampling methods, including careful well development techniques and ultra-low-flow sampling, employed in as part of the December 2012 event produced data most representative of Site conditions.*

*The December 2012 data indicate Site groundwater is not contaminated with lead above the associated screening criterion; while, and all but one unfiltered groundwater sample exceeded the Nonresidential Drinking Water Criterion for arsenic. However, the concentrations of arsenic detected in groundwater 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 based on the following points:*

- *Arsenic is not known to be have been used at the Site, nor is likely to have been a component of Site-related activities;*
- *All but one arsenic exceedance of Nonresidential Drinking Water Criteria are associated 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);*
- *All exceedances of Nonresidential Drinking Water Criteria for arsenic are within the collective range of concentrations typical of well water of Wayne County and the adjacent Washtenau County (greater than 0.05 mg/L), as described in MDEQ public outreach information*[2].

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

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[3]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

[3] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[4] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

[4] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[5])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[6] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

[5] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[6] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the at the *Former General Motors Corporation Livonia Powertrain* facility, EPA ID # *MID000718874* , located at *12200 Middlebelt Road, Livonia, Wayne County, Michigan*. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date _____
(print) _____
(title) _____

Supervisor (signature) _____ Date _____
(print) _____
(title) _____
(EPA Region or State) _____

Locations where References may be found:

*Livonia Civic Center Library*
*32777 5 Mile Road*
*Livonia, Michigan 48154*
*Attention: Mr. Carl Katafiasz*
*(734) 466-2491*

*Corrective Action Section*
*Waste Management Branch*
*Land and Chemicals Division*
*Region 5, U.S. EPA*
*Attention: Gregory A. Rudloff, P.G.*
*(312) 886-0455*
*rudloff.gregory@epa.gov*

Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

# RCRA FACILITY INVESTIGATION REPORT
# FORMER GM POWERTRAIN DIVISION LIVONIA
# 12200 MIDDLEBELT ROAD, LIVONIA, MICHIGAN

**USEPA ID #MID000718874**

**by**

**Haley & Aldrich of Michigan, Inc.**
**Ann Arbor, Michigan**

**for**

**Revitalizing Auto Communities**
**Environmental Response Trust**
**Ypsilanti, Michigan**

**File No. 37290**
**15 March 2013**

HALEY & ALDRICH

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15 March 2013
File No. 37290-009

USEPA REGION 5
77 West Jackson Boulevard
Mail Code: LU-9J
Chicago, IL 60604-3507

Attention: Gregory A. Rudloff, P.G.

Subject: RFI Report and Environmental Indicator Forms for the
Former General Motors Powertrain (GMPT) - Livonia
12200 Middlebelt, Livonia, Michigan
USEPA ID #MID000718874

Dear Mr. Rudloff:

Enclosed on behalf of Revitalizing Auto Communities Environmental Response Trust (RACER) please find a compact disk containing Adobe® Acrobat® Reader files pertaining to the following documents involving the referenced property:

1. RCRA Facility Investigation Report;
2. Documentation of Environmental Indicator Determination, RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) – Current Human Exposures Under Control; and
3. Documentation of Environmental Indicator Determination, RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA750) – Migration of Contaminated Groundwater Under Control.

Two copies of each of these documents are also enclosed.

If you have any questions concerning this information, or would like to discuss these matters in more detail, please do not hesitate to call us.

Sincerely yours,
HALEY & ALDRICH OF MICHIGAN, INC.

Derek C. Kaiding, P.E
Senior Project Manager - Vice President

Enclosures:

RCRA Facility Investigation Report
Former GM Powertrain Division Livonia
12200 Middlebelt Road, Livonia, Michigan, USEPA ID #MID000718874

Documentation of Environmental Indicator Determination, RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725) – Current Human Exposures Under Control
Former GM Powertrain Division Livonia
12200 Middlebelt Road, Livonia, Michigan, USEPA ID #MID000718874

Documentation of Environmental Indicator Determination, RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA750) – Migration of Contaminated Groundwater Under Control
Former GM Powertrain Division Livonia
12200 Middlebelt Road, Livonia, Michigan, USEPA ID #MID000718874

c:

Livonia Civic Center Library; Attn.: Mr. Carl Katafiasz
RACER Trust; Attn.: Mr. Grant Trigger
RACER Trust; Attn.: Mr. David Favero
Haley & Aldrich, Inc.; Attn.: Mr. James W. Little
Haley & Aldrich, Inc.; Ms. Susan Hoertt

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**LIST OF ACRONYMS AND ABBREVIATIONS**

| | |
|---|---|
| AOI | Area of Interest |
| BGS | Below Ground Surface |
| GM | General Motors |
| GMPT | General Motors Powertrain |
| GPR | Ground Penetrating Radar |
| GWP | Groundwater Protection |
| GPRA | Government Performance Results Act |
| Haley & Aldrich | Haley & Aldrich of Michigan, Inc. |
| mg/kg | Milligrams per Kilogram |

**LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)**

| | |
|---|---|
| mg/L | Milligrams per Liter |
| mL/min | Milliliters per minute |
| MDEQ | Michigan Department of Environmental Quality |
| MDNR | Michigan Department of Natural Resources |
| MDNRE | Michigan Department of Natural Resources and Environment |
| MI | Michigan |
| Michigan 10 Metals | Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver, and Zinc |
| MNREPA | Natural Resources and Environmental Protection Act Public Act 451 of 1994 |
| NTU | Nephelometric Turbidity Units |
| Part 201 | Part 201 of Michigan's Natural Resources and Environmental Protection Act of 1994 (as amended) |
| Part 201 Criteria | Nonresidential Screening Criteria included in Part 201 of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended |
| PAHs | Polycyclic Aromatic Hydrocarbons |
| RCRA | Resource Conservation and Recovery Act |
| RDW | Residential Drinking Water |
| RfC | Reference Concentration |
| RfD | Reference Dose |
| RME | Reasonable Maximum Exposure |
| QAPP | Quality Assurance Project Plan |
| RFI | RCRA Facility Investigation |
| 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) Facility Investigation Report* (RFI Report) on behalf of Revitalizing Auto Communities Environmental Response Trust (RACER) of Ypsilanti, Michigan. This RFI Report covers work performed during 2012 at the former General Motors (GM) Powertrain property located at 12200 Middlebelt Road, Livonia, Wayne County, Michigan (the Site) (Figure 1). The Site owner is referred to as RACER in this document, regardless of the time frame discussed.

Despite no history of hazardous waste being stored at the Site for more than 90 days and the Site not being subject to RCRA interim status, RACER has entered into a Performance Based Corrective Action Agreement with Region 5 of the United States Environmental Protection Agency (USEPA) for the Site.

This RFI Report describes the procedures, methods and results of the field investigations conducted during implementation of the RCRA Facility Investigation (RFI) activities proposed in the *RCRA Current Conditions Summary/RFI Work Plan* (Haley & Aldrich, December 2011; Revised May 2012) ("RFI Work Plan") and covers data collected through end of 2012.

The RFI Work Plan was approved by the USEPA via electronic mail on 11 May 2012. Proposed modifications to the scope of the RFI activities were communicated to USEPA via electronic mail dated 3 July 2012. The proposed modifications were approved by USEPA via electronic mail dated 9 July 2012. The scope of the RFI activities was again modified via electronic mail on 12 November 2012, and was approved by USEPA via electronic mail dated 13 November 2012.

The data collected to date have been evaluated to characterize the nature and extent of hazardous constituents in the environmental media at the Site. Human health and ecological risk evaluations are included in this RFI Report to provide a basis for determining whether the presence of hazardous constituents poses an unacceptable risk to human health and the environment that would warrant corrective measures.

## 1.2 Report Organization

This RFI Report is organized as follows:

- Section 1 provides an introduction to this report and an outline of its organization.
- Section 2 provides a brief overview of RFI activities and modifications made to the scope of work covered by the RFI Work Plan.
- Section 3 discusses the environmental setting of the Site, updated from the RFI Work Plan as appropriate, including land use, water supply/groundwater use, demographics, climate, geology, hydrogeology, surface water/drainage, and conceptual Site models for human and ecological exposures.

- Section 4 presents a discussion of the RFI results with respect to Nonresidential Screening Criteria included in Part 201 of the Michigan Natural Resources and Environmental Protection Act (MNREPA), 1994 PA 451, as amended (Part 201).
- Section 5 presents a human health risk evaluation concerning the significance of hazardous constituents in affected environmental media at the investigated areas and whether corrective measures are warranted.
- Section 6 summarizes the conclusions of the RFI.
- Section 7 lists associated references.

The tables, figures, and appendices referenced throughout this report provide supporting information pertaining to the RFI activities conducted for the Site.

# 2. OVERVIEW OF THE RFI

## 2.1 Site Description and History

As previously described in the RFI Work Plan, the Site is located at 12200 Middlebelt Road in Livonia, Michigan and is approximately 40 acres. It is generally a square-shaped tract of land situated in a mixed industrial/commercial/residential area (Figure 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.

Section 2 of the RFI Work Plan summarized individual areas of the Site which had the potential for a release of hazardous waste or hazardous constituent to the environment. These areas are referred to as Areas of Interest (AOIs). A total of 42 AOIs were identified, 36 of which were identified for further investigation. The remaining 6 AOIs warranted no further action and are not being carried forward through the Corrective Action process. The 36 AOIs subject to investigation in the RFI are summarized in Table I of this report. Further details concerning the 42 AOIs identified are provided in Table I of the RFI Work Plan.

## 2.2 Summary of RFI Activities and Work Plan Modifications

Section 3 of the RFI Work Plan described the scope of work that was initially planned for the Site, including discussions regarding RFI Goals and Objectives, RFI Approach, and Sampling and Analysis Plan for Areas of Interest (soil, groundwater, and non-aqueous phase liquid [NAPL]). Section 4 of the RFI Work Plan discussed plans for the evaluation of the resulting RFI data.

Field activities were conducted at the Site pursuant to the RFI Work Plan, as amended, as well as the associated *Field Sampling Plan*, and *Quality Assurance Project Plan* (QAPP) (Haley & Aldrich, December 2011; Revised May 2012).

The field activities associated with the initial phase of implementation of the RFI Work Plan were described in Table 1 of the RFI Work Plan and generally included identifying soil boring locations and clearing utilities for those locations, inspecting accessible trenches and subsurface process conveyances as specified in the Plan, conducting ground-penetrating radar (GPR) surveys of areas specified in the Plan, installing soil borings, installing temporary monitoring wells, and collecting samples of soil and samples of groundwater for laboratory analysis.

The initial phase of the RFI was undertaken at the Site during the period of 4 June 2012 through 31 August 2012, and included the following activities:

- Drilling of 70 test borings, with continuous interval sampling to depths of up to 35 feet below the ground surface (bgs);
- Photoionization detector (PID) screening, visual characterization, and soil/water shake testing of soil samples;
- Collection and laboratory analysis of 61 soil samples (including QA/QC samples) from 53 locations;
- Installation of 13 temporary monitoring wells;
- Collection and laboratory analysis of 11 groundwater water samples from 11 of the 13 temporary monitoring wells;
- Inspection and video recording, where possible, trenches and former process conveyance lines for the purpose of selecting locations for soil borings to be drilled along those units; and
- Conducting GPR surveys at AOI-08, AOI -17, and AOI -26;

All soil samples subject to laboratory analysis were analyzed for the following:

- Target Compound List (TCL) volatile organic compounds (VOCs);
- TCL polycyclic aromatic hydrocarbons (PAHs);
- TCL polychlorinated biphenyls; and
- Michigan 10 metals (Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver, and Zinc).

All groundwater samples were submitted for laboratory analysis of the following analytes:

- TCL VOCs;
- TCL PAHs; and
- Michigan 10 metals.

Groundwater samples collected were also analyzed for the following parameters in the field:

- Dissolved Oxygen (DO);
- Oxidation-reduction potential (ORP);
- Alkalinity/acidity (pH);
- Temperature;
- Conductivity; and
- Turbidity.

Groundwater samples exhibiting turbidity reading exceeding 10 Nephelometric Turbidity Units (NTUs) were submitted for both total (unfiltered) and dissolved (filtered) metals analysis.

As agreed by USPEA, a second phase of the RFI was initiated in November 2012 to facilitate collection of additional groundwater data to further evaluate groundwater quality and groundwater stability at the Site. This work targeted 11 of the 13 Site wells. Nine of the 11 targeted wells were developed and sampled. The remaining 2 targeted were dry and could not be developed or sampled. The wells were developed in November 2012 via gentle surging and low-rate purging, and were sampled on 10 December 2012 through 12 December 2012 using ultra-low-flow sampling techniques. These samples were analyzed for arsenic and lead (both filtered and unfiltered).

Tables II through V summarize the following information pertaining to the RFI field investigation, respectively:

- Soil Boring Inventory and Completion Summary;
- Temporary Monitoring Well Inventory and Completion Summary;
- Soil Sample Collection Summary; and
- Groundwater Sample Collection Summary.

### 2.3 RFI Work Plan Modifications

A total of 79 soil borings were initially planned for investigation pursuant to the RFI Work Plan, and each of these borings was anticipated to be converted to a temporary monitoring well. Groundwater grab samples were to be collected from each temporary monitoring well and submitted for laboratory analyses. The results of these groundwater analyses were to be assessed for whether evidence of release of hazardous constituents was observed for the respective AOI, and subsequent soil samples and/or groundwater samples would be collected as follow-up actions, if warranted based on evidence of impact. Only a limited number of soil samples were planned to be collected during the initial phase of the RFI.

The work completed during the initial phase of the RFI represented a modification to the RFI Work Plan. These modifications resulted from conditions encountered at the Site, and were conducted with concurrence from the USEPA. The following modifications were implemented:

- Reduced number of soil borings locations due to their proximity to building features, proximity to other boring locations, the inability to clear associated utilities, negative results of GPR surveys, and/or refusal encountered during drilling (70 actual versus 79 planned);
- Reduced number of wells (13 actual versus 79 planned) and only limited groundwater being encountered due to the presence of a thick, dense clay layer observed during drilling (water at only 11 of 13 locations); and
- Increased number of soil samples collected and analyzed to offset the anticipated reduction in groundwater data that would serve as a surrogate for identification of release at the majority of the AOIs.

Additionally, the RFI Work Plan called for the first round of groundwater samples to be collected as grab samples using a peristaltic pump, with no pre-sampling well development efforts to be performed. However, prior to sampling each of the monitoring wells in August 2012, to the extent possible depending upon well yield, each well was purged at a rate of approximately 200 to 300 mL/min, until readings of field indicator parameters (pH, temperature, conductivity, ORP, DO, and turbidity) stabilized. Stabilization was considered to be achieved when the final groundwater flow rate was achieved, and three consecutive readings for each of the parameters were within the following limits:

- pH = ±0.1 pH units of the average value of the three readings;
- Temperature = ±3 percent of the average value of the three readings;
- Conductivity = ±0.005 milliSiemen per centimeter (mS/cm) of the average value of the three readings for conductivity $<1$ mS/cm and ±0.01 mS/cm of the average value of the three readings for conductivity $>1$ mS/cm;
- ORP = ±10 millivolts (mV) of the average value of the three readings;
- DO = ±10 percent of the average value of the three readings; and
- Turbidity = ±10 percent of the average value of the three readings, or a final value of less than 5 NTU.

Only 11 of the 13 monitoring wells yielded a sustained flow of groundwater sufficient to facilitate sampling. Sampling withdrawal rates ranged approximately 100 to 200 mL/min.

As further detailed in Section 4.2, the initial round of groundwater samples exhibited the presence of only arsenic and lead at concentrations exceeding screening criteria which are discussed in Section 4.1.

Based on these findings, it was proposed to and agreed with USEPA that a second round of groundwater sample collection would be performed to further assess the presence of these constituents in Site groundwater.

It is well known that these constituents are commonly linked to the presence of sediments suspended and/or dissolved in the groundwater. Evidence of this is observed with respect to the initial round of Site groundwater results, as filtered sample results are lower than the unfiltered results. Specifically, in

all but one case of comparable data sets in which one of these constituents were exceeded in the unfiltered sample, the corresponding filtered concentration was shown to be either "non-detect" or below criteria.

In cases where constituent presence in groundwater is believed to be attributed to suspended and/or dissolved sediment, conditions for obtaining groundwater samples that are more representative and appropriate for risk evaluation are often improved with well surging and further purging, and the employment of ultra-low-flow sampling techniques.

As such, on 13 November 2012 through 15 November 2012 the previously sampled monitoring wells were subject to gentle surging using a polyethylene well bailer, and approximately 10 well volumes of groundwater were removed. These wells were allowed to rest for approximately two weeks, and were then subject to additional purging at an approximate rate of approximately 100 to 150 mL/min until stabilization was achieved. These wells were again allowed to rest for approximately two weeks, and on 10 December 2012 through 12 December 2012 samples were collected from 9 of the 11 wells for analyses of arsenic and lead (both filtered and unfiltered analyses). These samples were collected using ultra-low-flow sampling techniques involving sampling withdrawal rates of approximately 75 to 80 mL/min. The results of these efforts are discussed in Section 4.2.

It is also appropriate to note that during the initial phase of RFI implementation, approximately 2.5 gallons of diesel fuel was spilled into a blind (no outlet) concrete and steel constructed storm trench located along the south side of the building at one of the loading docks (exterior – Teal Dock). This incident occurred on 19 June 2012 while drilling subcontractors were re-fueling their drilling equipment. The subcontractor immediately used oil booms and pumps to remove the diesel fuel and impacted water contained in the blind trench, and then removed impacted solids from the base of the trench. The subcontractor containerized all wastes from these activities in drums and disposed of the wastes off-site.

# 3. ENVIRONMENTAL SETTING

This section describes the environmental setting at the Site, including land use, water supply/groundwater use, demographics, climate, geology, hydrogeology, surface water/drainage, and conceptual Site models for human and ecological exposures.

## 3.1 Land Use

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.

## 3.2 Groundwater Use/ 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 for more than 6 miles down gradient of the Site. 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 downgradient of the Site. 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.

## 3.3 Climate

The Wayne County climate is influenced by the Great Lakes and has a continental climate. It has a temperate climate with well-defined seasons. Frequent weather changes come from the passing of weather fronts and associated low and high centers of air pressure across the region. Winds are typically from the southwest, but during the winter months are dominantly from the northwest. The average January low temperature is 17° F, and the average July high temperature is 84° F (http://www.bestplaces.net/climate/county/michigan/wayne). The total annual rainfall and snowfall for the county are each approximately 32 inches (http: // www.bestplaces.net / climate / county / Michigan / wayne).

### 3.4 Demographics

As presented at: http://www.city-data.com/city/Livonia-Michigan.html, the City of Livonia, Michigan measures approximately 36 square miles, and is comprised of mostly urban area, with a population density of approximately 2,700 people per square mile. Its overall population is approximately 96,000 people, with the man/women ratio being about 48/52. The median age of this population is about 45 years old, and its estimated median annual household income in 2009 was about $66,500.

### 3.5 Surface Water Hydrology

Topographically, the Site is flat. The general area has a gradual gradient from west to east/southeast. On-site surface drainage appears to be primarily controlled by a storm water sewer system and likely historically affected by an abandoned tributary of the Shaw Drain. Storm water south and northeast of the Site is conveyed to Outfall 001 at the west-southwest property boundary. Storm water in the vicinity of the Site's WWTP that is located in the northeast corner of the Site is discharged to Outfall 002. The receiving waters of Outfall 001 and Outfall 002 are conveyed to the Lower Rouge River via the Shaw Drain (the nearest active surface water drainage channel). The Lower Rouge River empties into the Rouge River, which then flows southeast to the Detroit River, located more than 15 miles south east of the Site. The Detroit River eventually empties into Lake Erie.

### 3.6 Site Geology and Hydrogeology

Site Geologic conditions were characterized during the RFI to a depth of approximately 35 feet bgs. Descriptions of soil encountered at the 70 RFI boring locations are presented on boring logs included on compact disk in Appendix A. 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.

Stratigraphic correlations of on-site investigative locations are illustrated in cross-sections included as Figures 4, 5, and 6, with orientations as illustrated on Figure 3. Soil descriptions and stratigraphy observed at the Site are consistent with published regional information (see Section 1.2 of RFI Work Plan). 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 samples pursuant to the USEPA-approved modifications to the RFI Work Plan collectively discussed in Sections 1.1 and 2.3 of this report. As previously noted, 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. Figures 3 through 7 each illustrate the location of these temporary monitoring wells. 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 does not consistently yield groundwater volumes sufficient for sampling. Two of the temporary monitoring wells are installed 10 feet deeper than the other wells due to adjacent building conditions (existing basement).

Consistent with previous reports, 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 (AMSL) 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 AMSL. These potentiometric surface gradient trends indicate 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.

### 3.7 Conceptual Site Model for Human Exposures

As previously discussed, the Site occupies approximately 40 acres in Livonia, Michigan that are zoned for light and heavy industry. Future land use at the Site is expected to remain commercial/industrial. As part of the final remedy for the Site, a deed restriction to maintain continued commercial/industrial use is planned for the Site, and will be pursued following the completion of the RFI. As such, workers comprise the main receptor population at the Site under both current and reasonably expected future land use.

Under current and reasonably expected future conditions, the populations with potentially significant on-site exposures are routine workers, maintenance workers, construction workers, and trespassers. It is anticipated that any subsurface maintenance work at the Site would be conducted in accordance with Due Care requirements under Section 20107a of MNREPA, and a Site Health and Safety Plan, which would contain provisions for preventing significant exposures of such workers to environmental media.

The off-site areas around the Site consist of a mixture of commercial/industrial and residential land use. Current zoning for these areas is expected to remain unchanged. As such, the largest potentially exposed populations around the Site are residents, routine workers and maintenance workers.

In summary, the potentially exposed populations at and around the Site under current and reasonably expected future land use include the following:

Onsite:

- Routine workers,
- Maintenance workers,
- Construction workers, and
- Trespassers

Off-site:

- Residents,
- Routine workers, and
- Maintenance workers

### 3.8 Conceptual Site Model for Ecological Exposures

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. Nearly the entire Site is covered by buildings or pavement. The limited areas along Middlebelt Road that are not covered by buildings or pavement are maintained landscaping areas. Vegetation is also present near the DTE substation.

The Site does not provide naturalized areas for wildlife. 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 is not required to document no significant risk to ecological receptors.

# 4. INVESTIGATION RESULTS AND DISCUSSION

This section presents a summary of the results of the field investigations of the 36 AOIs considered during this RFI. Section 4.1 describes the MDEQ screening criteria used during this investigation, and Section 4.2 discusses the results of investigations. The associated analytical data and screening results are presented/summarized both in table and figure formats as follows:

- Table VI– Summary of Part 201 Screening Criteria for Soil;
- Table VII – Summary of Part 201 Screening Criteria for Groundwater;
- Figure 7 – Soil and Groundwater Analytical Data;
- Appendix B-1 – Summary of Soil Analytical Data; and
- Appendix B-2 – Summary of Groundwater Analytical Data.

## 4.1 Identification of Potentially Significant Releases

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 have occurred, and if the field investigation adequately characterized these potentially significant releases. The screening criteria for each medium are summarized below and have been identified to be applicable to the Site based on the conceptual Site model for human exposures discussed in Section 3.7.

The soil characterization data were compared with screening criteria that are developed by the MDEQ to facilitate implementation of Part 201 (Part 201 Criteria).

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

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

As previously noted, groundwater samples were intended to be collected from all initial soil borings to assist in the assessment of potential groundwater impact and in the placement of future groundwater monitoring wells, if needed. However, water accumulated in only 12 of the 13 temporary monitoring wells, and volumes of groundwater sufficient for sampling were found in only 11 of the 13 temporary monitoring wells. These wells were sampled on two occasions, once in August 2012 and once in December 2012. In November 2012, prior to initiating the second round of groundwater sample collection, the targeted wells were carefully developed using gentle surging and low purge rates to remove soil particles from the wells, as discussed in Section 2.3. Following this development, the December 2012 groundwater samples were collected using ultra-low-flow sampling techniques (sample withdrawal rates less than 80 milliliters per minute or less), as a further measure to obtain representative groundwater samples for laboratory analysis of arsenic and lead.

* Updated by MDEQ on 28 September 2012.

All of the RFI groundwater data have been compared with the following Part 201 Criteria:

- 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.

Constituents with at least one concentration exceeding the screening criteria anywhere at the Site were selected for display on a "data-box" figure (Figure 7).

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. The presence of constituent concentrations higher than the screening 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.

## 4.2 RFI Results and Discussion

### 4.2.1 Overview

As discussed in Section 2, 36 AOIs were subject to investigation based on evidence of a past release, historic operations, visual observations, and/or file review results. Tables B-1 and B-2 of Appendix B summarize the soil and groundwater data generated as part of the RFI with respect to each AOI. These tables present the analytical results for all analytes for the soil and groundwater samples collected during the RFI. As previously noted, Figure 7 also illustrates analyte exceedences across the Site. Validation of all soil and groundwater data collected at the Site as part of the RFI was performed in accordance with the QAPP. A summary of this validation is provided in Appendix C. The Site characterization data obtained for each of the AOIs investigated during this RFI are judged to be adequate and appropriate for RCRA Corrective Action decision-making. The laboratory reports are included on compact disk in Appendix D.

### 4.2.2 Analyte Detections and Criteria Exceedances

As shown in Tables B-1 and B-2 of Appendix B, 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 seven locations. Of the Part 201 Criteria discussed in Section 4.1, only the following were exceeded when compared to the RFI analytical data for the Site:

- Part 201 Nonresidential Drinking Water Protection Criteria (soil); and
- Part 201 Nonresidential Drinking Water Criteria (water).

Two soil samples exceeded the Nonresidential Drinking Water Protection Criteria of 4.6 mg/kg for arsenic:

| AOI | Soil Sample ID | Interval (ft.) | Arsenic Concentration (mg/kg) |
|---|---|---|---|
| AOI-04 | SB-04-157 | 8-10 | 8.58 |
| AOI-06 | SB-06-137 | 22-24 | 7.03 |

No other soil data exceeded screening criteria.

The Nonresidential Drinking Water Criteria of 0.01 mg/L for arsenic was exceeding at six locations, as summarized below:

| AOI | Temp. Well ID | August 2012 Arsenic Concentration (mg/L) | | December 2012 Arsenic Concentration (mg/L) | |
|---|---|---|---|---|---|
| | | Unfiltered | Filtered | Unfiltered | Filtered |
| AOI-06 | MW-06-139 | 0.028/0.037 | 0.006/0.011 | 0.036 | 0.008 |
| AOI-10 | MW-10-124 | 0.071 | 0.007 | 0.091 | 0.009 |
| AOI-27 | MW-27-158 | 0.018 | 0.003 | 0.019/0.019 | 0.01/0.009 |
| AOI-28 | MW-28-152 | 0.027 | Not Analyzed | 0.035 | 0.038 |
| AOI-33 | MW-33-105 | 0.015 | 0.008 | 0.0072 | 0.004 |
| AOI-40 | MW-40-135 | 0.011/0.011 | 0.009/0.009 | 0.015 | 0.006 |

Note: shaded values represent criteria exceedances, and duplicate results are separated with a "/".

The only other screening criteria exceedences for groundwater involved lead (0.004 mg/L) at six locations, as summarized below:

| AOI | Temp. Well ID | August 2012 Lead Concentration (mg/L) | | December 2012 Lead Concentration (mg/L) | |
|---|---|---|---|---|---|
| | | Unfiltered | Filtered | Unfiltered | Filtered |
| AOI-02 | MW-02-129 | 0.005 | 0.022 | 0.003 U | 0.003 U |
| AOI-06 | MW-06-137 | 0.005 | Not Analyzed | 0.003 U | 0.003 U |
| AOI-10 | MW-10-124 | 0.006 | 0.003 U | 0.003 U | 0.003 U |
| AOI-27 | MW-27-158 | 0.012 | 0.003 U | 0.003 U / 0.003 U | 0.003 U / 0.003 U |
| AOI-33 | MW-33-105 | 0.029 | 0.003 U | 0.003 U | 0.003 U |
| AOI-38 | MW-38-101 | 0.007 | 0.003 U | 0.003 U | 0.003 U |

Note: shaded values represent criteria exceedances; U – indicates that the analyte was not detected, and the value shown is the reporting limit.

Upon comparing corresponding data for the August 2012 groundwater sampling event to the December 2012 groundwater sampling event, it is observed that in most cases, the

concentrations of arsenic increased slightly within the relative same order of magnitude on a well-to-well comparison. It is further observed that lead exceeded the noted criteria in the samples collected in August 2012; however, lead was not detected in the groundwater samples collected from these wells in December 2012. It is believed that the sampling methods, including careful well development techniques and ultra-low-flow sampling, employed in the December 2012 event produced data most representative of the conditions at the Site.

The December 2012 data indicate Site groundwater is not contaminated with lead above the associated screening criterion, and all but one unfiltered groundwater sample exceeded the Nonresidential Drinking Water Criterion for arsenic. However, the concentrations of arsenic detected in groundwater 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 based on the following points:

- Arsenic is not known to be have been used at the Site, nor is likely to have been a component of Site-related activities;
- All but one exceedance of the Nonresidential Drinking Water Criterion for arsenic are associated 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);
- All exceedances of Nonresidential Drinking Water Criteria 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[†].

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

## 5. HUMAN HEALTH RISK EVALUATION

As previously explained, the RFI field investigation was designed to determine if a release of hazardous waste or hazardous constituents had occurred, and where a potentially significant release was identified, to characterize the nature and extent of hazardous constituents in the environmental media.

During the implementation of the RFI, the Site characterization data collected for each AOI were compared with conservative risk-based screening criteria to identify whether a potentially significant release of hazardous constituents to the environment may have occurred. Section 4 concluded that adequate data had been collected from each AOI to support a risk evaluation.

The significance of potential exposures to Site-related concentrations of constituents in potential exposure media was evaluated based on current and reasonably expected future land use at and around the Site. Potential exposure media include soil and groundwater. There is no exposure to surface water and/or sediment, since there are no surface water bodies on the property and no significant impact on off-site surface water bodies.

Soil characterization data pertaining to the Site were compared with Part 201 Criteria as discussed in Section 4.1, and as detailed in Section 4.2.2, only a limited number of exceedances of the following criteria were found:

- Part 201 Nonresidential Drinking Water Protection Criteria (soil); and
- Part 201 Nonresidential Drinking Water Criteria (groundwater).

The only potential pathways of concern involving these screening criteria include potable use of groundwater at or in the vicinity of the Site (i.e., on-site and off-site routine workers, maintenance workers, and construction workers, as well as local residents and Site trespassers).

Currently there is no evidence of exposure as these pathways are incomplete due to the following reasons:

- No current use of groundwater at the Site;
- Drinking water is supplied to the Site and the surrounding area 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 water wells present within ½-mile radius of the Site;
- City of Livonia prohibits groundwater well installations and potable use of groundwater through its City Ordinance 13.40.030 (Ord. 2823, § 1, 2009);
- Wayne County requires permits be issued for all drinking water well installations; and
- State of Michigan requires licensure of all groundwater well drillers operating in the State.

Concern for the future state of the potable use of groundwater at or in the vicinity of the Site is collectively addressed by Due Care compliance under Section 20107a of MNREPA, and the fact that State and County permits are needed for well installations regionally surrounding the Site, as well as the City of Livonia's prohibition of drinking water well installations within the City limits. As noted previously, these overlapping requirements provide strict control over drinking water well installations in this area.

Additionally, as noted in Section 4.2.2, the levels of arsenic found in groundwater at the Site are believed to be present as a result of natural conditions (i.e., types of soil deposits), and are not attributed to Site-related activities.

Also, baseline institutional controls, involving land and groundwater use restrictions, are planned for this Site. It is expected that these controls will adequately address any concerns for potential future use of Site groundwater. These controls will be established through deed restrictions, and are expected to include restrictions that will maintain continued nonresidential, commercial/industrial use of the Site, and will prohibit any future use of groundwater at the Site for any purpose, beyond sampling and other related investigatory testing. These restrictions will run with the property in perpetuity, unless USEPA approves the removal of these restrictions.

## 6. SUMMARY AND CONCLUSIONS

An RFI of the Site has been conducted to determine whether the AOIs identified in the RFI Work Plan have released hazardous waste or hazardous constituents that pose a significant risk to human health or the environment. As a result of the extensive RFI, potentially significant releases to on-site soil and groundwater were identified and characterized at the Site. The nature and extent of hazardous constituents in the environmental media characterized during the RFI are discussed in Section 4.

As discussed in Section 4, the site characterization data obtained for each of the areas investigated during the RFI and discussed herein are judged to be adequate and appropriate for RCRA Corrective Action decision-making.

All Site data were compared to applicable criteria identified in Section 4.1, consistent with the conceptual Site model for human exposures discussed in Section 3.7. The only applicable Part 201 Criteria found to be exceeded when compared to the RFI analytical data for the Site involved arsenic in soil only at two locations above the Part 201 Nonresidential Drinking Water Protection Criteria; and arsenic and lead in groundwater at select locations above the Part 201 Nonresidential Drinking Water Criteria. Each of these exceedances was within the same order of magnitude of the corresponding criteria.

Well development and ultra-low-flow sampling techniques affected the concentrations of both lead and arsenic, relative to samples collected in August 2012 versus December 2012. In most cases, the arsenic concentrations increased slightly within the relative same order of magnitude on a well-to-well comparison. While lead was previously detected in amounts that exceeded the noted criteria in August 2012, none of the unfiltered groundwater samples collected in December 2012 showed detections of lead.

Additionally, as noted in Section 4.2.2, the levels of arsenic found in groundwater at the Site are believed to present as a result of natural conditions (i.e., types of soil deposits), and are not attributed to Site-related activities.

The only potential pathways of concern involving these screening criteria include the potable use of groundwater at or in the vicinity of the Site. Currently, groundwater at or in the vicinity of the Site is not being used, and the future state of these pathways is addressed by the restrictions discussed in Sections 3.2 and 6. Additionally, it is expected that further concerns for potential future use of Site groundwater will be addressed through Due Care compliance and deed restrictions that will prohibit future use of Site groundwater.

Per the conceptual Site model for ecological exposures presented in Section 3.8, terrestrial and/or aquatic exposure of ecological receptors is considered nominal and/or incomplete. Therefore, further action pertaining to ecological receptors is not warranted.

## 7. PRIMARY REFERENCES

1. ARCADIS-US, Inc., Phase I Environmental Site Assessment, MLC ID 1195 General Motors Powertrain (GMPT) - Livonia 12200 Middlebelt Livonia, Michigan 48150, 8 April 2010.

2. ARCADIS-US, Inc., Remediation Cost Estimate Summary, 30 October 2009, Revised May 2010.

3. Environmental Data Recourses, Inc., Aerial Photo Decade Package, Inquiry Number 3176438.7, 3 October 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150.

4. Environmental Data Recourses, Inc., Aerial Building Permit Report, Inquiry Number 3176438.11, 3 October 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150.

5. Environmental Data Recourses, Inc., Sanborn Map Report, Inquiry Number 3176438.3, 3 October 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150 (No maps available).

6. Environmental Data Recourses, Inc., City Directory Abstract, Inquiry Number 3176438.6, 4 October 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150.

7. Environmental Data Recourses, Inc., Lien-Search Report, Inquiry Number 3176438.7, 3 October 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150.

8. Environmental Data Recourses, Inc., Topographic Map Permit Report, Inquiry Number 3176438.4, 30 September 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150.

9. Environmental Data Recourses, Inc., Property Tax Map, Inquiry Number 3176438.8, 29 September 2011, GMC-Powertrain Livonia Engine, 12200 Middlebelt Road, Livonia, MI 48150

10. 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.

11. GM Engine Division, Initial Abatement Steps as Follow-up to a Confirmed Regulated Substance Release, 28 January 1991.

12. Haley & Aldrich of Michigan, Inc., Resource Conservation and Recovery Act Current Conditions Summary / Facility Investigation Work Plan For The Former GM Powertrain Division Livonia 12200 Middlebelt Road, Livonia, Michigan, USEPA ID #MID000718874, 29 December 2011; Revised 31 May 2012).

13. 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; Revised 31 May 2012).

14. 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).

15. Michigan Department of Environmental Quality, Arsenic in Well Water, http://www.michigan.gov/documents/deq/deq-wd-gws-wcu-arsenicwellwater_270592_7.pdf

16. The Avendt Group, Inc. Engineers and Scientists, Site Assessment Related to Underground Storage Tank Removal BOC Powertrain – Livonia Engine, 26 October 1989.

17. The Chester Engineers, Site Assessment for UST Nos. 4, 5, 6, and 7 Removal, 22 February 1991.

18. The Chester Engineers, Work Plan for Hydrogeological Site Investigation in the Area of USTs 1, 2, 4, 5, 6, 7, 15 May 1991.

19. The Traverse Group, Leaking Underground Storage Tank Closure Report, 11 June 1996.

20. The Traverse Group, Leaking Underground Storage Tank Closure Report, 23 August 1996.

**TABLE I**
**SUMMARY OF AOIS SUBJECT TO RFI**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI # | AOI Title | Location Column/Bay | Description / Components |
|---|---|---|---|
| 01 | Teal Dock/Former Rail/Truck Bay/Chip Bunkers | South wall, D24-J24 | Former rail line for loading/unloading raw material, waste/recycling material |
| 02 | South Gallery | D23-M23 x D2-M20 | Management of metal grinding, coolant, lubricant, cutting fluid |
| 04 | East Gallery | M14-P14 | Management of metal grindings, coolant, lubricants, cutting fluid |
| 05 | Wash/Dump station | K14-L14 | Process waste, oily waste, floor cleaning |
| 06 | West Gallery | D3-E13 | Management of metal grindings, coolant, lubricants, cutting fluid |
| 07 | Dump station | Near West Gallery, F15-G15 | Process waste, oily waste, floor cleaning |
| 08 | Former paint shop/shed | K12/L12 | Environmental/Emergency Response Plan describes shed with 825-gallon containment sump installed below shed, no floor drains in proximity. Paints, thinners, paint reducer (xylenes). Arcadis report identifies "Tank 8" as a 100-gallon paint reserve tank. Location is not described. |
| 09 | Oil sump | L8-M8 | May have been associated with operation of East Gallery. Oil sump near columns L8/M8 is approximately five feet in diameter. Oil Pit near 8N maybe associated with Oil sump near L8/M8, contains oily material. |
| 10 | Equipment pit | L7-M7 | Containment for heavy equipment. Equipment Pit contains approximately 3 feet of oily / coolant water. |
| 11 | Dump station | J6-K6 | Process waste, floor cleaning. Dump Station near Columns J5/K5 pit is filled with oily / coolant sludge. |
| 12 | Equipment pits (2) - containment beneath heavy equipment | F5-D5 | Currently contains oily waste liquid. Oil-filled trench/flume located approximately 25 feet from equipment pit, extending approximately 100 feet north of the pit. Oil-filled trench / flume system, may be associated with equipment pit. Oil-filled pit near Column G4. |
| 13 | Wash/Dump station | B4-C4 | Large wash and process waste station. Lines for cold water, hot water, compressed air and process waste observed at this station. Floor drain located approximately 6 ft. east of this pit. |
| 14 | Equipment pit - containment beneath heavy equipment | A3-B3 | Containment beneath heavy equipment. Slopes downward toward south end of feature. Approximately 6" of oily/coolant water toward south end, 2-4" of oil/coolant water at north end of feature. Outlets located in south and east corners. Poured concrete. Minor cracking in side walls. A shallow trench drain is located south of this AOI. |
| 15 | Equipment pit - containment beneath heavy equipment | D2-E2 | Containment beneath heavy equipment. Oil/coolant observed in trough connected to adjacent flume. Poured concrete. Minor chipping, minor delamination observed at southeast end. |
| 16 | Dump station | M1A-N1A | Process waste, oily waste, floor cleaning. Associated with process waste system. Oily/coolant sludge observed in pit. |
| 17 | Former 750-gallon UST | WP5-WR5 | Note: ARCADIS REC - former underground oil storage tank. Use unknown |
| 18 | Dump station | K3A-L3A | Process waste, oily waste, floor cleaning. Associated with process waste system. Approximately 1 ft. deep. Note: this unit appeared to be deeper than other dump stations observed during the October 2011 site reconnaissance. |

**TABLE I**
**SUMMARY OF AOIS SUBJECT TO RFI**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI # | AOI Title | Location Column/Bay | Description / Components |
|---|---|---|---|
| 19 | Trash compactor and oil pump station | N5A-P5A | Dark staining and oily residue observed in compactor area interior and exterior. Storm drain and process waste drain observed at compactor area exterior. Dark staining and oily residue observed on concrete berm providing containment around oil pump station and on floor in proximity to station. |
| 22 | Dump station | H6A-J6A | Process waste, oily waste, floor cleaning. Associated with process waste system. Station was dry at time of October 2011 site reconnaissance. |
| 23 | Dump station | WR2-WS2 | Process waste, oily waste, floor cleaning. Associated with process waste system. |
| 26 | Paint booth area | D20/D21 | Paint booth observed with signage "Only aerosol can spraying". No floor drains observed in area. Sump covers located approximately 20' west of booth, 18' east of booth. Arcadis report refers to paint reserve "Tank 8". Location is not described. |
| 27 | Below grade process flumes | J14-J18, M19-M-20 | Conveyed fluidized metal chips, metal filing debris for galleries |
| 28 | Below grade process waste conveyances | wP15-wP17, wT10-wT11 | Conveyed process waste from operations, sumps, trenches to onsite WWTP |
| 29 | Former Railroad Spur | G5A-H4A | Located in north-central portion of existing building. |
| 30 | 12434 Middlebelt - possible former gas station | wAA1A-wD4 | Building Department records indicate the following: 1,000-gallon buried UST removed 04/20/1965; 2,000-gallon UST removal 04/21/1965; septic system disconnected 10/06/1970; inspection of 220-gallon heating oil tank 1954. Building Dept. inspector stated a gas station was formerly located at 12434 Middlebelt. The property was acquired by GM for plant expansion. |
| 31 | Fire pump house (post 1989) | wG6-wG10 | 3 fire pump generators, 3 184-gallon diesel fuel ASTs. Evidence of staining associated with the oldest (as reported by Securitas) of the three diesel fire pump engines. Floor drains located in building. Blow down/condensate drains from engines. Staining in proximity to drains. |
| 32 | Former fire pump house (pre-1989) | wP4-wT4 | Building Department records refer to relocation of fire pump house and equipment. |
| 33 | WWTP main building and exterior wash pad | Northeast portion of site | Basement constructed beneath majority of WWTP main building. Basement may extend 20' below grade. Sumps are constructed in basement |

**TABLE I**
**SUMMARY OF AOIS SUBJECT TO RFI**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI # | AOI Title | Location Column/Bay | Description / Components |
|---|---|---|---|
| 34 | Less than 90-day HW storage area | Interior location, west of WWTP main building | Less than 90-day storage of hazardous wastes. Facility plans (Livonia Fire Dept) describe as bermed, enamel coated floor. Secondary containment provided by containment pallets and poly overpack drums |
| 36 | Oil Storage Building | Adjacent to WWTP main building, west side | Bulk storage of oil products, lubricants, hydraulic oils. Building signage: "Fluid Storage Building". Area outside of building to west is identified on Site Plan and Material Storage Areas drawing as loading and unloading area. Sump pit and pump located within secondary containment area, 4ft x 4ft x 5ft. Evidence of release from bulk tank labeled: 3,250 gallons Product SP 735 (caustic). |
| 37 | ASTs (2) | West of WWTP | 1 800-gallon unleaded gasoline tank and 1 200-gallon diesel fuel tank. Both tanks located within containment area. Fuel used for vehicles. Dispensing hoses extend beyond containment area. |
| 38 | Detroit Edison Substation | East of WWTP | Main electrical transformer and switching yard for the plant. |
| 39 | Equipment pit | A15/A14 | Containment for heavy equipment. Poured concrete, 4 concrete berms for equipment elevation. Feature is sloped downward toward south end. Two outlets approximately 18" bgs at south and east corners. Oily sludge with miscellaneous debris remaining in pit. Material is approximately 2" deep at south end. |
| 40 | Sump for equipment pit | A11/A12 | Sump may have operated for management of materials contained in equipment pit. Steel construction. At time of site reconnaissance, contained debris and equipment, possibly from decommissioning. |
| 41 | Equipment pit | A7/A6 | Containment for heavy equipment. Poured concrete. Return coolant lines observed over pit. Several inches of oil/coolant water at south end of pit. Inlet/outlet observed in southeast corner of pit. Floor drain located adjacent to pit, south of pit. |
| 42 | Dump station | G2 | Process waste, oily waste, floor cleaning. Oily sludge observed in the pit. |

**TABLE II**
**SOIL BORING INVENTORY AND COMPLETION SUMMARY**
**RACER GMPT LIVONIA**
**LIVONIA, MICHIGAN**

| Boring ID | Associated AOI | Completion Date | APPROXIMATE LOCATION | | Surface Elevation (NAD 83) | Boring Total Depth (ft below grade) |
|---|---|---|---|---|---|---|
| | | | Northing | Easting | | |
| 02-128 | AOI-02 | 7/18/2012 | 319893.78 | 13403583.74 | 632.44 | 35 |
| 02-129 | AOI-02 | 6/20/2012 | 319868.05 | 13403266.62 | 632.86 | 25 |
| 02-131 | AOI-02 | 6/20/2012 | 319858.66 | 13403424.01 | 632.11 | 25 |
| 02-132 | AOI-02 | 7/18/2012 | 319976.54 | 13403317.48 | 633.12 | 30 |
| 02-133 | AOI-02 | 7/18/2012 | 319978.14 | 13403403.63 | 633.12 | 30 |
| 02-154 | AOI-02 | 6/18/2012 | 320011.73 | 13403706.41 | 633.13 | 34 |
| 02-155 | AOI-02 | 6/18/2012 | 319994.71 | 13403600.64 | 633.12 | 30 |
| 02-156 | AOI-02 | 6/20/2012 | 319996.63 | 13403496.28 | 633.13 | 25 |
| 04-125 | AOI-04 | 7/17/2012 | 320314.90 | 13403811.21 | 633.06 | 35 |
| 04-126 | AOI-04 | 7/25/2012 | 320276.17 | 13403852.11 | 631.97 | 35 |
| 04-157 | AOI-04 | 7/17/2012 | 320242.66 | 13403757.19 | 633.05 | 35 |
| 05-127 | AOI-05 | 6/18/2012 | 320292.12 | 13403723.55 | 633.15 | 30 |
| 06-136 | AOI-06 | 7/23/2012 | 320302.45 | 13403228.50 | 633.16 | 35 |
| 06-137 | AOI-06 | 7/23/2012 | 320325.50 | 13403263.30 | 633.08 | 35 |
| 06-138 | AOI-06 | 7/19/2012 | 320299.97 | 13403321.95 | 633.03 | 35 |
| 06-139 | AOI-06 | 7/24/2012 | 320268.70 | 13403267.24 | 633.03 | 35 |
| 07-140 | AOI-07 | 7/19/2012 | 320223.55 | 13403395.32 | 633.16 | 15 |
| 09-123 | AOI-09 | 7/16/2012 | 320512.73 | 13403757.67 | 633.13 | 10 |
| 10-124 | AOI-10 | 7/16/2012 | 320567.03 | 13403779.92 | 633.09 | 10 |
| 11-122 | AOI-11 | 6/18/2012 | 320609.45 | 13403597.98 | 633.17 | 30 |
| 12-120 | AOI-12 | 7/26/2012 | 320617.67 | 13403417.49 | 633.03 | 10 |
| 12-121 | AOI-12 | 6/25/2012 | 320624.48 | 13403373.67 | 633.14 | 20 |
| 13-144 | AOI-13 | 7/20/2012 | 320657.75 | 13403142.00 | 633.06 | 15 |
| 14-145 | AOI-14 | 7/27/2012 | 320681.28 | 13403085.78 | 633.14 | 12 |
| 14-146 | AOI-14 | 6/21/2012 | 320731.13 | 13403074.42 | 633.13 | 25 |
| 15-150 | AOI-15 | 7/20/2012 | 320733.18 | 13403268.03 | 633.11 | 10 |
| 16-116 | AOI-16 | 6/25/2012 | 320799.00 | 13403782.33 | 633.12 | 20 |
| 18-117 | AOI-18 | 7/16/2012 | 320916.46 | 13403608.69 | 633.07 | 10 |
| 19-115 | AOI-19 | 7/17/2012 | 321004.82 | 13403750.96 | 633.04 | 10 |
| 19-153 | AOI-19 | 7/2582012 | 320998.70 | 13403811.30 | 632.66 | 10 |
| 22-118 | AOI-22 | 7/16/2012 | 321061.25 | 13403514.19 | 633.13 | 5 |
| 23-149 | AOI-23 | 6/21/2012 | 321038.06 | 13403311.22 | 633.15 | 25 |
| 26-130 | AOI-26 | 7/18/2012 | 320004.98 | 13403316.08 | 633.15 | 20 |
| 27-158 | AOI-27 | 7/19/2012 | 320305.75 | 13403537.42 | 633.09 | 10 |
| 27-159 | AOI-27 | 7/19/2012 | 320128.51 | 13403578.28 | 633.06 | 13 |
| 27-160 | AOI-27 | 7/17/2012 | 320047.24 | 13403594.96 | 633.05 | 10 |
| 27-161 | AOI-27 | 7/17/2012 | 320162.85 | 13403782.50 | 633.08 | 10 |
| 28-152 | AOI-28 | 7/24/2012 | 320162.85 | 13403782.50 | 633.08 | 10 |
| 28-164 | AOI-28 | 6/21/2012 | 320447.70 | 13403333.54 | 633.00 | 25 |
| 28-165 | AOI-28 | 6/21/2012 | 320132.55 | 13403171.87 | 633.00 | 25 |
| 28-166 | AOI-28 | 7/24/2012 | 320215.51 | 13403217.95 | 632.97 | 10 |
| 28-167 | AOI-28 | 7/24/2012 | 320342.48 | 13403351.61 | 633.03 | 12 |
| 28-168 | AOI-28 | 7/23/2012 | 320444.85 | 13403424.52 | 632.96 | 12 |
| 28-169 | AOI-28 | 7/26/2012 | 320474.23 | 13403275.31 | 633.11 | 10 |
| 29-103 | AOI-29 | 7/30/2012 | 320624.48 | 13403236.54 | 633.09 | 10 |
| 29-114 | AOI-29 | 7/31/2012 | 321129.47 | 13404202.53 | 632.67 | 10 |
| 30-162 | AOI-30 | 7/31/2012 | 321112.79 | 13403815.59 | 631.85 | 10 |
| 30-163 | AOI-30 | 7/31/2012 | 320711.86 | 13403380.56 | 633.07 | 10 |
| 30-170 | AOI-30 | 6/25/2012 | 321011.57 | 13402704.82 | 633.42 | 20 |
| 30-171 | AOI-30 | 7/20/2012 | 321048.59 | 13402803.47 | 632.88 | 15 |
| 31-142 | AOI-31 | 8/1/2012 | 320926.32 | 13402744.44 | 633.15 | 10 |
| 32-147 | AOI-32 | 7/20/2012 | 320839.18 | 13402744.48 | 633.11 | 15 |
| 32-148 | AOI-32 | 7/20/2012 | 320471.64 | 13402962.99 | 632.45 | 4.5 |
| 33-104 | AOI-33 | 7/30/2012 | 320921.25 | 13403297.08 | 633.16 | 40 |
| 33-105 | AOI-33 | 7/30/2012 | 320965.15 | 13403272.18 | 633.11 | 22 |
| 33-106 | AOI-33 | 7/29/2012 | 321088.38 | 13404210.33 | 633.33 | 40 |

**TABLE II**
**SOIL BORING INVENTORY AND COMPLETION SUMMARY**
**RACER GMPT LIVONIA**
**LIVONIA, MICHIGAN**

| Boring ID | Associated AOI | Completion Date | APPROXIMATE LOCATION | | Surface Elevation (NAD 83) | Boring Total Depth (ft below grade) |
|---|---|---|---|---|---|---|
| | | | Northing | Easting | | |
| 33-108 | AOI-33 | 6/25/2012 | 321018.68 | 13404236.68 | 633.27 | 20 |
| 34-109 | AOI-34 | 7/31/2012 | 320941.24 | 13404205.77 | 633.03 | 10 |
| 36-110 | AOI-36 | 7/25/2012 | 321059.64 | 13404134.87 | 633.35 | 10 |
| 36-111 | AOI-36 | 7/25/2012 | 320965.16 | 13404140.35 | 633.57 | 10 |
| 36-112 | AOI-36 | 7/31/2012 | 320933.66 | 13404024.71 | 633.31 | 10 |
| 36-113 | AOI-36 | 7/31/20012 | 320961.74 | 13403989.74 | 633.38 | 10 |
| 37-107 | AOI-37 | 7/25/2012 | 321016.50 | 13404036.33 | 633.31 | 10 |
| 38-100 | AOI-38 | 7/27/2012 | 320987.86 | 13404067.05 | 633.60 | 10 |
| 38-101 | AOI-38 | 7/31/2012 | 320978.09 | 13403940.60 | 633.66 | 10 |
| 38-102 | AOI-38 | 7/31/2012 | 321079.23 | 13404435.25 | 634.42 | 10 |
| 39-134 | AOI-39 | 6/21/2012 | 321033.24 | 13404362.16 | 634.64 | 5.5 |
| 40-135 | AOI-40 | 7/24/2012 | 320933.11 | 13404417.49 | 634.27 | 10 |
| 41-141 | AOI-41 | 6/22/2012 | 320197.86 | 13403105.31 | 632.94 | 25 |
| 42-119 | AOI-42 | 7/26/2012 | 320305.55 | 13403093.07 | 633.15 | 10 |

**TABLE III**
**TEMPORARY MONITORING WELL INVENTORY AND COMPLETION SUMMARY**
**RACER GMPT LIVONIA**
**LIVONIA, MICHIGAN**

| Well ID | AOI Location | Date Installed | Approximate Location | | Ground Elevation AMSL | Top of Riser Elevation AMSL | Well Diameter (inches) | Installed Depth of Well from ground surface | Screened Interval feet BGS | Screen Elevation feet AMSL | Measured Depth to Bottom from Ground Surface (8/8/12) | Depth to Water (ft below TOR) (8/8/12) | Groundwater Elevation (feet AMSL) (8/8/12) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Northing | Easting | | | | | | | | | |
| 02-129 | AOI-02 | 6/20/2012 | 319868.05 | 13403266.62 | 632.86 | 632.94 | 1.25 | 10 | 5 - 10 | 627.86 - 622.86 | 10.07 | 5.43 | 627.51 |
| 06-137 | AOI-06 | 7/23/2012 | 320325.50 | 13403263.30 | 633.08 | 636.91 | 1.5 | 21 | 16 - 21 | 617.08 - 612.08 | 21.27 | 19.48 | 617.43 |
| 06-139 | AOI-06 | 7/24/2012 | 320268.70 | 13403267.24 | 633.03 | 634.46 | 1.5 | 23.5 | 18.5 - 23.5 | 614.53 - 609.53 | 23.94 | 17.01 | 617.45 |
| 10-124 | AOI-10 | 7/16/2012 | 320567.03 | 13403779.92 | 633.09 | 634.97 | 1.5 | 8 | 3 - 8 | 630.09 - 625.09 | 8.46 | 7.29 | 627.68 |
| 15-150 | AOI-15 | 7/20/2012 | 320733.18 | 13403268.03 | 633.11 | 636.96 | 1.5 | 6 | 1 - 6 | 632.11 - 627.11 | 6.15 | NA | NA |
| 18-117 | AOI-18 | 7/16/2012 | 320916.46 | 13403608.69 | 633.07 | 634.97 | 1.5 | 8 | 3 - 8 | 630.07 - 625.07 | 8.13 | 8.11 | 626.86 |
| 19-115 | AOI-19 | 7/17/2012 | 321004.82 | 13403750.96 | 633.04 | 634.46 | 1.5 | 9 | 4 - 9 | 629.04 - 624.04 | 8.61 | 6.66 | 627.80 |
| 27-158 | AOI-27 | 7/19/2012 | 320305.75 | 13403537.42 | 633.09 | 633.35 | 1.5 | 10 | 5 - 10 | 628.09 - 623.09 | 9.74 | 9.48 | 623.87 |
| 28-152 | AOI-28 | 7/24/2012 | 320447.70 | 13403333.54 | 633.00 | 633.83 | 1.5 | 10 | 5 - 10 | 628.00 - 623.00 | 9.50 | 7.19 | 626.64 |
| 28-165 | AOI-28 | 6/22/2012 | 320215.51 | 13403217.95 | 632.97 | 635.34 | 2 | 10 | 5-10 | 627.97 - 622.97 | 10.35 | 6.22 | 629.12 |
| 33-105 | AOI-33 | 7/30/2012 | 321018.68 | 13404236.68 | 633.27 | 634.23 | 1.5 | 9.5 | 4-9 | 629.27 - 624.27 | 9.35 | 4.46 | 629.77 |
| 38-101 | AOI-38 | 7/31/2012 | 321033.24 | 13404362.16 | 634.64 | 636.68 | 1.5 | 8 | 2.5-7.5 | 631.89 - 627.14 | 7.98 | 6.23 | 630.45 |
| 40-135 | AOI-40 | 7/24/2012 | 320305.55 | 13403093.07 | 633.15 | 633.63 | 1.5 | 10 | 5 - 10 | 628.15 - 623.15 | 9.54 | 5.18 | 628.45 |

**Notes:**
AMSL = Above Mean Sea Level
BGS = Below Ground Surface
TOR = Top of Riser
NA = Not Applicable
NT = Not Taken

**TABLE IV**
**SOIL SAMPLE COLLECTION SUMMARY**
**RACER GMPT LIVONIA**
**LIVONIA, MICHIGAN**

| AOI | Location ID | Sample Depth (ft bgs) | Sample Date | Sample Name | Sample Type | Location Type | Analyzed Parameters | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | VOCs | SVOCs (PAHs) | PCBs | MI 10 Metals |
| AOI-02 | 02-131 | 1-2 | 6/20/2012 | SB131(06-20-2012)(1-2) | N | SOIL BORING | x | x | x | x |
| AOI-02 | 02-132 | 20-22 | 7/18/2012 | SB132(07-18-2012)(20-22) | N | SOIL BORING | x | x | x | x |
| AOI-04 | 04-126 | 24-26 | 7/25/2012 | SB126(07-25-12)(24-26) | N | SOIL BORING | x | x | x | x |
| AOI-04 | 04-157 | 3-5 | 7/1/2012 | SB157(07-17-12)(3-5) | N | SOIL BORING | x | x | x | x |
| AOI-04 | 04-157 | 8-10 | 7/17/2012 | SB157(07-17-12)(8-10) | N | SOIL BORING | x | x | x | x |
| AOI-05 | 05-127 | 3-5 | 6/18/2012 | SB127(06-18-2012)(3-5) | N | SOIL BORING | x | x | x | x |
| AOI-06 | 06-136 | 22-24 | 7/23/2012 | SB136(07-23-12)(22-24) | N | SOIL BORING | x | x | x | x |
| AOI-06 | 06-137 | 22-24 | 7/23/2012 | SB137(07-23-12)(22-24) | N | SOIL BORING | x | x | x | x |
| AOI-06 | 06-138 | 22.5-24.5 | 7/19/2012 | SB138(07-19-12)(22.5-24.5) | N | SOIL BORING | x | x | x | x |
| AOI-06 | 06-139 | 10-12 | 7/24/2012 | SB139(07-24-12)(22-24) | N | SOIL BORING | x | x | x | x |
| AOI-07 | 07-140 | 6-8 | 7/18/2012 | SB140(07-19-12)(10-12) | N | SOIL BORING | x | x | x | x |
| AOI-09 | 09-123 | 6-8 | 7/16/2012 | SB123(07-16-12)(6-8) | N | SOIL BORING | x | x | x | x |
| AOI-10 | 10-124 | 4-6 | 7/16/2012 | SB124(07-16-12)(4-6) | N | SOIL BORING | x | x | x | x |
| AOI-12 | 12-120 | 4-6 | 7/26/2012 | SB120(07-26-12)(4-6) | N | SOIL BORING | x | x | x | x |
| AOI-12 | 12-121 | 3-5 | 6/25/2012 | SB121(06-25-12)(3-5) | N | SOIL BORING | x | x | x | x |
| AOI-13 | 13-144 | 1.5-3.5 | 7/26/2012 | SB144(07-26-12)(1.5-3.5) | N | SOIL BORING | x | x | x | x |
| AOI-13 | 13-144 | 7.5-9.5 | 7/26/2012 | SB144(07-26-12)(7.5-9.5) | N | SOIL BORING | x | x | x | x |
| AOI-14 | 14-145 | 2-4 | 7/27/2012 | SB145(07-27-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-14 | 14-145 | 6-8 | 7/27/2012 | SB145(07-27-12)(6-8) | N | SOIL BORING | x | x | x | x |
| AOI-14 | 14-146 | 4-5 | 6/21/2012 | SB146(06-21-2012)(4-5) | N | SOIL BORING | x | x | x | x |
| AOI-15 | 15-150 | 2-4 | 7/20/2012 | SB150(07-20-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-15 | 15-150 | 2-4 | 7/20/2012 | DUP 2(07-20-12) | FD | SOIL BORING | x | x | x | x |
| AOI-16 | 16-116 | 1-2 | 6/25/2012 | SB116(06-25-12)(1-2) | N | SOIL BORING | x | x | x | x |
| AOI-18 | 18-117 | 2-4 | 7/16/2012 | SB117(07-16-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-19 | 19-153 | 3.5-5.5 | 7/25/2012 | SB153(07-25-12)(3.5-5.5) | N | SOIL BORING | x | x | x | x |
| AOI-22 | 22-118 | 2-4 | 7/19/2012 | SB118(07-19-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-26 | 26-130 | 16-18 | 7/18/2012 | SB130(07-18-12)(16-18) | N | SOIL BORING | x | x | x | x |
| AOI-27 | 27-158 | 3-5 | 7/19/2012 | SB158(07-19-12)(3-5) | N | SOIL BORING | x | x | x | x |
| AOI-27 | 27-159 | 7-9 | 7/19/2012 | SB159(07-19-12)(7-9) | N | SOIL BORING | x | x | x | x |
| AOI-28 | 28-152 | 4-6 | 7/24/2012 | SB152(07-24-12)(4-6) | N | SOIL BORING | x | x | x | x |
| AOI-28 | 28-166 | 4-6 | 7/24/2012 | SB166(07-24-12)(4-6) | N | SOIL BORING | x | x | x | x |
| AOI-28 | 28-166 | 4-6 | 7/23/2012 | DUP 3(07-24-12) | FD | SOIL BORING | x | x | x | x |
| AOI-28 | 28-167 | 2-4 | 7/24/2012 | SB167(07-24-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-28 | 28-168 | 6-8 | 7/23/2012 | SB168(07-23-12)(6-8) | N | SOIL BORING | x | x | x | x |
| AOI-28 | 28-169 | 1.5-3.5 | 7/26/2012 | SB169(07-26-12)(1.5-3.5) | N | SOIL BORING | x | x | x | x |
| AOI-29 | 29-103 | 0-2 | 7/30/2012 | SB103(07-30-12)(0-2) | N | SOIL BORING | x | x | x | x |
| AOI-29 | 29-114 | 2-4 | 7/31/2012 | SB114(07-31-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-30 | 30-162 | 2-4 | 7/31/2012 | SB162(07-31-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-30 | 30-163 | 8-10 | 7/31/2012 | SB163(07-31-12)(8-10)* | N | SOIL BORING | x | x | x | x |
| AOI-30 | 30-171 | 10-12 | 7/20/2012 | SB171(07-20-12)(10-12) | N | SOIL BORING | x | x | x | x |
| AOI-30 | 30-171 | 10-12 | 7/20/2012 | DUP 1(07-20-12) | FD | SOIL BORING | x | x | x | x |

**TABLE IV**
**SOIL SAMPLE COLLECTION SUMMARY**
**RACER GMPT LIVONIA**
**LIVONIA, MICHIGAN**

| | | | | | | | Analyzed Parameters | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample | Sample | | Sample | | | SVOCs | | MI 10 |
| AOI-31 | 31-142 | 0-2 | 8/1/2012 | SB142(08-01-12)(0-2) | N | SOIL BORING | x | x | x | x |
| AOI-32 | 32-147 | 8-10 | 7/20/2012 | SB147(07-20-12)(8-10) | N | SOIL BORING | x | x | x | x |
| AOI-32 | 32-148 | 2-4 | 7/20/2012 | SB148(07-20-12)(2.5-4.5) | N | SOIL BORING | x | x | x | x |
| AOI-33 | 33-104 | 0-2 | 7/30/2012 | SB104(07-30-12)(0-2) | N | SOIL BORING | x | x | x | x |
| AOI-33 | 33-105 | 0-2 | 7/30/2012 | SB105(07-30-12)(0-2) | N | SOIL BORING | x | x | x | x |
| AOI-33 | 33-106 | 8-10 | 7/27/2012 | SB106(07-27-12)(8-10) | N | SOIL BORING | x | x | x | x |
| AOI-33 | 33-106 | 32-34 | 7/27/2012 | SB106(07-27-12)(32-34) | N | SOIL BORING | x | x | x | x |
| AOI-34 | 34-109 | 0-2 | 7/31/2012 | SB109(07-31-12)(0-2) | N | SOIL BORING | x | x | x | x |
| AOI-36 | 36-110 | 0.5-2.5 | 7/25/2012 | SB110(07-25-12)(0.5-2.5) | N | SOIL BORING | x | x | x | x |
| AOI-36 | 36-111 | 0.5-2.5 | 7/25/2012 | SB111(07-25-12)(0.5-2.5) | N | SOIL BORING | x | x | x | x |
| AOI-36 | 36-112 | 0-2 | 7/31/2012 | SB112(07-31-12)(0-2) | N | SOIL BORING | x | x | x | x |
| AOI-36 | 36-112 | 0-2 | 7/31/2012 | DUP 4(07-31-12) | FD | SOIL BORING | x | x | x | x |
| AOI-36 | 36-113 | 3-5 | 7/31/2012 | SB113(07-31-12)(3-5) | N | SOIL BORING | x | x | x | x |
| AOI-37 | 37-107 | 3-5 | 7/25/2012 | SB107(07-25-12)(3-5) | N | SOIL BORING | x | x | x | x |
| AOI-38 | 38-100 | 2-4 | 7/27/2012 | SB100(07-27-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-38 | 38-101 | 2.5-4.5 | 7/27/2012 | SB101(07-27-12)(2.5-4.5) | N | SOIL BORING | x | x | x | x |
| AOI-38 | 38-102 | 2-4 | 7/31/2012 | SB102(07-31-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-40 | 40-135 | 2-4 | 7/24/2012 | SB135(07-24-12)(2-4) | N | SOIL BORING | x | x | x | x |
| AOI-41 | 41-141 | 3-5 | 6/22/2012 | SB141(06-22-2012)(3-5) | N | SOIL BORING | x | x | x | x |
| AOI-42 | 42-119 | 3-5 | 7/26/2012 | SB119(07-26-12)(3-5) | N | SOIL BORING | x | x | x | x |

**Notes and Abbreviations:**

1. Sample type codes: N - Normal, FD, Field Duplicate
2. ft bgs: Feet below ground surface

* Sample SB163(07-31-12)(8-10) was misnamed in the field, its original name was SB165(07-31-12)(8-10)

**TABLE V**
**GROUNDWATER SAMPLE COLLECTION SUMMARY**
**RACER GMPT LIVONIA**
**LIVONIA, MICHIGAN**

| Location Type | AOI | Location | Sample Date | Sample Name | Sample Type | Sample Parameters | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | VOCs | PAHs | Unfiltered MI 10 Metals | Filtered MI 10 Metals | Unfiltered Lead | Filtered Lead | Unfiltered Arsenic | Filtered Arsenic |
| Temporary Monitoring Well | AOI-02 | 02-129 | 8/8/2012 | MW129(0-08-2012)(1250) | N | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-06 | 06-137 | 8/9/2012 | MW137(08-09-2012)(1215) | N | x | x | x | | | | | |
| Temporary Monitoring Well | AOI-06 | 06-139 | 8/8/2012 | MW139(08-09-2012)(0915) | N | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-06 | 06-139 | 8/8/2012 | DUP-01(08-09-12) | FD | x | x | x | | | | | |
| Temporary Monitoring Well | AOI-10 | 10-124 | 8/9/2012 | MW124(08-09-2012)(1630) | N | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-19 | 19-115 | 8/10/2012 | MW115(08-10-2012)(0845) | N | x | x | x | | | | | |
| Temporary Monitoring Well | AOI-27 | 27-158 | 8/9/2012 | MW158(08-09-2012)(1630) | N | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-28 | 28-152 | 8/10/2012 | MW152(08-10-2012)(1035) | N | x | x | x | | | | | |
| Temporary Monitoring Well | AOI-28 | 28-165 | 8/9/2012 | MW165(08-09-2012)(0825) | N | x | x | x | | | | | |
| Temporary Monitoring Well | AOI-33 | 33-105 | 8/8/2012 | MW105(08-08-2012)(1445) | N | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-38 | 38-101 | 8/8/2012 | MW101(08-08-2012)(1615) | N | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-40 | 40-135 | 8/9/2012 | MW135(08-09-2012)(1320) | N | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-40 | 40-135 | 8/9/2012 | DUP-02(08-09-12) | FD | x | x | x | x | | | | |
| Temporary Monitoring Well | AOI-15 | 15-150 | 8/10/2012 | Insufficient volume of water for sampling | | | | | | | | | |
| Temporary Monitoring Well | AOI-18 | 18-117 | 8/10/2012 | Insufficient volume of water for sampling | | | | | | | | | |
| Temporary Monitoring Well | AOI-02 | 02-129 | 12/11/2012 | TW129(12-11-2012)(1305) | N | | | | | x | x | | |
| Temporary Monitoring Well | AOI-06 | 06-137 | 12/12/2012 | TW137(12-12-2012)(1445) | N | | | | | x | x | | |
| Temporary Monitoring Well | AOI-06 | 06-139 | 12/12//2012 | TW139(12-12-2012)(1650) | N | | | | | | | x | x |
| Temporary Monitoring Well | AOI-10 | 10-124 | 12/12/2013 | TW124(12-12-2012)(1340) | N | | | | | x | x | x | x |
| Temporary Monitoring Well | AOI-19 | 19-115 | Not Sampled | | | | | | | | | | |
| Temporary Monitoring Well | AOI-27 | 27-158 | 12/11/2012 | TW158(12-11-2012)(1610) | N | | | | | x | x | x | x |
| Temporary Monitoring Well | AOI-27 | 27-158 | 12/11/2012 | DUP-01(12-11-2012) | FD | | | | | x | x | x | x |
| Temporary Monitoring Well | AOI-28 | 28-152 | 12/11/2012 | TW152(12-11-2012)(1410) | N | | | | | | | x | x |
| Temporary Monitoring Well | AOI-28 | 28-165 | Not Sampled | | | | | | | | | | |
| Temporary Monitoring Well | AOI-33 | 33-105 | 12/10/2012 | TW105(12-10-2012)(1415) | N | | | | | x | x | x | x |
| Temporary Monitoring Well | AOI-38 | 38-101 | 12/12/2012 | TW101(12-12-2012)(1100) | N | | | | | x | x | | |
| Temporary Monitoring Well | AOI-40 | 40-135 | 12/10/2012 | TW135(12-10-2012)(1600) | N | | | | | | | x | x |
| Temporary Monitoring Well | AOI-15 | 15-150 | 12/10/2012 | Insufficient volume of water for sampling | | | | | | | | | |
| Temporary Monitoring Well | AOI-18 | 18-117 | 12/10/2012 | Insufficient volume of water for sampling | | | | | | | | | |

**Notes and Abbreviations:**
1. Sample type codes: N - Normal, FD - Field Duplicate, VOCs - Volatile Organic Constituents, PAHs - Polycyclic Aromatic Hydrocarbons
2. Miscellaneous analytes include one or more of the following:
   Alkalinity, Total (As CaCO3)
   Ammonia
   Ammonia-N
   Chloride
   Dissolved Organic Carbon (DOC)
   Ethane
   Ethene
   Hardness
   Hardness (Filtered)

**TABLE VI**
**SUMMARY OF PART 201 SCREENING CRITERIA FOR SOIL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| | Statewide Default Background Levels {A} | Groundwater Contact Protection Criteria {B} | Soil Saturation Conc. Screening Levels {C} | Non-residential Drinking Water Protection Criteria {D} | Non-residential Soil Volatilization to Indoor Air Inhalation Criteria {E} | Non-residential Infinite Source Volatile Soil Inhalation Criteria (VSIC) {F} | Non-residential Particulate Soil Inhalation Criteria {G} | Non-residential Direct Contact Criteria {H} |
|---|---|---|---|---|---|---|---|---|
| **Inorganic Compounds (mg/kg)** | | | | | | | | |
| Arsenic, Total | 5.8 | 2000 | - | 4.6 | - | - | 910.0001 | 37 |
| Barium, Total | 75 | 1000000 | - | 1300 | - | - | 150000 | 130000 |
| Cadmium, Total | 1.2 | 230000 | - | 6 | - | - | 2200 | 2100 |
| Chromium, Total | - | 140000 | - | 30 | - | - | 240 | 9200 |
| Copper, Total | 32 | 1000000 | - | 5800 | - | - | 59000 | 73000 |
| Lead, Total | 21 | - | - | 700 | - | - | 44000 | 900.0001 |
| Mercury, Total | 0.13 | 47 | - | 1.7 | 89.00001 | 62 | 8800 | 580 |
| Selenium, Total | 0.41 | 78000 | - | 4 | - | - | 59000 | 9600 |
| Silver, Total | 1 | 200000 | - | 13 | - | - | 2900 | 9000 |
| Zinc, Total | 47 | 1000000 | - | 5000 | - | - | - | 630000 |
| **PCBs (mg/kg)** | | | | | | | | |
| Total PCBs | - | - | - | - | 16000 | 810 | 6500 | 16 |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | |
| 1-Methylnaphthalene | - | | | | | | | |
| 2-Methylnaphthalene | - | 5500 | - | 170 | 4900 | 1800 | 290000 | 26000 |
| Acenaphthene | - | 970 | - | 880 | 350000 | 97000 | 6200000 | 130000 |
| Acenaphthylene | - | 440 | - | 17 | 3000 | 2700 | 1000000 | 5200 |
| Anthracene | - | 41 | - | 41 | 1000000 | 1600000 | 29000000 | 730000 |
| Benzo(a)anthracene | - | - | - | - | - | - | - | 80 |
| Benzo(a)pyrene | - | - | - | - | - | - | 1900 | 8 |
| Benzo(b)fluoranthene | - | - | - | - | - | - | - | 80 |
| Benzo(g,h,i)perylene | - | - | - | - | - | - | 350000 | 7000 |
| Benzo(k)fluoranthene | - | - | - | - | - | - | - | 800 |
| Chrysene | - | - | - | - | - | - | - | 8000 |
| Dibenz(a,h)anthracene | - | - | - | - | - | - | - | 8 |
| Fluoranthene | - | 730 | - | 730 | 1000000 | 890000 | 4100000 | 130000 |
| Fluorene | - | 890 | - | 890 | 1000000 | 150000 | 4100000 | 87000 |
| Indeno(1,2,3-cd)pyrene | - | - | - | - | - | - | - | 80 |
| Naphthalene | - | 2100 | - | 100 | 470 | 350 | 88000 | 52000 |
| Phenanthrene | - | 1100 | - | 160 | 5100 | 190 | 2900 | 5200 |
| Pyrene | - | 480 | - | 480 | 1000000 | 780000 | 2900000 | 84000 |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | - | 440 | 440 | 6.4 | 33 | 120 | 530000 | 440 |
| 1,1,1-Trichloroethane | - | 460 | 460 | 4 | 460 | 4500 | 29000000 | 460 |
| 1,1,2,2-Tetrachloroethane | - | 94 | 870 | 0.7 | 23 | 34 | 68000 | 240 |
| 1,1,2-Trichloroethane | - | 420 | 920 | 0.1 | 24 | 57 | 250000 | 840 |
| 1,1-Dichloroethane | - | 890 | 890 | 50 | 430 | 2500 | 15000000 | 890 |
| 1,1-Dichloroethene | - | 220 | 570 | 0.14 | 0.33 | 3.7 | 78000 | 570 |
| 1,2,3-Trichlorobenzene | - | - | - | - | - | - | - | - |
| 1,2,3-Trichloropropane | - | 830 | 830 | 2.4 | 7.5 | 11 | 8800 | 830 |
| 1,2,3-Trimethylbenzene | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | - | 1100 | 1100 | 4.2 | 1100 | 34000 | 11000000 | 1100 |
| 1,2,4-Trimethylbenzene | - | 110 | 110 | 2.1 | 110 | 25000 | 36000000 | 110 |
| 1,2-Dibromo-3-chloropropane (DBCP) | - | 1.2 | 1.2 | 0.01 | 1.2 | 0.9 | 700 | 1.2 |
| 1,2-Dibromoethane (Ethylene Dibromide) | - | 0.5 | 890 | 0.02 | 3.6 | 5.8 | 18000 | 0.43 |
| 1,2-Dichlorobenzene | - | 210 | 210 | 14 | 210 | 46000 | 44000000 | 210 |
| 1,2-Dichloroethane | - | 380 | 1200 | 0.1 | 11 | 21 | 150000 | 420 |
| 1,2-Dichloropropane | - | 320 | 550 | 0.1 | 7.4 | 30 | 120000 | 550 |
| 1,3,5-Trimethylbenzene | - | 94 | 94 | 1.8 | 94 | 19000 | 36000000 | 94 |
| 1,3-Dichlorobenzene | - | 51 | 170 | 0.48 | 48 | 94 | 88000 | 170 |
| 1,4-Dichlorobenzene | - | 140 | - | 1.7 | 100 | 260 | 570000 | 1900 |
| 2-Butanone (Methyl Ethyl Ketone) | - | 27000 | 27000 | 760 | 27000 | 35000 | 29000000 | 27000 |
| 2-Hexanone | - | 2500 | 2500 | 58 | 1800 | 1300 | 1200000 | 2500 |
| 2-Methylnaphthalene | - | 5500 | - | 170 | 4900 | 1800 | 290000 | 26000 |
| 2-Phenylbutane (sec-Butylbenzene) | - | 88 | 10000 | 4.6 | - | - | 180000 | 8000 |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | - | 2700 | 2700 | 100 | 2700 | 53000 | 60000000 | 2700 |
| Acetone | - | 110000 | 110000 | 42 | 110000 | 160000 | 170000000 | 73000 |
| Acrylonitrile | - | 280 | 8300 | 0.22 | 35 | 17 | 58000 | 74 |

**TABLE VI**
**SUMMARY OF PART 201 SCREENING CRITERIA FOR SOIL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| | Statewide Default Background Levels {A} | Groundwater Contact Protection Criteria {B} | Soil Saturation Conc. Screening Levels {C} | Non-residential Drinking Water Protection Criteria {D} | Non-residential Soil Volatilization to Indoor Air Inhalation Criteria {E} | Non-residential Infinite Source Volatile Soil Inhalation Criteria (VSIC) {F} | Non-residential Particulate Soil Inhalation Criteria {G} | Non-residential Direct Contact Criteria {H} |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | |
| Benzene | - | 220 | 400 | 0.1 | 8.4 | 45 | 470000 | 400 |
| Bromobenzene | - | 360 | 760 | 1.5 | 580 | 540 | 240000 | 760 |
| Bromodichloromethane | - | 280 | 1500 | 1.6 | 6.4 | 31 | 110000 | 490 |
| Bromoform | - | 870 | 870 | 1.6 | 770 | 3100 | 3600000 | 870 |
| Bromomethane (Methyl Bromide) | - | 1400 | 2200 | 0.58 | 1.6 | 13 | 150000 | 1000 |
| Carbon disulfide | - | 280 | 280 | 46 | 140 | 1600 | 21000000 | 280 |
| Carbon tetrachloride | - | 92 | 390 | 0.1 | 0.99 | 12 | 170000 | 390 |
| Chlorobenzene | - | 260 | 260 | 2 | 220 | 920 | 2100000 | 260 |
| Chlorobromomethane | - | - | - | - | - | - | - | - |
| Chloroethane | - | 950 | 950 | 34 | 950 | 36000 | 290000000 | 950 |
| Chloroform (Trichloromethane) | - | 1500 | 1500 | 1.6 | 38 | 150 | 1600000 | 1500 |
| Chloromethane (Methyl Chloride) | - | 1100 | 1100 | 22 | 10 | 120 | 2600000 | 1100 |
| cis-1,2-Dichloroethene | - | 640 | 640 | 1.4 | 41 | 210 | 1000000 | 640 |
| cis-1,3-Dichloropropene | - | - | - | - | - | - | - | - |
| Cyclohexane | - | - | - | - | - | - | - | - |
| Cymene (p-Isopropyltoluene) | - | - | - | - | - | - | - | - |
| Dibromochloromethane | - | 360 | 610 | 1.6 | 21 | 80 | 160000 | 500 |
| Dibromomethane | - | 2000 | 2000 | 4.6 | - | - | - | 2000 |
| Dichlorodifluoromethane (CFC-12) | - | 1000 | 1000 | 270 | 1700 | 63000 | 1500000000 | 1000 |
| Ethyl Ether | - | 7400 | 7400 | 0.2 | 7400 | 100000 | 350000000 | 7400 |
| Ethylbenzene | - | 140 | 140 | 1.5 | 140 | 2400 | 13000000 | 140 |
| Hexachloroethane | - | 110 | - | 1.2 | 79 | 660 | 100000 | 730 |
| Iodomethane | - | - | - | - | - | - | - | - |
| Isopropylbenzene | - | 390 | 390 | 260 | 390 | 2000 | 2600000 | 390 |
| Methyl acetate | - | - | - | - | - | - | - | - |
| Methyl cyclohexane | - | - | - | - | - | - | - | - |
| Methyl Tert Butyl Ether | - | 5900 | 5900 | 0.8 | 5900 | 30000 | 88000000 | 5900 |
| Methylene chloride | - | 2300 | 2300 | 0.1 | 240 | 700 | 8300000 | 2300 |
| Naphthalene | - | 2100 | - | 100 | 470 | 350 | 88000 | 52000 |
| n-Butylbenzene | - | 120 | 10000 | 4.6 | - | - | 880000 | 8000 |
| n-Propylbenzene | - | 300 | 10000 | 4.6 | - | - | 590000 | 8000 |
| Styrene | - | 270 | 520 | 2.7 | 520 | 3300 | 6900000 | 520 |
| tert-Butylbenzene | - | 180 | 10000 | 4.6 | - | - | 290000 | 8000 |
| Tetrachloroethene | - | 88 | 88 | 0.1 | 21 | 210 | 1200000 | 88 |
| Tetrahydrofuran | - | 32000 | 120000 | 5.4 | 2400 | 15000 | 170000000 | 9500 |
| Toluene | - | 250 | 250 | 16 | 250 | 3300 | 12000000 | 250 |
| trans-1,2-Dichloroethene | - | 1400 | 1400 | 2 | 43 | 330 | 2100000 | 1400 |
| trans-1,3-Dichloropropene | - | - | - | - | - | - | - | - |
| trans-1,4-Dichloro-2-butene | - | - | - | - | - | - | - | - |
| Trichloroethene | - | 440 | 500 | 0.1 | 1.9 | 14 | 59000 | 500 |
| Trichlorofluoromethane (CFC-11) | - | 560 | 560 | 150 | 560 | 110000 | 1700000000 | 560 |
| Trifluorotrichloroethane (Freon 113) | - | 550 | 550 | 550 | 550 | 210000 | 2300000000 | 550 |
| Vinyl chloride | - | 20 | 490 | 0.04 | 2.8 | 29 | 890000 | 34 |
| Xylene (total) | - | 5.6 | 150 | 5.6 | 150 | 54000 | 130000000 | 150 |

**Notes:**
1. Michigan Part 201 Generic Cleanup Criteria, dated 9/28/2012.

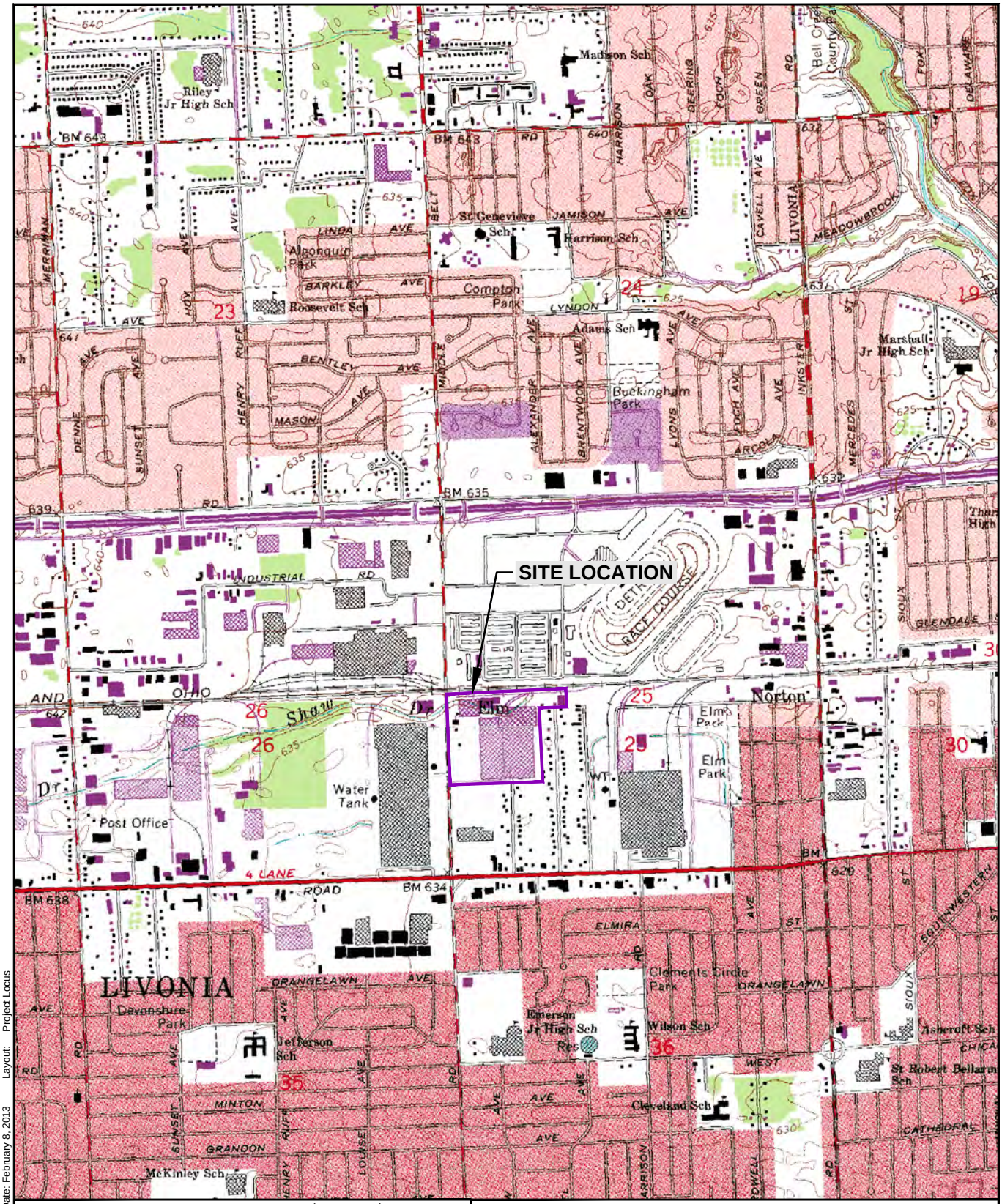
**TABLE VII**
**SUMMARY OF PART 201 SCREENING CRITERIA FOR GROUNDWATER**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| | Non-residential Drinking Water Criteria {A} | Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria {B} | Groundwater Contact Criteria {C} | Water Solubility {D} | Flammability and Explosivity Screening Level {E} | Acute Inhalation Screening Level {F} |
|---|---|---|---|---|---|---|
| **Inorganic Compounds (mg/L)** | | | | | | |
| Arsenic, Dissolved | 0.01 | - | 4.3 | - | - | - |
| Arsenic, Total | 0.01 | - | 4.3 | - | - | - |
| Barium, Dissolved | 2 | - | 14000 | - | - | - |
| Barium, Total | 2 | - | 14000 | - | - | - |
| Cadmium, Dissolved | 0.005 | - | 190 | - | - | - |
| Cadmium, Total | 0.005 | - | 190 | - | - | - |
| Chromium, Dissolved | 0.1 | - | 460 | - | - | - |
| Chromium, Total | 0.1 | - | 460 | - | - | - |
| Copper, Dissolved | 1 | - | 7400 | - | - | - |
| Copper, Total | 1 | - | 7400 | - | - | - |
| Lead, Dissolved | 0.004 | - | - | - | - | - |
| Lead, Total | 0.004 | - | - | - | - | - |
| Mercury, Dissolved | 0.002 | 0.056 | 0.056 | 0.056 | - | - |
| Mercury, Total | 0.002 | 0.056 | 0.056 | 0.056 | - | - |
| Selenium, Dissolved | 0.05 | - | 970 | - | - | - |
| Selenium, Total | 0.05 | - | 970 | - | - | - |
| Silver, Dissolved | 0.098 | - | 1500 | - | - | - |
| Silver, Total | 0.098 | - | 1500 | - | - | - |
| Zinc, Dissolved | 5 | - | 110000 | - | - | - |
| Zinc, Total | 5 | - | 110000 | - | - | - |
| **Semi-Volatile Organic Compounds (mg/L)** | | | | | | |
| 1-Methylnaphthalene | - | - | - | - | - | - |
| 2-Methylnaphthalene | 0.75 | 25 | 25 | 24.6 | - | - |
| Acenaphthene | 3.8 | 4.2 | 4.2 | 4.24 | - | - |
| Acenaphthylene | 0.15 | 3.9 | 3.9 | 3.93 | - | - |
| Anthracene | 0.043 | 0.043 | 0.043 | 0.0434 | - | - |
| Benzo(a)anthracene | 0.0085 | - | 0.0094 | 0.0094 | - | - |
| Benzo(a)pyrene | 0.005 | - | 0.001 | 0.00162 | - | - |
| Benzo(b)fluoranthene | 0.0015 | - | 0.0015 | 0.0015 | - | - |
| Benzo(g,h,i)perylene | 0.001 | - | 0.001 | 0.00026 | - | - |
| Benzo(k)fluoranthene | 0.001 | - | 0.001 | 0.0008 | - | - |
| Chrysene | 0.0016 | - | 0.0016 | 0.0016 | - | - |
| Dibenz(a,h)anthracene | 0.002 | - | 0.002 | 0.00249 | - | - |
| Fluoranthene | 0.21 | 0.21 | 0.21 | 0.206 | - | - |
| Fluorene | 2 | 2 | 2 | 1.98 | - | - |
| Indeno(1,2,3-cd)pyrene | 0.002 | - | 0.002 | 0.000022 | - | - |
| Naphthalene | 1.5 | 31 | 31 | 31 | - | 31 |
| Phenanthrene | 0.15 | 1 | 1 | 1 | - | - |
| Pyrene | 0.14 | 0.14 | 0.14 | 0.135 | - | - |
| **Volatile Organic Compounds (mg/L)** | | | | | | |
| 1,1,1-Trichloroethane | 0.2 | 1300 | 1300 | 1330 | - | 1300 |
| 1,1,2,2-Tetrachloroethane | 0.035 | 77 | 4.7 | 2970 | - | - |
| 1,1,2-Trichloroethane | 0.005 | 110 | 21 | 4420 | - | - |
| 1,1-Dichloroethane | 2.5 | 2300 | 2400 | 5060 | 380 | - |
| 1,1-Dichloroethene | 0.007 | 1.3 | 11 | 2250 | 97 | 140 |
| 1,2,4-Trichlorobenzene | 0.07 | 300 | 19 | 300 | - | 300 |
| 1,2-Dibromo-3-chloropropane (DBCP) | 0.0002 | 1.2 | 0.39 | 1.23 | - | - |
| 1,2-Dibromoethane (Ethylene Dibromide) | 0.00005 | 15 | 0.025 | 4200 | - | - |
| 1,2-Dichlorobenzene | 0.6 | 160 | 160 | 156 | - | 160 |
| 1,2-Dichloroethane | 0.005 | 59 | 19 | 8520 | 2500 | - |
| 1,2-Dichloropropane | 0.005 | 36 | 16 | 2800 | 550 | 2800 |
| 1,3-Dichlorobenzene | 0.019 | 41 | 2 | 111 | - | - |
| 1,4-Dichlorobenzene | 0.075 | 74 | 6.4 | 73.8 | - | - |
| 2-Butanone (Methyl Ethyl Ketone) | 38 | 240000 | 240000 | 240000 | - | 240000 |
| 2-Hexanone | 2.9 | 8700 | 5200 | 16000 | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | 5.2 | 20000 | 13000 | 20000 | - | 20000 |

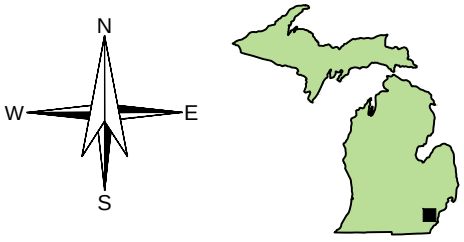
**TABLE VII**
**SUMMARY OF PART 201 SCREENING CRITERIA FOR GROUNDWATER**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| | Non-residential Drinking Water Criteria {A} | Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria {B} | Groundwater Contact Criteria {C} | Water Solubility {D} | Flammability and Explosivity Screening Level {E} | Acute Inhalation Screening Level {F} |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds (mg/L) (con't)** | | | | | | |
| Acetone | 2.1 | 1000000 | 31000 | 1000000 | 15000 | 1000000 |
| Benzene | 0.005 | 35 | 11 | 1750 | 68 | 67 |
| Bromodichloromethane | 0.08 | 37 | 14 | 6740 | - | - |
| Bromoform | 0.08 | 3100 | 140 | 3100 | - | - |
| Bromomethane (Methyl Bromide) | 0.029 | 9 | 70 | 14500 | - | - |
| Carbon disulfide | 2.3 | 550 | 1200 | 1190 | 13 | - |
| Carbon tetrachloride | 0.005 | 2.4 | 4.6 | 793 | - | 96 |
| Chlorobenzene | 0.1 | 470 | 86 | 472 | 160 | - |
| Chloroethane | 1.7 | 5700 | 440 | 5740 | 110 | - |
| Chloroform (Trichloromethane) | 0.08 | 180 | 150 | 7920 | - | - |
| Chloromethane (Methyl Chloride) | 1.1 | 45 | 490 | 6340 | 36 | 210 |
| cis-1,2-Dichloroethene | 0.07 | 210 | 200 | 3500 | 530 | - |
| cis-1,3-Dichloropropene | - | - | - | - | - | - |
| Cyclohexane | - | - | - | - | - | - |
| Dibromochloromethane | 0.08 | 110 | 18 | 2600 | - | - |
| Dichlorodifluoromethane (CFC-12) | 4.8 | 300 | 300 | 300 | - | - |
| Ethylbenzene | 0.074 | 170 | 170 | 169 | 43 | 170 |
| Isopropylbenzene | 2.3 | 56 | 56 | 56 | 29 | - |
| Methyl acetate | - | - | - | - | - | - |
| Methyl cyclohexane | - | - | - | - | - | - |
| Methyl Tert Butyl Ether | 0.04 | 47000 | 610 | 46800 | - | - |
| Methylene chloride | 0.005 | 1400 | 220 | 17000 | - | - |
| Styrene | 0.1 | 310 | 9.7 | 310 | 140 | 310 |
| Tetrachloroethene | 0.005 | 170 | 12 | 200 | - | 200 |
| Toluene | 0.79 | 530 | 530 | 526 | 61 | - |
| trans-1,2-Dichloroethene | 0.1 | 200 | 220 | 6300 | 230 | - |
| trans-1,3-Dichloropropene | - | - | - | - | - | - |
| Trichloroethene | 0.005 | 4.9 | 22 | 1100 | - | 1100 |
| Trichlorofluoromethane (CFC-11) | 7.3 | 1100 | 1100 | 1100 | - | 1100 |
| Trifluorotrichloroethane (Freon 113) | 170 | 170 | 170 | 170 | - | 170 |
| Vinyl chloride | 0.002 | 13 | 1 | 2760 | 33 | - |
| Xylene (total) | 0.28 | 190 | 190 | 186 | 70 | 190 |

**Notes:**
1. Michigan Part 201 Generic Cleanup Criteria, dated 9/28/2012.




SITE COORDINATES: 43Á87'34"N 83Á83'32"W




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

HALEY & ALDRICH

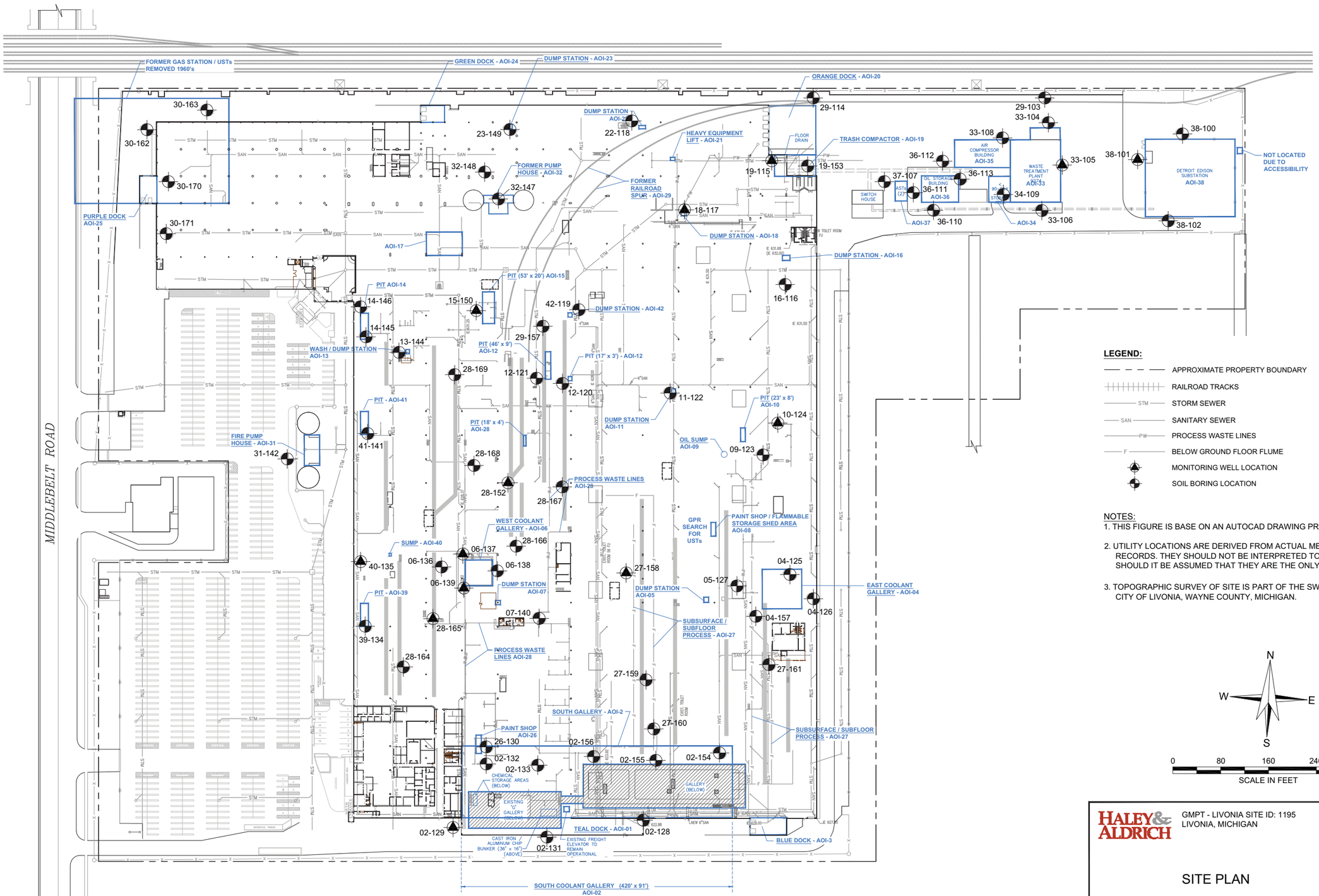
GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

# PROJECT LOCUS

SCALE: 1:24000
FEBRUARY 2013

FIGURE 1

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




**LEGEND:**

- APPROXIMATE PROPERTY BOUNDARY
- RAILROAD TRACKS
- STM — STORM SEWER
- SAN — SANITARY SEWER
- PW — PROCESS WASTE LINES
- F — BELOW GROUND FLOOR FLUME
- MONITORING WELL LOCATION
- SOIL BORING LOCATION

NOTES:

1. THIS FIGURE IS BASE ON AN AUTOCAD DRAWING PROVIDED BY NEDERVELD.
2. UTILITY LOCATIONS ARE DERIVED FROM ACTUAL MEASUREMENTS OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.
3. TOPOGRAPHIC SURVEY OF SITE IS PART OF THE SW $\frac{1}{4}$ OF SECTION 25, T1S, R9E, CITY OF LIVONIA, WAYNE COUNTY, MICHIGAN.

N
W E
S

0 80 160 240 320
SCALE IN FEET

HALEY & ALDRICH

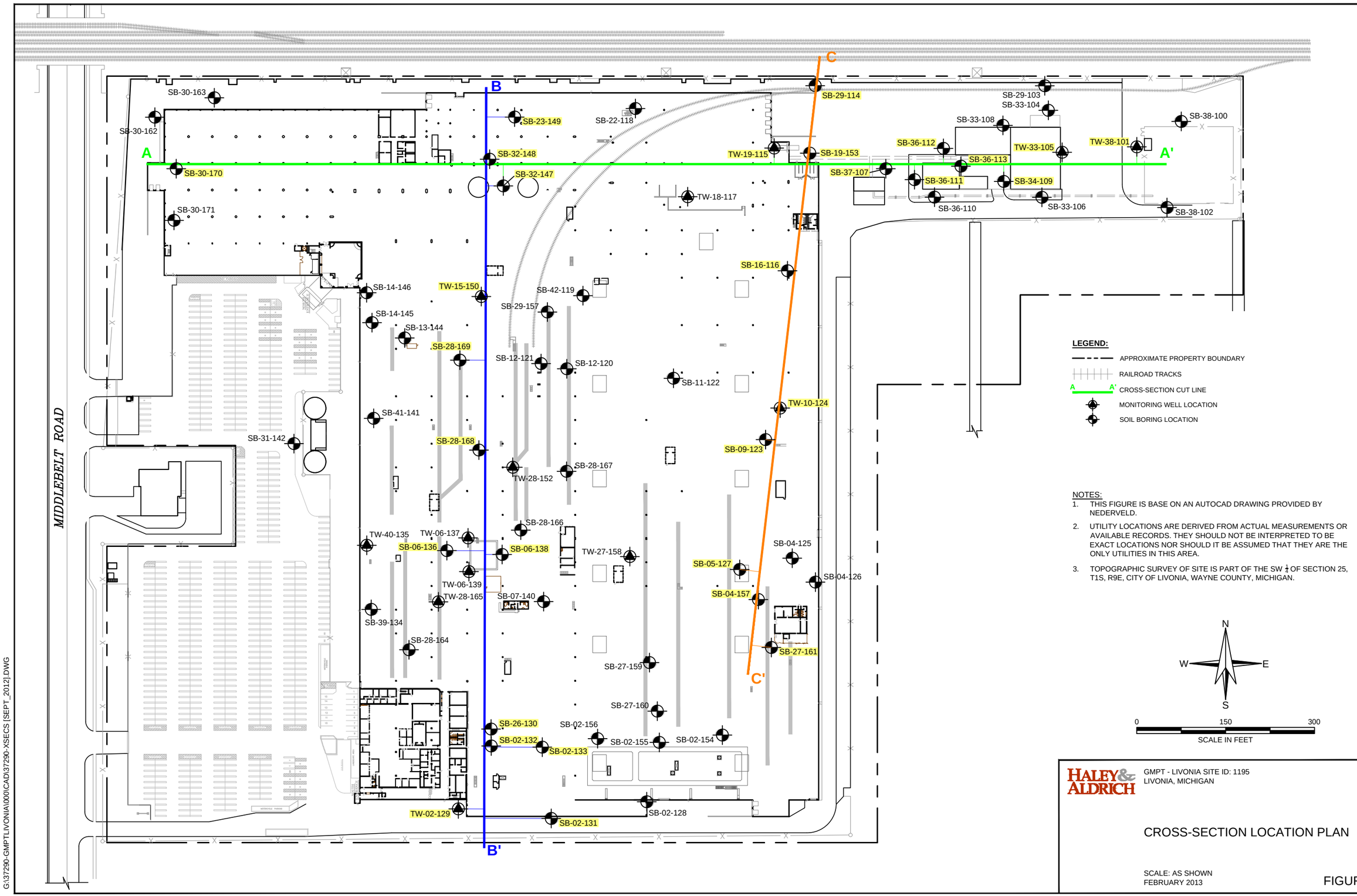
GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

# SITE PLAN

SCALE: AS SHOWN
FEBRUARY 2013

FIGURE 2

G:\37290-GMPTLIVONIA\000\CAD\37290-SITE_PLAN.DWG




NOTES:

1. THIS FIGURE IS BASE ON AN AUTOCAD DRAWING PROVIDED BY NEDERVELD.
2. UTILITY LOCATIONS ARE DERIVED FROM ACTUAL MEASUREMENTS OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.
3. TOPOGRAPHIC SURVEY OF SITE IS PART OF THE SW $\frac{1}{4}$ OF SECTION 25, T1S, R9E, CITY OF LIVONIA, WAYNE COUNTY, MICHIGAN.

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GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

# CROSS-SECTION LOCATION PLAN

SCALE: AS SHOWN
FEBRUARY 2013

FIGURE 3

G:\37290-GMPTLIVONIA\000\CAD\37290-XSECS [SEPT_2012].DWG

A
WEST

A'
EAST

ELEV (FT.)

635
630
625
620
615
610

SB-30-170
EL. 633.15
S 8.05'

SB-32-148
EL. 633.11
N 8.05'

SB-32-147
EL. 633.16
S 36.88'

TW-19-115
EL. 633.04
N 27.11'

SB-19-153
EL. 632.66
N 18.41'

SB-37-107
EL. 633.66
S 7.74'

SB-36-111
EL. 633.38
S 26.19'

SB-36-112
EL. 633.31
N 26.52'

SB-36-113
EL. 633.60
S 3.42'

SB-34-109
EL. 633.57
S 29.24'

TW-33-105
EL. 633.27
N 20.09'

TW-38-101
EL. 634.64
N 29.24'

CONCRETE
OL/OH
CH
CL
SP-SC (FILL)
SAND
CLAY
MH
SC
GRAVEL/CINDERS
FOUNDRY SAND (FILL)
SP (FILL)
SP
SP-SC
CONC.
GRAVEL (FILL)
TILE/CONC.
GP (FILL)
GRAVEL/SAND /FINES (FILL)
FILL
ML
CH (FILL)

?

EXPLORATION LEGEND

TW-19-115 — EXPLORATION DESIGNATION
EL. 633.04 — GROUND SURFACE ELEVATION
N 27.11 — DIRECTION AND DISTANCE FROM CROSS-SECTION CUT LINE
DENOTES PRESENCE OF STAND-UP PIPE
GROUND SURFACE
POINT OF STRATAGRAPHIC CHANGE
CL — USCS SOIL DESIGNATION
SCREENED INTERVAL

HORIZ. 0 120 240
VERT. 0 5 10
APPROXIMATE SCALE IN FEET

HALEY & ALDRICH

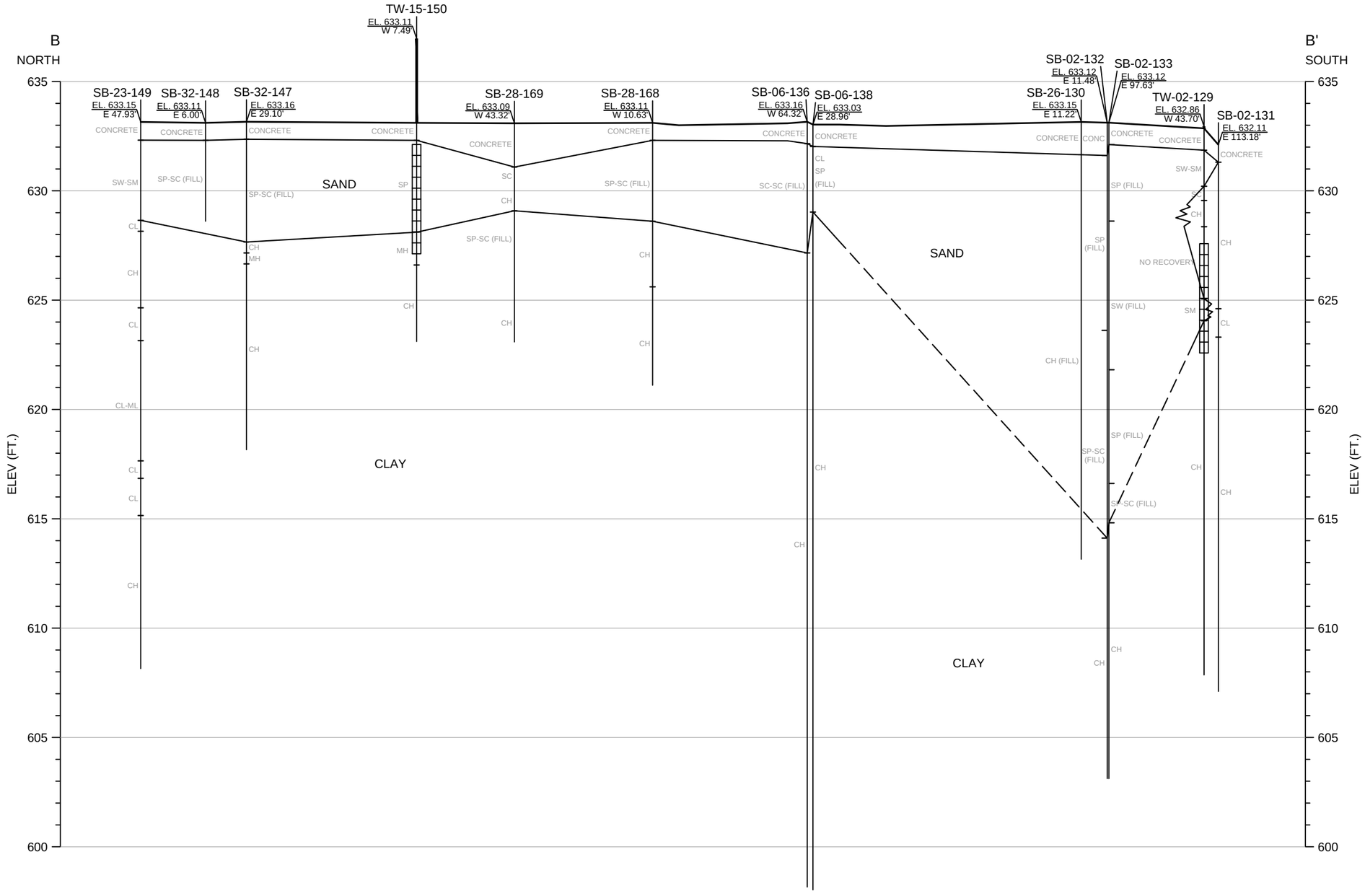
GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

# CROSS-SECTION A-A'

SCALE: AS SHOWN
FEBRUARY 2013

FIGURE 4

G:\37290-GMPT\LIVONIA\000\CAD\37290-XSECS [SEPT_2012].DWG




EXPLORATION LEGEND

TW-19-115 — EXPLORATION DESIGNATION

EL. 633.04
N 27.11 — GROUND SURFACE ELEVATION; DIRECTION AND DISTANCE FROM CROSS-SECTION CUT LINE

DENOTES PRESENCE OF STAND-UP PIPE

GROUND SURFACE

POINT OF STRATAGRAPHIC CHANGE

CL — USCS SOIL DESIGNATION

SCREENED INTERVAL

HORIZ. 0 120 240
VERT. 0 5 10
APPROXIMATE SCALE IN FEET

HALEY & ALDRICH

GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

# CROSS-SECTION B-B'

SCALE: AS SHOWN
FEBRUARY 2013

FIGURE 5

G:\37290-GMPT\LIVONIA\000\CAD\37290-XSECS [SEPT_2012].DWG

C
NORTH

C'
SOUTH

ELEV (FT.)

635
630
625
620
615
610
605
600

SB-29-114
EL. 631.85
W 2.01'

SB-19-153
EL. 632.66
E 2.01'

SB-16-116
EL. 633.12
W 12.36'

TW-10-124
EL. 633.09
E 2.12'

SB-09-123
EL. 633.13
W 16.13'

SB-05-127
EL. 633.15
W 34.10'

SB-04-157
EL. 633.05
E 3.05'

SB-27-161
EL. 633.08
E 34.10'

CONCRETE/GRAVEL
CONCRETE
GRAVEL/CINDERS
SP-SC (FILL)
SP (FILL)
SAND
SP-SC
CH
CLAY
SW-SM
OH
CLAY
CL-ML
CH
CLAY
SAND
SP
CH
CONCRETE
CLAY
CL (FILL)
SW
CH
CLAY
CONCRETE
SM
SW-SM
CH
CL-ML
CH
CONCRETE
SAND
SP-SC
MH
CH
CONCRETE
CLAY
CL-ML (FILL)
SP-SC (FILL)
CH (FILL)
SP-SC (FILL)
CH
SC
SAND
CH
CLAY
CH

EXPLORATION LEGEND

TW-19-115 — EXPLORATION DESIGNATION
EL. 633.04 — GROUND SURFACE ELEVATION
N 27.11 — DIRECTION AND DISTANCE FROM CROSS-SECTION CUT LINE
DENOTES PRESENCE OF STAND-UP PIPE
GROUND SURFACE
POINT OF STRATAGRAPHIC CHANGE
CL — USCS SOIL DESIGNATION
SCREENED INTERVAL

HORIZ. 0 80 160
VERT. 0 5 10
APPROXIMATE SCALE IN FEET

HALEY & ALDRICH

GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

# CROSS-SECTION C-C'

SCALE: AS SHOWN
FEBRUARY 2013

FIGURE 6

G:\37290-GMPT LIVONIA\000\CAD\37290-XSECS [SEPT_2012].DWG

| SB-15-150 | 7/20/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.26 [<A] 0.57 [<A] |
| Barium | 7.58 [<A] 5.94 [<A] |
| Chromium | 1.5 1.03 |
| Copper | 2.8 J [<A] 4.72 J [<A] |
| Lead | 1.84 [<A] 1.55 [<A] |
| Zinc | 6.6 [<A] 5.65 [<A] |

| SB-30-163 | 7/31/2012 8 - 10 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 4.59 [<A] |
| Barium | 72.2 [<A] |
| Chromium | 15.3 |
| Copper | 19.1 [<A] |
| Lead | 9.05 [<A] |
| Zinc | 42.1 [<A] |

| SB-12-120 | 7/26/2012 4 - 6 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 3.49 [<A] |
| Barium | 54.7 [<A] |
| Cadmium | 0.21 [<A] |
| Chromium | 7.59 |
| Copper | 17.2 [<A] |
| Lead | 8.97 [<A] |
| Zinc | 34.8 [<A] |

| SB-32-147 | 7/20/2012 8 - 10 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 3.12 [<A] |
| Barium | 27.7 [<A] |
| Chromium | 5.99 |
| Copper | 15 [<A] |
| Lead | 7.3 [<A] |
| Zinc | 24.8 [<A] |

| SB-32-148 | 7/20/2012 2.5 - 4.5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.97 [<A] |
| Barium | 27 [<A] |
| Chromium | 2.26 |
| Copper | 5.15 [<A] |
| Lead | 4.87 [<A] |
| Zinc | 8.05 [<A] |

| SB-42-119 | 7/26/2012 3 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.64 [<A] |
| Barium | 26.1 [<A] |
| Chromium | 4.51 |
| Copper | 7.24 [<A] |
| Lead | 5.43 [<A] |
| Zinc | 16.1 [<A] |

| SB-22-118 | 7/19/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.78 [<A] |
| Barium | 5.78 [<A] |
| Chromium | 0.98 |
| Copper | 1.73 [<A] |
| Lead | 1.6 [<A] |
| Zinc | 5.94 [<A] |

| SB-19-153 | 7/25/2012 3.5 - 5.5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 2.07 [<A] |
| Barium | 51.7 [<A] |
| Chromium | 4.63 |
| Copper | 8.63 [<A] |
| Lead | 5.21 [<A] |
| Zinc | 21 [<A] |

| SB-29-114 | 7/31/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.44 [<A] |
| Barium | 26.8 [<A] |
| Chromium | 3.11 |
| Copper | 7.91 [<A] |
| Lead | 5.45 [<A] |
| Zinc | 12.7 [<A] |

| SB-36-111 | 7/25/2012 0.5 - 2.5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.31 [<A] |
| Barium | 11.1 [<A] |
| Chromium | 2.06 |
| Copper | 3.3 [<A] |
| Lead | 2.66 [<A] |
| Zinc | 9.71 [<A] |

| SB-36-112 | 7/31/2012 0 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.02 [<A] 1.47 [<A] |
| Barium | 36.4 [<A] 58.4 [<A] |
| Chromium | 4.17 4.29 |
| Copper | 5.9 [<A] 6.76 [<A] |
| Lead | 22.1 43.8 |
| Zinc | 28.6 [<A] 24.8 [<A] |
| PCBs | |
| Aroclor-1260 (PCB-1260) | 1.0 J 4 |
| Volatile Organic Compounds | |
| 1,2,4-Trichlorobenzene | 0.4 0.6 |
| 1,3-Dichlorobenzene | 0.12 0.18 |
| 1,4-Dichlorobenzene | 0.15 0.23 |

| SB-29-103 | 7/30/2012 0 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.47 [<A] |
| Barium | 12.7 [<A] |
| Chromium | 1.2 |
| Copper | 3.84 [<A] |
| Lead | 4.87 [<A] |
| Zinc | 5.7 [<A] |

| SB-33-104 | 7/30/2012 0 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.4 [<A] |
| Barium | 7.97 [<A] |
| Chromium | 2.17 |
| Copper | 2.44 [<A] |
| Lead | 2.36 [<A] |
| Zinc | 3.82 [<A] |

| SB-33-105 | 7/30/2012 0 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.43 [<A] |
| Barium | 10.1 [<A] |
| Chromium | 2.44 |
| Copper | 5.73 [<A] |
| Lead | 3.07 [<A] |
| Zinc | 13.4 [<A] |

| TW-33-105 | 8/8/2012 4 - 9 (ft) | 12/10/2012 4 - 9 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | 0.006 | 0.004 |
| Arsenic, Total | 0.015 [A] | 0.0072 |
| Barium, Dissolved | 0.03 | - |
| Barium, Total | 0.126 | - |
| Cadmium, Dissolved | 0.0005 U | - |
| Cadmium, Total | 0.0014 | - |
| Chromium, Dissolved | 0.003 U | - |
| Chromium, Total | 0.007 | - |
| Copper, Dissolved | 0.007 | - |
| Copper, Total | 0.048 | - |
| Lead, Dissolved | 0.003 U | 0.003 U |
| Lead, Total | 0.009 [A] | 0.003 U |
| Zinc, Dissolved | 0.022 | - |
| Zinc, Total | 0.044 | - |

| SB-30-162 | 7/31/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.98 [<A] |
| Barium | 64.7 [<A] |
| Cadmium | 0.82 [<A] |
| Chromium | 7.31 |
| Copper | 31.6 [<A] |
| Lead | 35.9 |
| Mercury | 0.1 [<A] |
| Zinc | 82.7 |

| SB-37-107 | 7/25/2012 3 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Barium | 14.2 [<A] |
| Chromium | 1.04 |
| Copper | 0.56 [<A] |
| Lead | 2.06 [<A] |
| Zinc | 1.89 [<A] |

| SB-38-100 | 7/27/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.09 [<A] |
| Barium | 27.8 [<A] |
| Cadmium | 0.27 [<A] |
| Chromium | 3.14 |
| Copper | 17.4 [<A] |
| Lead | 38.4 |
| Zinc | 31.1 [<A] |
| Semi-Volatile Organic Compounds | |
| Anthracene | 0.6 |
| Benzo(a)anthracene | 2.5 |
| Benzo(a)pyrene | 3.4 |
| Benzo(b)fluoranthene | 5.3 |
| Benzo(g,h,i)perylene | 1.9 |
| Benzo(k)fluoranthene | 5.8 |
| Chrysene | 2.6 |
| Dibenz(a,h)anthracene | 0.5 |
| Fluoranthene | 5 |
| Indeno(1,2,3-cd)pyrene | 1.6 |
| Phenanthrene | 2.6 |
| Pyrene | 4.7 |

| SB-12-121 | 6/25/2012 3 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 2.01 [<A] |
| Barium | 49.7 [<A] |
| Chromium | 4.24 |
| Copper | 7.35 [<A] |
| Lead | 6.8 [<A] |
| Zinc | 21 [<A] |

| TW-19-115 | 8/10/2012 4 - 9 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic, Total | 0.004 |
| Barium, Total | 0.172 |
| Copper, Total | 0.005 |
| Lead, Total | 0.004 |
| Zinc, Total | 0.013 |

| SB-38-101 | 7/27/2012 2.5 - 4.5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.75 [<A] |
| Barium | 31.5 [<A] |
| Chromium | 4.37 |
| Copper | 9.39 [<A] |
| Lead | 9.83 [<A] |
| Zinc | 15.7 [<A] |

| SB-30-171 | 7/20/2012 10 - 12 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 4.48 [<A] 4.05 [<A] |
| Barium | 19.8 [<A] 19.8 [<A] |
| Chromium | 3.87 2.83 |
| Copper | 13.3 [<A] 15.1 [<A] |
| Lead | 5.59 [<A] 5.87 [<A] |
| Zinc | 24.7 [<A] 29.5 [<A] |

| TW-38-101 | 8/8/2012 2.5 - 7.5 (ft) | 12/10/2012 2.5 - 7.5 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | 0.005 | - |
| Arsenic, Total | 0.005 | - |
| Barium, Dissolved | 0.046 | - |
| Barium, Total | 0.048 | - |
| Copper, Dissolved | 0.013 | - |
| Copper, Total | 0.013 | - |
| Lead, Dissolved | 0.003 U | 0.003 U |
| Lead, Total | 0.007 [A] | 0.003 U |
| Zinc, Dissolved | 0.005 | - |
| Zinc, Total | 0.005 U | - |

| SB-14-146 | 6/21/2012 4 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 2.02 [<A] |
| Barium | 62.6 [<A] |
| Cadmium | 0.23 [<A] |
| Chromium | 5 |
| Copper | 12.6 [<A] |
| Lead | 8.87 [<A] |
| Zinc | 22.4 [<A] |
| Volatile Organic Compounds | |
| Acetone | 2 |

| SB-38-102 | 7/31/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.6 [<A] |
| Barium | 50.1 [<A] |
| Cadmium | 0.35 [<A] |
| Chromium | 3.75 |
| Copper | 6.97 [<A] |
| Lead | 18.8 [<A] |
| Zinc | 25.1 [<A] |

| SB-14-145 | 7/27/2012 2 - 4 (ft) | 7/27/2012 6 - 8 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic | 0.48 [<A] | 1.31 [<A] |
| Barium | 17.7 [<A] | 72.2 [<A] |
| Chromium | 3.65 | 8.93 |
| Copper | 4.51 [<A] | 6.23 [<A] |
| Lead | 2.5 [<A] | 5.6 [<A] |
| Zinc | 8.27 [<A] | 23.8 [<A] |

| SB-34-109 | 7/31/2012 0 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.34 [<A] |
| Barium | 6.65 [<A] |
| Chromium | 2.28 |
| Copper | 3.78 [<A] |
| Lead | 2.57 [<A] |
| Zinc | 9.07 [<A] |

| SB-13-144 | 7/26/2012 1.5 - 3.5 (ft) | 7/26/2012 7.5 - 9.5 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic | 0.44 [<A] | 1.59 [<A] |
| Barium | 27.5 [<A] | 58 [<A] |
| Chromium | 3.04 | 6.78 |
| Copper | 4.95 [<A] | 5.91 [<A] |
| Lead | 3.57 [<A] | 4.92 [<A] |
| Zinc | 10.7 [<A] | 19.6 [<A] |

| SB-33-106 | 7/27/2012 8 - 10 (ft) | 7/27/2012 32 - 34 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic | 0.44 [<A] | 5.41 [<A] |
| Barium | 25.7 [<A] | 66.6 [<A] |
| Cadmium | 0.2 U | 0.25 [<A] |
| Chromium | 2.83 | 9.27 |
| Copper | 2.88 [<A] | 16.4 [<A] |
| Lead | 3.18 [<A] | 8.4 [<A] |
| Zinc | 7.45 [<A] | 34.8 [<A] |

| SB-28-169 | 7/26/2012 1.5 - 3.5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.44 [<A] |
| Barium | 31.5 [<A] |
| Chromium | 3.52 |
| Copper | 4.8 [<A] |
| Lead | 4 [<A] |
| Zinc | 11.8 [<A] |

| SB-36-113 | 7/31/2012 3 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.41 [<A] |
| Barium | 12.8 [<A] |
| Chromium | 3.64 |
| Copper | 3.96 [<A] |
| Lead | 2.56 [<A] |
| Zinc | 9.52 [<A] |

| SB-41-141 | 6/22/2012 3 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.29 [<A] |
| Barium | 10.8 [<A] |
| Chromium | 1.29 |
| Copper | 1.24 [<A] |
| Lead | 1.9 [<A] |
| Zinc | 5.97 [<A] |

| SB-36-116 | 6/25/2012 1 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 2.45 [<A] |
| Barium | 64.8 [<A] |
| Chromium | 4.07 |
| Copper | 10.6 [<A] |
| Lead | 9.02 [<A] |
| Zinc | 18.3 [<A] |

| SB-36-110 | 7/25/2012 0.5 - 2.5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.32 [<A] |
| Barium | 13 [<A] |
| Chromium | 2.59 |
| Copper | 3.89 [<A] |
| Lead | 3.13 [<A] |
| Zinc | 9.71 [<A] |

| SB-31-142 | 8/1/2012 0 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.55 [<A] |
| Barium | 25.1 [<A] |
| Cadmium | 0.23 [<A] |
| Chromium | 4.45 |
| Copper | 5.9 [<A] |
| Lead | 12.9 [<A] |
| Zinc | 19.5 [<A] |

| SB-10-124 | 7/16/2012 4 - 6 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.95 [<A] |
| Barium | 18.7 [<A] |
| Chromium | 2.39 |
| Copper | 4.33 [<A] |
| Lead | 6.27 [<A] |
| Zinc | 8.82 [<A] |

| TW-10-124 | 8/9/2012 3 - 8 (ft) | 12/12/2012 3 - 8 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | 0.007 | 0.009 |
| Arsenic, Total | 0.071 [A] | 0.091 [A] |
| Barium, Dissolved | 0.193 | - |
| Barium, Total | 0.238 | - |
| Copper, Dissolved | 0.004 U | - |
| Copper, Total | 0.008 | - |
| Lead, Dissolved | 0.003 U | 0.003 U |
| Lead, Total | 0.006 [A] | 0.003 U |
| Zinc, Dissolved | 0.026 | - |
| Zinc, Total | 0.024 | - |

| SB-28-168 | 7/23/2012 6 - 8 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 2.28 [<A] |
| Barium | 47.9 [<A] |
| Cadmium | 0.21 [<A] |
| Chromium | 6.47 |
| Copper | 11.6 [<A] |
| Lead | 7.24 [<A] |
| Zinc | 31.2 [<A] |

| TW-40-135 | 8/9/2012 5 - 10 (ft) | 12/10/2012 5 - 10 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | 0.009/0.009 | 0.005 |
| Arsenic, Total | 0.011 J [A]/0.011 J [A] | 0.015 [A] |
| Barium, Dissolved | 0.067/0.066 | - |
| Barium, Total | 0.072/0.076 | - |
| Lead, Dissolved | 0.003/0.003 | - |
| Lead, Total | 0.004/0.003 | - |
| Zinc, Dissolved | 0.016/0.016 | - |
| Zinc, Total | 0.005 U/0.005 U | - |

| SB-09-123 | 7/16/2012 6 - 8 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 2.21 [<A] |
| Barium | 58.9 [<A] |
| Cadmium | 0.31 [<A] |
| Chromium | 5.38 |
| Copper | 19.7 [<A] |
| Lead | 10.5 [<A] |
| Selenium | 0.64 |
| Zinc | 30 [<A] |

| SB-40-135 | 7/24/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 2.01 [<A] |
| Barium | 16.2 [<A] |
| Chromium | 2.9 |
| Copper | 4.56 [<A] |
| Lead | 3.19 [<A] |
| Zinc | 14.1 [<A] |

| SB-04-126 | 7/25/2012 24 - 26 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 4.55 [<A] |
| Barium | 61.3 [<A] |
| Cadmium | 0.25 [<A] |
| Chromium | 9.39 |
| Copper | 19.8 [<A] |
| Lead | 8.34 [<A] |
| Zinc | 37.1 [<A] |
| Volatile Organic Compounds | |
| Methyl cyclohexane | 0.19 |

| SB-28-152 | 7/24/2012 4 - 6 (ft) |
|---|---|
| Inorganic Compounds | |
| Barium | 9.21 [<A] |
| Chromium | 2.89 |
| Copper | 1.65 [<A] |
| Lead | 2.24 [<A] |
| Zinc | 11.3 [<A] |
| Volatile Organic Compounds | |
| m&p-Xylene | 0.22 |
| o-Xylene | 0.08 |

| SB-05-127 | 6/18/2012 3 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.42 [<A] |
| Barium | 21.3 [<A] |
| Chromium | 1.43 |
| Copper | 2.73 [<A] |
| Lead | 2.26 [<A] |
| Zinc | 4.36 [<A] |

| SB-04-157 | 7/17/2012 3 - 5 (ft) | 7/17/2012 8 - 10 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic | 0.98 [<A] | 8.58 [D] |
| Barium | 20.3 [<A] | 67.2 [<A] |
| Cadmium | 0.21 [<A] | 0.2 U |
| Chromium | 1.65 | 11.4 |
| Copper | 5.54 [<A] | 18.3 [<A] |
| Lead | 2.72 [<A] | 8.52 [<A] |
| Zinc | 13.6 [<A] | 38.6 [<A] |

| TW-28-152 | 8/10/2012 5 - 10 (ft) | 12/11/2012 5 - 10 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | - | 0.038 [A] |
| Arsenic, Total | 0.027 [A] | 0.035 [A] |
| Barium, Total | 0.136 | - |
| Copper, Total | 0.016 | - |
| Selenium, Total | 0.007 | - |
| Zinc, Total | 0.011 | - |
| Volatile Organic Compounds | | |
| Acetone | 2 | - |

| TW-06-139 | 8/9/2012 18.5 - 23.5 (ft) | 12/12/2012 18.5 - 23.5 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | 0.006 J/0.011 J [A] | 0.008 |
| Arsenic, Total | 0.028 J [A]/0.037 J [A] | 0.036 [A] |
| Barium, Dissolved | 0.11/0.11 | - |
| Barium, Total | 0.154/0.154 | - |
| Zinc, Dissolved | 0.036/0.029 | - |
| Zinc, Total | 0.005/0.005 U | - |

| SB-02-131 | 6/20/2012 1 - 2 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.8 [<A] |
| Barium | 81 |
| Cadmium | 0.24 [<A] |
| Chromium | 4.14 |
| Copper | 14.5 [<A] |
| Lead | 8.61 [<A] |
| Zinc | 15.5 [<A] |

| SB-27-159 | 7/19/2012 7 - 9 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.83 [<A] |
| Barium | 40.6 [<A] |
| Chromium | 5.47 |
| Copper | 5.98 [<A] |
| Lead | 5.64 [<A] |
| Zinc | 19.6 [<A] |

| TW-27-158 | 8/9/2012 5 - 10 (ft) | 12/11/2012 5 - 10 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | 0.003 | 0.01/0.009 |
| Arsenic, Total | 0.018 [A] | 0.019 [A]/0.019 [A] |
| Barium, Dissolved | 0.137 | - |
| Barium, Total | 0.169 | - |
| Copper, Dissolved | 0.004 U | - |
| Copper, Total | 0.013 | - |
| Lead, Dissolved | 0.003 U | 0.003 U/0.003 U |
| Lead, Total | 0.012 [A] | 0.003 U/0.003 U |
| Zinc, Dissolved | 0.022 | - |
| Zinc, Total | 0.034 | - |

| SB-06-136 | 7/23/2012 22 - 24 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 4.75 [<A] |
| Barium | 61.8 [<A] |
| Cadmium | 0.25 [<A] |
| Chromium | 6.83 |
| Copper | 16.3 [<A] |
| Lead | 9.09 [<A] |
| Zinc | 39.1 [<A] |
| Volatile Organic Compounds | |
| Methyl cyclohexane | 0.22 |

| SB-06-137 | 7/23/2012 22 - 24 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 7.03 [D] |
| Barium | 47.6 [<A] |
| Cadmium | 0.2 [<A] |
| Chromium | 5.79 |
| Copper | 17.5 [<A] |
| Lead | 9.04 [<A] |
| Zinc | 31.6 [<A] |
| Volatile Organic Compounds | |
| Methyl cyclohexane | 0.15 |

| TW-28-165 | 8/9/2012 5 - 10 (ft) |
|---|---|
| Inorganic Compounds | |
| Barium, Total | 0.266 |

| TW-06-137 | 8/9/2012 16 - 21 (ft) | 12/12/2012 16 - 21 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Barium, Total | 0.316 | - |
| Cadmium, Total | 0.0006 | - |
| Copper, Total | 0.035 | - |
| Lead, Dissolved | - | 0.003 U |
| Lead, Total | 0.005 [A] | 0.003 U |
| Zinc, Total | 0.029 | - |

| SB-06-139 | 7/24/2012 22 - 24 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 0.94 [<A] |
| Barium | 5.51 [<A] |
| Chromium | 1.32 |
| Copper | 3.36 [<A] |
| Lead | 2.35 [<A] |
| Zinc | 12.4 [<A] |

| TW-02-129 | 8/8/2012 5 - 10 (ft) | 12/11/2012 5 - 10 (ft) |
|---|---|---|
| Inorganic Compounds | | |
| Arsenic, Dissolved | 0.003 | - |
| Arsenic, Total | 0.004 | - |
| Barium, Dissolved | 0.602 | - |
| Barium, Total | 0.614 | - |
| Cadmium, Dissolved | 0.0005 U | - |
| Cadmium, Total | 0.0009 | - |
| Lead, Dissolved | 0.022 [A] | 0.003 U |
| Lead, Total | 0.005 [A] | 0.003 U |
| Zinc, Dissolved | 0.051 | - |
| Zinc, Total | 0.039 | - |

| SB-28-130 | 7/18/2012 16 - 18 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 3.78 [<A] |
| Barium | 70 [<A] |
| Chromium | 6.85 |
| Copper | 19 [<A] |
| Lead | 8.76 [<A] |
| Selenium | 0.67 |
| Zinc | 28.6 [<A] |

| SB-02-132 | 7/18/2012 20 - 22 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 4.73 [<A] |
| Barium | 32.1 [<A] |
| Cadmium | 0.22 [<A] |
| Chromium | 5.79 |
| Copper | 17.8 [<A] |
| Lead | 7.96 [<A] |
| Selenium | 0.66 |
| Zinc | 31.4 [<A] |
| Volatile Organic Compounds | |
| Methyl cyclohexane | 0.1 |

| SB-06-138 | 7/19/2012 22.5 - 24.5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 4.34 [<A] |
| Barium | 53 [<A] |
| Chromium | 5.33 |
| Copper | 15.9 [<A] |
| Lead | 7.34 [<A] |
| Zinc | 30.5 [<A] |

| SB-01-140 | 7/19/2012 10 - 12 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.27 [<A] |
| Barium | 54.1 [<A] |
| Chromium | 4.94 |
| Copper | 11.2 [<A] |
| Lead | 7.36 [<A] |
| Zinc | 22.5 [<A] |

| SB-25-166 | 7/24/2012 4 - 6 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.52 [<A] 1.43 [<A] |
| Barium | 9.32 [<A] 7.46 [<A] |
| Chromium | 2.08 2.47 |
| Copper | 6.56 [<A] 18.2 [<A] |
| Lead | 4.08 [<A] 3.75 [<A] |
| Zinc | 11.8 [<A] 12.3 [<A] |

| SB-28-167 | 7/24/2012 2 - 4 (ft) |
|---|---|
| Inorganic Compounds | |
| Barium | 24 [<A] |
| Chromium | 3.81 |
| Copper | 2.56 [<A] |
| Lead | 2.36 [<A] |
| Zinc | 8.42 [<A] |

| SB-27-158 | 7/19/2012 3 - 5 (ft) |
|---|---|
| Inorganic Compounds | |
| Arsenic | 1.4 [<A] |
| Barium | 12.8 [<A] |
| Chromium | 2.09 |
| Copper | 3.95 [<A] |
| Lead | 3.32 [<A] |
| Zinc | 8.31 [<A] |

FORMER GAS STATION / USTs REMOVED 1960's
GREEN DOCK - AOI-24
DUMP STATION - AOI-23
ORANGE DOCK - AOI-20
DUMP STATION AOI-22
HEAVY EQUIPMENT LIFT - AOI-21
TRASH COMPACTOR - AOI-19
FORMER PUMP HOUSE - AOI-32
FORMER RAILROAD SPUR - AOI-29
PURPLE DOCK AOI-25
AOI-17
DUMP STATION - AOI-18
DUMP STATION - AOI-16
PIT (53' x 20') AOI-15
PIT AOI-14
WASH / DUMP STATION AOI-13
PIT (40' x 9') AOI-12
PIT (17' x 3') - AOI-12
PIT - AOI-41
PIT (18' x 4') AOI-28
DUMP STATION AOI-11
PIT (23' x 8') AOI-10
OIL SUMP AOI-09
FIRE PUMP HOUSE - AOI-31
PROCESS WASTE LINES
WEST COOLANT GALLERY - AOI-06
GPR SEARCH FOR USTs
PAINT SHOP / FLAMMABLE STORAGE SHED AREA AOI-08
SUMP - AOI-40
PIT - AOI-39
DUMP STATION AOI-07
SUMP STATION AOI-05
EAST COOLANT GALLERY - AOI-04
SUBSURFACE / SUBFLOOR PROCESS - AOI-27
PROCESS WASTE LINES AOI-28
SOUTH GALLERY - AOI-2
PAINT SHOP AOI-26
CHEMICAL STORAGE AREAS (BELOW)
EXISTING GALLERY (BELOW)
TEAL DOCK - AOI-01
BLUE DOCK - AOI-3
CAST IRON / ALUMINUM CHIP BUNKER (36' x 16') (ABOVE)
CONVEYOR BELT SYSTEM (ABOVE) NON-OPERATIONAL
SOUTH COOLANT GALLERY (420' x 91') AOI-02
MIDDLEBELT ROAD
NOT LOCATED DUE TO ACCESSIBILITY
AOI-37
AOI-34
AOI-38

**LEGEND:**

- APPROXIMATE PROPERTY BOUNDARY
- RAILROAD TRACKS
- TEMPORARY MONITORING WELL LOCATION
- SOIL BORING LOCATION

NOTES:

1. THIS FIGURE IS BASE ON AN AUTOCAD DRAWING PROVIDED BY NEDERVELD.
2. UTILITY LOCATIONS ARE DERIVED FROM ACTUAL MEASUREMENTS OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.
3. TOPOGRAPHIC SURVEY OF SITE IS PART OF THE SW ¼ OF SECTION 25, T1S, R9E, CITY OF LIVONIA, WAYNE COUNTY, MICHIGAN.
4. GROUNDWATER DATA SHOWN IN BLUE DATABOX. RESULT SHOWN IN MG/L.
   - [A] - NON-RESIDENTIAL DRINKING WATER CRITERIA
   - [B] - NON-RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
   - [C] - GROUNDWATER CONTACT CRITERIA
   - [D] - WATER SOLUBILITY
   - [E] - FLAMMABILITY AND EXPLOSIVITY SCREENING LEVEL
   - [F] - ACUTE INHALATION SCREENING LEVEL
5. SOIL DATA SHOWN IN WHITE DATABOX. RESULT SHOWN IN MG/KG.
   - [<A] - LESS THAN STATEWIDE DEFAULT BACKGROUND LEVELS, NOT SCREENED FOR OTHER CRITERIA
   - [B] - GROUNDWATER CONTACT PROTECTION CRITERIA
   - [C] - SOIL SATURATION CONCENTRATION SCREENING LEVELS
   - [D] - NON-RESIDENTIAL DRINKING WATER PROTECTION CRITERIA
   - [E] - NON-RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
   - [F] - NON-RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
   - [G] - NON-RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
   - [H] - NON-RESIDENTIAL DIRECT CONTACT CRITERIA
6. CHEMICALS SHOWN IN BOX WERE DETECTED AT THAT LOCATION IN SOIL AND/OR GROUNDWATER.

N W E S

0 80 160 240 320
SCALE IN FEET

HALEY & ALDRICH

GMPT - LIVONIA SITE ID: 1195
LIVONIA, MICHIGAN

# SOIL AND GROUNDWATER ANALYTICAL DATA

SCALE: AS SHOWN
FEBRUARY 2013

FIGURE 7

G:\37290-GMPT\LIVONIA_THRU 10-18-2011_DTR AFTER\GLOBAL\CAD\DRAWINGS\37290-DATABOX-D2.DWG

**APPENDIX A**

**Soil Boring and Temporary Monitoring Well Logs**

**(On CD)**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-128**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 18, 2012
Finish July 18, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 632.4
Datum
Location See Plan
N 319,894
E 13,403,584

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 48/60 | 0.0 5.0 | 631.4 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | CL | Medium, stiff, dark brown, sandy lean CLAY (CL), mps = 20mm, no odor -FILL- PID = ND ppm | | TR | | 10 | 10 | 80 | N | M | H | M |
| | | | | 628.9 | | | | | | | | | | | | |
| | | | | 3.5 | SP-SC | PID = ND ppm | | TR | | | 90 | 10 | | | | |
| | | | | 628.4 | | | | | | | | | | | | |
| | | | | 4.0 | CH | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 5mm, no odor, dry -FILL- | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 44/60 | 5.0 10.0 | | | Stiff, brown, fat CLAY (CH), mps = 5mm, no odor, moist -TILL- PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm Similiar as above, gray at 9', occasional silt lens (< 2") present PID = ND ppm | | | | | | | | | | |
| 10 | | S3 50/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, gray, fat clay PID = ND ppm | | | | | | | | | | |
| 15 | | S4 54/60 | 15.0 20.0 | | | PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | PID = ND ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-02-128**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-128
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 53/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| 25 | | S6 52/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| 30 | | S7 58/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| 35 | | | | 597.4 35.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 35 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-02-128

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-129**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 20, 2012
Finish June 20, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 632.9
Datum
Location See Plan
N 319,868
E 13,403,267

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 38 | 0.0 5.0 | 631.9 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | SW-SM | Loose brown well-graded sand with silt and gravel (SW-SM), mps=25 mm, no odor, dry PID = ND ppm | 5 | 10 | 20 | 40 | 15 | 10 | | | | |
| | | | | 630.1 2.8 | SC | PID = ND ppm | | | | 50 | 25 | 25 | | | | |
| | | | | 629.6 3.3 | CH | Dense brown clayey sand (SC), mps=2 mm, no odor, dry PID = ND ppm | 3 | 2 | | | | 95 | N | H | H | H |
| | | | | 628.4 4.5 | | Stiff brown fat clay (CH), mps=20 mm, no odor, dry PID = ND ppm | | | | | | | | | | |
| 5 | | S2 26 | 5.0 10.0 | | | No recovery from 5.0 ft to 7.75 ft PID = ND ppm | | | | | | | | | | |
| | | | | 625.1 7.8 | SM | Dense silty sand (SM), mps=4 mm, no odor, wet | | | 15 | 35 | 20 | 30 | | | | |
| | | | | 624.1 8.8 | CH | Stiff gray-brown fat clay (CH), mps=20 mm, no odor, dry PID = ND ppm | 2 | 3 | | | | 95 | N | H | H | H |
| 10 | | S3 56 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 15 | | S4 59 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above except, clay and slightly softer from 18.0 ft to 18.5 ft PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | PID = ND ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 25
Rock Cored (ft) -
Samples 5S

**Boring No. SB-02-129**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-129
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 | 20.0<br>25.0 | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | | | 607.9<br>25.0 | | Bottom of exploration at 25.0 ft<br>2-inch temporary PVC well screened 5 to 10 ft bgs. | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-02-129

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-131**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 20, 2012
Finish June 20, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 632.1
Location See Plan
N 319,859
E 13,403,424

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 48 | 0.0 5.0 | 631.4 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | | CH | Stiff to very stiff gray with black discoloration from 1.0 ft to 2.0 ft, fat CLAY (CH), mps = >0.25 mm, no odor, dry | | | | | | 100 | N | H | H | H |
| | | | | | | Analytical soil sample collected from 1 to 2 ft bgs. PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 59 | 5.0 10.0 | | CH | PID = ND ppm | 2 | 3 | | | | 95 | N | H | H | H |
| | | | | | | Similar as above except, brown, mps=20 mm PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| | | | | 624.6 7.5 | CL | Soft brown lean CLAY (CL), no odor, dry PID = ND ppm | | | | | | 100 | N | M | M | M |
| | | | | 623.4 8.8 | CH | Stiff to very stiff brown fat CLAY (CH), mps=20 mm, no odor, dry PID = ND ppm | 2 | 3 | | | | 95 | N | H | H | H |
| 10 | | S3 57 | 10.0 15.0 | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above except, black/gray-brown to gray PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above except, gray PID = ND ppm | | | | | | | | | | |
| 15 | | S4 60 | 15.0 20.0 | | | | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 25
Rock Cored (ft) -
Samples 5S

**Boring No. SB-02-131**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-131
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60 | 20.0 25.0 | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| 25 | | | | 607.1 25.0 | | Bottom of exploration at 25.0 ft<br>PID = ND ppm | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-02-131

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-132**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 18, 2012
Finish July 18, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 319,977
E 13,403,317

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 31/60 | 0.0 5.0 | | | CONCRETE | | | | | | | | | | |
| | | | | 631.6 1.5 | SP | PID = ND ppm<br>Dense, brown, poorly graded SAND (SP), mps = fine sand, no odor, dry -FILL- | | | | | 99 | TR | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 30/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 623.6 9.5 | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 5mm, no odor, moist -FILL- | | TR | TR | | 90 | 10 | | | | |
| 10 | | S3 47/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similiar as above, more fine gravel | | 5 | | | 85 | 10 | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 47/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 614.1 19.0 | CH | Stiff, gray, fat CLAY (CH), mps = 5mm, no odor, moist -TILL- | | TR | | | TR | 99 | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 30
Rock Cored (ft)
Samples 6S

**Boring No. SB-02-132**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-132
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 54/60 | 20.0 25.0 | | | PID = ND ppm<br>Analytical soil sample collected from 20 to 22 ft bgs.<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| 25 | | S6 52/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| 30 | | | | 603.1 30.0 | | PID = ND ppm<br>Bottom of exploration at 30 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-02-132

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-133**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 18, 2012
Finish July 18, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 319,978
E 13,403,404

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 31/60 | 0.0 5.0 | 632.1 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | SP | Dense, brown, poorly graded SAND (SP), mps = 3mm, no odor, dry -FILL- PID = ND ppm PID = ND ppm PID = ND ppm | | TR | | | 95 | 5 | | | | |
| | | | | 628.6 4.5 | SW | Dense, brown, well graded SAND (SW), mps = coarse sand, no odor, dry -FILL- PID = ND ppm | | TR | 20 | 60 | 20 | TR | | | | |
| 5 | | S2 57/60 | 5.0 10.0 | | | PID = ND ppm PID = ND ppm PID = ND ppm | | | | | | | | | | |
| 10 | | S3 51/60 | 10.0 15.0 | 621.9 11.3 | SP | Dense, light brown, poorly graded SAND (SP), mps = fine sand, no odor, dry -FILL- PID = ND ppm PID = ND ppm PID = ND ppm | | | TR | TR | 99 | TR | | | | |
| 15 | | S4 43/60 | 15.0 20.0 | 616.6 16.5 | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps = fine sand, no odor, dry -FILL- | | | | | 90 | 10 | | | | |
| | | | | 614.9 18.3 | CH | Stiff, gray, fat CLAY (CH), mps = 5mm, no odor, moist -TILL- PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 30
Rock Cored (ft)
Samples 6S

**Boring No. SB-02-133**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-133
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 56/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Similar as above - occasional thin (< 1") silt lens present | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | S6 55/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| 30 | | | | 603.1 30.0 | | PID = ND ppm<br>Bottom of exploration at 30 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-02-133

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-154**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 18, 2012
Finish June 18, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 633.1
Location See Plan
N 320,012
E 13,403,706

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 37 | 0.0 5.0 | 631.6 | | CONCRETE | | | | | | | | | | |
| | | | | 1.5 | SW-SM | Loose light brown well-graded SAND with silt and gravel (SW-SM), mps=35 mm, no odor, dry -FILL- PID = 0.2 ppm PID = 0.1 ppm | 5 | 10 | 10 | 40 | 25 | 10 | | | | |
| | | | | 628.9 4.3 | | | | | | | | | | | | |
| | | | | 628.6 4.5 | SC | PID = 0.1 ppm CONCRETE | 3 | 12 | 10 | 40 | 20 | 20 | | | | |
| 5 | | S2 36 | 5.0 10.0 | | | Dense gray-brown clayey SAND with gravel (SC), mps=25 mm, no odor, dry | | | | | | | | | | |
| | | | | 625.6 7.5 | SC | Similar as above PID = 0.1 ppm | | | | | | | | | | |
| | | | | | SC | Similar as above except, 1.0 in. long black organic wood clast at ~9.0 ft -TILL- PID = 0.1 ppm | | | | | | | | | | |
| 10 | | S3 49 | 10.0 15.0 | 621.9 11.3 | CH | PID = ND ppm PID = ND ppm | | 2 | | | | 98 | N | H | H | H |
| | | | | | | Medium stiff gray-brown fat CLAY (CH), mps=5 mm, no odor, dry -TILL- PID = ND ppm | | | | | | | | | | |
| 15 | | S4 50 | 15.0 20.0 | | | PID = ND ppm PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm Similar as above PID = ND ppm PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | 614.4 18.8 | CL | PID = ND ppm Medium stiff to soft gray-brown lean CLAY (CL), mps=5 mm, no odor, dry -TILL- | | 2 | | | 3 | 95 | N | M | M | H |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (ft) | 34 |
| Rock Cored (ft) | - |
| Samples | 7S |

**Boring No. SB-02-154**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-154
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 58 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CL | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 609.4 23.8 | CH | PID = ND ppm / Medium dense stiff gray-brown fat CLAY (CH), mps=30 mm, no odor, dry -TILL- | 2 | 3 | | | | 95 | N | H | H | H |
| 25 | | S6 59 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | | 5 | 3 | | | | 92 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above except, more coarse grain gravel | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above | | | | | | | | | | |
| 30 | | S7 48 | 30.0 34.0 | | CH | PID = ND ppm | 5 | 3 | | | | 92 | N | H | H | H |
| | | | | | | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 599.1 34.0 | | Bottom of exploration at 34.0 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-02-154

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-155**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 18, 2012
Finish June 18, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.1
Datum
Location See Plan
N 319,995
E 13,403,601

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 24/60 | 0.0 5.0 | 631.6 | | CONCRETE | | | | | | | | | | |
| | | | | 1.5 | SW-SM | Loose light brown well-graded SAND with silt and gravel (SW-SM), mps=25 mm, no odor, dry -FILL- PID = 0.3 ppm | 5 | 10 | 10 | 40 | 25 | 10 | | | | |
| | | | | | | PID = 0.3 ppm | | | | | | | | | | |
| | | | | | | PID = 0.3 ppm | | | | | | | | | | |
| 5 | | S2 28/60 | 5.0 10.0 | | | | | | | | | | | | | |
| | | | | 624.6 | | | | | | | | | | | | |
| | | | | 8.5 | | CONCRETE | | | | | | | | | | |
| | | | | 624.4 | SW-SM | PID = 0.3 ppm | | | | | | | | | | |
| | | | | 8.8 | | Loose light brown well-graded SAND with silt and gravel (SW-SM), mps=25 mm, no odor, dry -FILL- PID = 0.3 ppm | | | | | | | | | | |
| 10 | | S3 40/60 | 10.0 15.0 | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | SW-SM | Similar as above PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | 618.1 | | | | | | | | | | | | |
| 15 | | S4 25/60 | 15.0 20.0 | 15.0 | | No recovery from 15 to 18 ft | | 5 | 5 | 40 | 25 | 25 | | | | |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | PID = 0.3 ppm | | | | | | | | | | |
| | | | | 615.1 | | | | | | | | | | | | |
| | | | | 18.0 | SM | Loose gray-brown silty SAND (SM), mps=15 mm, no odor, dry -TILL- | | 5 | 5 | 40 | 25 | 25 | | | | |
| 20 | | | | | | PID = 0.3 ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (ft) | 30 |
| Rock Cored (ft) | - |
| Samples | 6S |

**Boring No. SB-02-155**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-155
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60/60 | 20.0 25.0 | 612.6 20.5 | CH | Medium dense stiff gray-brown fat CLAY (CH), mps=15 mm, no odor, dry -TILL- | | 5 | | | | 95 | N | H | H | H |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | PID = 0.3 ppm | | | | | | | | | | |
| | | | | | | PID = 0.3 ppm | | | | | | | | | | |
| 25 | | S6 59/60 | 25.0 30.0 | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | CH | Similar as above except, mps=30 mm | 2 | 3 | | | | 95 | N | H | H | H |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| 30 | | | | 603.1 30.0 | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 34.0 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-02-155

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-02-156**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 20, 2012
Finish June 20, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 633.1
Location See Plan
N 319,997
E 13,403,496

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 52/60 | 0.0 5.0 | 631.6 1.5 | | CONCRETE | | | | | | | | | | |
| | | | | | SW-SM | Loose, light brown, well graded SAND with silt and gravel (SW-SM), mps = 35mm, dry, no odor | 5 | 10 | 15 | 40 | 20 | 10 | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 49/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SW-SM | Similiar as above | | | | | | | | | | |
| | | | | 624.6 8.5 | | PID = ND ppm | | | | | | | | | | |
| | | | | 624.4 8.8 | SW-SM | CONCRETE | | | | | | | | | | |
| | | | | 623.6 9.5 | SC | Similiar as above | 5 | 15 | 10 | 40 | 10 | 20 | | | | |
| 10 | | S3 50/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | 621.6 11.5 | CH | Dense, brown, clayey SAND with gravel (SC), mps = 20mm, dry, no odor | 2 | 3 | | | | 95 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Medium stiff, gray-brown CLAY (CH), mps = 40mm, dry, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 60/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 25
Rock Cored (ft) -
Samples 5S

**Boring No. SB-02-156**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-02-156
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 48/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | 611.1 22.0 | CL-ML | Similiar as above | | 2 | | | | 98 | N | M | M | M |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 609.6 23.5 | CH | Soft to medium stiff, gray-brown, lean CLAY (CL), mps = 4mm, dry, no odor | 2 | 3 | | | | 95 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | | | 608.1 25.0 | | Similiar as 11.5 to 22 ft bgs. | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 25.0 ft | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-02-156

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-04-125**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 17, 2012
Finish July 17, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,315
E 13,403,811

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe 6620 DT. |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 37/60 | 0.0 5.0 | 631.6 1.5 | | CONCRETE | | | | | | | | | | |
| | | | | | CL | PID = ND ppm<br>Medium, stiff to stiff, gray and brown, sandy lean CLAY (CL), mps = 20mm, no odor, moist<br>-FILL- | | TR | | 10 | 10 | 80 | | | | |
| | | | | 629.6 3.5 | SP-SC | PID = ND ppm/<br>Dense, brown, poorly graded sand with CLAY (SP-SC), mps = 5mm, no odor, dry | | TR | | | 90 | 10 | | | | |
| | | | | 628.6 4.5 | CH | PID = ND ppm/<br>Stiff, brown, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL- | | TR | | | TR | 99 | N | H | H | |
| 5 | | S2 41/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above, fine sand present, elastic silt (MH) lens 6.5' - 7.0', gray at 8.5', moist<br>PID = ND ppm | | | | | | | | | | |
| 10 | | S3 40/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above, very plastic<br>PID = ND ppm | | | | | | | | | | |
| 15 | | S4 39/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-04-125**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-04-125
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 54/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | S6 51/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 30 | | S7 50/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above, fat gray clay | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 35 | | | | 598.1 35.0 | | Bottom of exploration at 35 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-04-125

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-04-126**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 25, 2012
Finish July 25, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 632.0
Datum
Location See Plan
N 320,276
E 13,403,852

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 44/60 | 0.0 5.0 | 631.0 | | GRAVEL | | | | | | | | | | |
| | | | | 1.0 | CL | PID = ND ppm<br>Soft, dark brown, sandy lean CLAY (CL), mps = 10mm, no odor, moist | | | 5 | 10 | 10 | 95 | R | M | L | M |
| | | | | 630.0 | | -FILL- | | | | | | | | | | |
| | | | | 2.0 | CH | Soft, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-FILL- | | | | 5 | 5 | 90 | S | M | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 50/60 | 5.0 10.0 | 626.0 | | | | | | | | | | | | |
| | | | | 6.0 | CH | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-Soft 7' - 8'<br>-Wet, clayey sand lens 8' - 8.25' | | TR | | | TR | 99 | N | H | H | H |
| | | | | | | -TILL- | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 58/60 | 10.0 15.0 | | | | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 46/60 | 15.0 20.0 | | | | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | PID = ND ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-04-126**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-04-126
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 25/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 24 to 26 ft bgs. PID = ND ppm | | | | | | | | | | |
| 25 | | S6 60/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 35 | | | | 597.0 35.0 | | PID = ND ppm Bottom of exploration at 35 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-04-126

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-04-157**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 17, 2012
Finish July 17, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,243
E 13,403,757

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 28/60 | 0.0 5.0 | 631.6 1.5 | SP-SC | CONCRETE<br>PID = ND ppm<br>Dense, brown, poorly graded SAND with clay (SP-SC), mps = fine sand, burnt soapy/greasy odor 3 to 5 ft, black staining 4.5 to 5.0 ft, dry<br>Analytical soil samples collected from 3 to 5 ft bgs.<br>PID = 1.2 ppm | | | | | | | | | | |
| 5 | | S2 43/60 | 5.0 10.0 | 628.1 5.0 | MH | PID = 3.7 ppm<br>Medium stiff, gray, elastic SILT (MH), mps = silt, burnt soapy/greasy odor, moist | | | | | | | | | | |
| | | | | 626.6 6.5 | CH | PID = ND ppm<br>Stiff, gray, fat CLAY (CH), mps = 5mm, burnt soapy/greasy odor to 7.5 ft, no odor 7.5 to 10 ft, moist<br>-TILL-<br>PID = ND ppm<br>Analytical soil samples collected from 8 to 10 ft bgs. | | | | | | | | | | |
| 10 | | S3 41/60 | 10.0 15.0 | 623.1 10.0 622.6 10.5 | SC | PID = ND ppm<br>Dense, gray, clayey SAND (SC), mps = fine sand, burnt soapy/greasy odor, wet<br>-ALLUVIUM-<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as 6.5 - 10 feet<br>PID = ND ppm | | | | | | | | | | |
| 15 | | S4 44/60 | 15.0 20.0 | | | PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as, gray, fat clay<br>PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | PID = ND ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-04-157**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-04-157
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 56/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 25 | | S6 53/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above, hard PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| 35 | | | | 598.1 35.0 | | Bottom of exploration at 35 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-04-157

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-05-127**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 18, 2012
Finish June 18, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.2
Datum
Location See Plan
N 320,292
E 13,403,724

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 36/60 | 0.0 5.0 | 631.7 | | CONCRETE | | | | | | | | | | |
| | | | | 1.5 | SM | Loose gray-brown, silty SAND (SM), mps=1mm, dry, solvent / oily-like odor, black discoloration | | | 10 | 50 | 20 | 20 | | | | |
| | | | | | | Analytical soil sample collected from 3 to 5 ft bgs. PID = 0.5 ppm | | | | | | | | | | |
| | | | | | | PID = 1.2 ppm | | | | | | | | | | |
| 5 | | S2 41/60 | 5.0 10.0 | | | PID = 0.6 ppm | | | | | | | | | | |
| | | | | 627.2 6.0 | SW-SM | Loose, gray, well graded SAND with silt (SW-SM), mps = 4mm, moist, no odor | | | 20 | 60 | 10 | 10 | | | | |
| | | | | 626.2 7.0 | CH | Medium stiff, gray-brown, fat CLAY (CH), mps = 5mm, dry, no odor PID = 0.2 ppm | | | | | | 100 | N | H | H | H |
| | | | | 625.2 8.0 | CL | Soft to medium stiff, gray-brown, lean CLAY (CL), mps = 0.75mm, dry PID = ND ppm | | | | | | 100 | N | M | M | M |
| | | | | 624.2 9.0 | CH | Same as above but mps = 30mm PID = ND ppm | 3 | 3 | | | | 94 | N | H | H | H |
| 10 | | S3 27/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 15 | | S4 60/60 | 15.0 20.0 | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above PID = ND ppm | | | | | | | | | | |
| 20 | | | | | CH | PID = ND ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 30
Rock Cored (ft) -
Samples 6S

**Boring No. SB-05-127**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-05-127
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 58/60 | 20.0 25.0 | 612.7 20.5 | | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| 25 | | S6 60/60 | 25.0 30.0 | | | Similar as above | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similar as above | | | | | | | | | | |
| 30 | | | | 603.2 30.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 30.0 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-05-127

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-06-136**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 23, 2012
Finish July 23, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.2
Datum
Location See Plan
N 320,302
E 13,403,228

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 43/60 | 0.0 5.0 | 632.2 1.0 | | CONCRETE | | | | | | | | | | |
| | | | | | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 20mm, no odor, dry -FILL- PID = ND ppm PID = ND ppm | | TR | | | 90 | 10 | | | | |
| 5 | | S2 50/60 | 5.0 10.0 | 627.2 6.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Stiff, gray, fat CLAY (CH), mps = 20mm, occasional silt parting present, no odor, moist -TILL- PID = ND ppm PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | S3 60/60 | 10.0 15.0 | | | PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| 15 | | S4 49/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-06-136**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-06-136
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 22 to 24 ft bgs. PID = ND ppm | | | | | | | | | | |
| 25 | | S6 60/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 35 | | | | 598.2 35.0 | | PID = ND ppm Bottom of exploration at 35 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-06-136

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-06-137**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 23, 2012
Finish July 23, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,325
E 13,403,263

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | 632.3 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 20mm, no odor, dry | | TR | | | 90 | 10 | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 47/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 49/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similar as above, moist | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 43/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similar as above, wet | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | PID = ND ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-06-137**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-06-137
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 42/60 | 20.0 25.0 | | SP-SC | Similar as above, wet PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| | | | | 611.6 21.5 | CH | Stiff, gray, fat CLAY (CH), mps = 20mm, no odor, moist -TILL- Analytical soil sample collected from 22 to 24 ft bgs. PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | S6 60/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above PID = ND ppm | | | | | | | | | | |
| 35 | | | | 598.1 35.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 35 ft | | | | | | | | | | |
| | | | | | | 1.5-inch temporary PVC well screened from 16 to 21 ft bgs. | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-06-137

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-06-138**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 19, 2012
Finish July 19, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,300
E 13,403,322

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 37/60 | 0.0 5.0 | 632.0 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | CL/SP | PID = ND ppm<br>Brown to black, interberdded CLAY (CL) and poorly graded SAND (SP)<br>-FILL- | | TR<br>TR | | | 99<br>TR | TR<br>99 | | | | |
| | | | | 629.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | 4.0 | CH | Stiff, gray, fat CLAY (CH), mps = 5mm, no odor, moist, occasional silt parting present<br>-TILL-<br>PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 53/60 | 5.0 10.0 | | | PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| 10 | | S3 48/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Similar as above | | | | | | | | | | |
| 15 | | S4 60/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above<br>PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-06-138**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-06-138
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Analytical soil sample collected 22.5 to 24.5 ft bgs. | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | S6 60/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 35 | | | | 598.0 35.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 35.0 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-06-138

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-06-139**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 24, 2012
Finish July 24, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,269
E 13,403,267

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 33/60 | 0.0 5.0 | 632.9 0.1 | SP-SC | CONCRETE | | | | | | | | | | |
| | | | | | | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 5mm, no odor, dry -FILL- | | TR | | | 90 | 10 | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 52/60 | 5.0 10.0 | | | | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 55/60 | 10.0 15.0 | | | | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 46/60 | 15.0 20.0 | | | | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similar as above, wet | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

## Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 08/01/12 | | | | 23.77 | 15.54 |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 35
Rock Cored (ft)
Samples 7S

**Boring No. SB-06-139**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-06-139
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60/60 | 20.0 25.0 | | SP-SC | PID = ND ppm<br>Similar as above, Slight stagnant odor | | | | | | | | | | |
| | | | | 609.5 23.5 | | Analytical soil sample collected from 22 to 24 ft bgs. | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL- | | TR | | | TR | 99 | N | H | H | H |
| 25 | | S6 60/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 35 | | | | 598.0 35.0 | | PID = ND ppm<br>Bottom of exploration at 35 ft | | | | | | | | | | |

1.5-inch temporary PVC well screened from 18.5 to 23.5 ft bgs.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-06-139

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-07-140**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 20, 2012
Finish July 20, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.2
Datum
Location See Plan
N 320,224
E 13,403,395

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 50/60 | 0.0 5.0 | 632.4 | | CONCRETE | | | | | | | | | | |
| | | | | 0.8 631.7 | SP-SC | Brown, poorly graded SAND with clay (SP-SC) -FILL- | | | | | | | | | | |
| | | | | 1.5 | CH | PID = ND ppm | | | | | | | | | | |
| | | | | 629.7 | | Medium stiff, gray-brown, sandy, fat CLAY (CH), mps = 10mm, no odor, moist | | | | | | | | | | |
| | | | | 3.5 629.2 | SP | -FILL- | | | | | | | | | | |
| | | | | 4.0 | CH | PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 48/60 | 5.0 10.0 | | | PID = ND ppm<br>Similar to 0.75 - 1.5 ft<br>PID = ND ppm<br>Stiff, gray, fat CLAY (CH), mps = 5mm, no odor, moist, occasional silt, parting present<br>-TILL-<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 10 | | S3 50/60 | 10.0 15.0 | | CH | Similiar as above<br>Analytical soil sample collected from 10 to 12 ft bgs.<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 15 | | | | 618.2 15.0 | | PID = ND ppm<br>Bottom of exploration at 15 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 15
Rock Cored (ft)
Samples 3S

**Boring No. SB-07-140**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-09-123**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 16, 2012
Finish July 16, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,513
E 13,403,758

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 29/60 | 0.0 5.0 | 632.1 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | CL | Medium stiff, gray-brown, sandy lean CLAY (CL), mps = 20mm, no odor, dry -FILL- PID = ND ppm | | TR | 5 | 10 | 10 | 75 | N | L | L | M |
| | | | | 629.6 3.5 | SW | Loose, brown, well graded SAND (SW), mps = 5mm, no odor, dry PID = ND ppm | | TR | 30 | 50 | 15 | 5 | | | | |
| 5 | | S2 49/60 | 5.0 10.0 | 628.1 5.0 | CH | Stiff, gray, fat CLAY (CH), mps = 5mm, no odor, moist -TILL- Analytical soil sample collected from 6 to 8 ft bgs. PID = ND ppm PID = ND ppm PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | S3 24/24 | 10.0 12.0 | 621.1 12.0 | CH | Similiar as above PID = ND ppm Bottom of exploration at 12 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 12
Rock Cored (ft)
Samples 3S

**Boring No. SB-09-123**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-10-124**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 16, 2012
Finish July 16, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,567
E 13,403,780

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 27/60 | 0.0 5.0 | 632.1 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | SP | Dense, brown, poorly graded SAND (SP), mps = 10mm, no odor, dry -FILL- PID = ND ppm PID = ND ppm | | TR | | | 100 | TR | | | | |
| | | | | | SP | Similar as above, black staining, slight petroleum-like odor, wet Analytical soil sample collected from 4 to 6 ft bgs. PID = ND ppm | | | | | | | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | 627.6 5.5 | CH | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist -TILL- PID = ND ppm PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 623.1 10.0 | | PID = ND ppm Bottom of exploration at 10 ft | | | | | | | | | | |

1.5-inch temporary PVC well screened from 3 to 8 ft bgs.

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 07/16/12 | | | | 8.27 | 5.28 |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-10-124**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-11-122**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 18, 2012
Finish June 18, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.2
Datum
Location See Plan
N 320,609
E 13,403,598

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 31/60 | 0.0 5.0 | 631.7 | | CONCRETE | | | | | | | | | | |
| | | | | 1.5 | OL | Loose dark brown, sandy organic soil, OL/OH, mps=1mm, no odor, dry | | | 10 | 20 | 20 | 50 | | | | |
| | | | | 630.2 3.0 | SP-SM | Loose, tan, poorly graded SAND with silt (SP-SM), mps = 2mm, no odor, dry | | | | 80 | 10 | 10 | | | | |
| | | | | 629.2 4.0 | CH | PID = ND ppm<br>Medium stiff, tan, fat CLAY (CH), with lens of SP-SM like above at 4.5' that is 2" thick (CH), mps = 0.75mm, no odor, dry | | | | | | 100 | N | H | H | H |
| 5 | | S2 50/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | 627.2 6.0 | CH | PID = ND ppm<br>Medium stiff, gray-brown, fat CLAY (CH), mps = 20mm, no odor, dry | 2 | 3 | | | | 95 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 58/60 | 10.0 15.0 | | CH | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 55/60 | 15.0 20.0 | | CH | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 20 | | | | 620.0 | CH | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 30
Rock Cored (ft) -
Samples 6S

**Boring No. SB-11-122**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-11-122
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60/60 | 20.0 25.0 | | CL-ML | Similiar as above<br>PID = ND ppm | 3 | 3 | | | | 94 | N | M | M | M |
| | | | | | | Medium to soft, gray-brown, lean CLAY (CL-ML), mps = 35mm, no odor, dry<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 25 | | S6 58/60 | 25.0 30.0 | 608.2 25.0 | CH | PID = ND ppm<br>Similiar as above | | 5 | | | | 95 | N | H | H | H |
| | | | | | | Medium stiff to stiff, gray-brown, fat CLAY (CH), mps = 15mm, no odor, dry<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 30 | | | | 603.2 30.0 | CH | PID = ND ppm<br>Similiar as above<br>Bottom of exploration at 30.0 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-11-122

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-12-120**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 26, 2012
Finish July 26, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,618
E 13,403,417

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 51/60 | 0.0 5.0 | 631.7 | | CONCRETE | | | | | | | | | | |
| | | | | 1.3 | SC | PID = 0.5 ppm<br>Dense, brown, clayey SAND (SC), mps = medium sand, petroleum/ammonia-like odor, moist<br>-FILL- | | | | 30 | 40 | 30 | | | | |
| | | | | 629.5 | | | | | | | | | | | | |
| | | | | 3.5 | | PID = 0.9 ppm | | | | | | | | | | |
| | | | | 629.0 4.0 | CH | CONCRETE | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | Stiff, gray, fat CLAY (CH), mps = 10mm, petroleum/ammonia-like odor, 4.0' - 5.5'; no odor 5.5' - 10.0', moist<br>-TILL-<br>Analytical soil sample collected from 4 to 6 ft bgs.<br>PID = 0.8 ppm | | | | | | | | | | |
| | | | | | CH | PID = 2.2 ppm<br>Similiar as above<br>PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.0 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-12-120**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-12-121**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 25, 2012
Finish June 25, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 633.1
Location See Plan
N 320,624
E 13,403,374

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 20/60 | 0.0 5.0 | 631.9 1.3 | | CONCRETE | | | | | | | | | | |
| | | | | | | No Recovery from 1.25' to 3.5' | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 3 to 5 ft bgs. | | | | | | | | | | |
| | | | | 628.6 4.5 | SW-SM | Loose, tan, well graded SAND with silt, gravel (SW-SM), mps = 20mm, dry, oil-like odor | 5 | 10 | 15 | 40 | 20 | 10 | | | | |
| 5 | | S2 50/60 | 5.0 10.0 | | CL | Analytical soil sample collected from 3 to 5 ft bgs. PID = 0.8 ppm<br>Medium stiff to soft, light brown, lean CLAY (CL), mps = 0.75mm, dry, oil-like odor | | | | | | 100 | N | M | M | M |
| | | | | 625.4 7.8 | CL | PID = 0.9 ppm | | | | | | | | | | |
| | | | | | CL | PID = ND ppm<br>Similiar as above, has 3" moist seam from about 7.25' to 7.5', no odor | | | | | | 100 | N | M | M | M |
| 10 | | S3 40/60 | 10.0 15.0 | | | PID = ND ppm<br>Soft, gray-brown, lean CLAY (CL), mps = 0.75mm, dry, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CL | PID = ND ppm | | | | | | | | | | |
| | | | | 620.9 12.3 | CH | PID = 0.2 ppm<br>Similiar as above | | | | | | 100 | N | M | M | M |
| | | | | | | PID = ND ppm<br>Stiff, gray-brown, fat CLAY (CH), mps = 0.75mm, dry, no odor | | | | | | | | | | |
| 15 | | S4 60/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 616.4 16.8 | CH | PID = ND ppm | 3 | 2 | | | | 95 | N | M | M | M |
| | | | | | CL | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| | | | | | | Soft to medium stiff, gray-brown, lean CLAY (CL), mps = 30mm, moist outside, dry inside | | | | | | | | | | |
| 20 | | | | 613.0 20.0 | | | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 20
Rock Cored (ft) -
Samples 4S
**Boring No. SB-12-121**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-12-121
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = 0.2 ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 20 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-12-121

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-13-144**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 26, 2012
Finish July 26, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,658
E 13,403,142

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | 632.1 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 5mm, petroleum-like odor, oily appearance 2.5' - 3.5', moist -FILL- | | TR | | | 90 | 10 | | | | |
| | | | | | | Analytical soil sample collected from 1.5 to 3.5 ft bgs. PID = ND ppm | | | | | | | | | | |
| | | | | 629.6 3.5 | CH | PID = 1.4 ppm | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 7.5 to 9.5 ft bgs. PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| 10 | | S3 60/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | | | 618.1 15.0 | | PID = ND ppm Bottom of exploration at 15 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 15
Rock Cored (ft)
Samples 3S

**Boring No. SB-13-144**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-14-145**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 27, 2012
Finish July 27, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,681
E 13,403,086

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | 632.1 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | SP-SC | Loose/stiff, brown, interbedded poorly graded SAND with clay (SP-SC)/fat CLAY (CH), mps = 10mm, petroleum-like odor, moist | | | | | 90 | 10 | | | | |
| | | | | 631.1 2.0 | CH | PID = ND ppm | | | | | | | | | | |
| | | | | 630.1 3.0 | SP-SC | Analytical soil samples collected from 2 to 4 ft bgs. -FILL- | | | | | 5 | 95 | | | | |
| | | | | 629.1 4.0 | CH | PID = ND ppm Stiff, brown, fat CLAY (CH), mps = 10mm, no odor, moist -TILL- | | | | | | | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | | | Similiar as above, soft at 6 to 8 ft Analytical soil samples collected from 6 to 8 ft bgs. PID = ND ppm PID = ND ppm | | | | | | | | | | |
| 10 | | S3 24/24 | 10.0 12.0 | | | PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | 621.1 12.0 | CH | Similiar as above PID = ND ppm Bottom of exploration at 12 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 12
Rock Cored (ft)
Samples 3S

**Boring No. SB-14-145**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-14-146**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 21, 2012
Finish June 12, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.1
Datum
Location See Plan
N 320,731
E 13,403,074

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: |
| Hammer Weight (lb) | | - | - | Drill Mud: None |
| Hammer Fall (in.) | | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 49/60 | 0.0 5.0 | 632.4 | | CONCRETE | | | | | | | | | | |
| | | | | 0.8 | SW-SM | Loose, light brown, well-graded SAND with silt and gravel (SW-SM), mps=15 mm, dry | 5 | 10 | 15 | 40 | 20 | 10 | | | | |
| | | | | 631.1 | | | | | | | | | | | | |
| | | | | 2.0 | CH | Very stiff, brown-yellow-brown, fat CLAY (CH), mps = 0.75mm, dry, no odor until 4.5 feet, hydrocarbon-like odor | | | | | | 100 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 4 to 5 ft bgs. | | | | | | | | | | |
| 5 | | | | 628.1 | | PID = ND ppm | | | | | | | | | | |
| | | S2 58/60 | 5.0 10.0 | 5.0 | CH | Similiar as above, except a solvent-like odor | | | | | | 100 | N | H | H | H |
| | | | | | | PID = 0.4 ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 624.4 | | PID = ND ppm | | | | | | | | | | |
| | | | | 8.8 | CH | Similiar as above, except no odor | | | | | | 100 | N | H | H | H |
| | | | | 623.1 | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 60/60 | 10.0 15.0 | 10.0 | CL | Soft, gray, lean CLAY (CL), mps = 0.75mm, dry, no odor | | | | | | 100 | N | M | M | M |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 620.1 | | | | | | | | | | | | |
| | | | | 13.0 | CL | Similiar as above, mps = 15mm, brachiopeds | 3 | 7 | | | | 90 | N | M | M | M |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 618.1 | | | | | | | | | | | | |
| 15 | | S4 46/60 | 15.0 20.0 | 15.0 | CL | Soft, gray, lean CLAY (CL), mps = 0.75mm, moist, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 614.4 | | PID = ND ppm | | | | | | | | | | |
| | | | | 18.8 | CL | Medium stiff to soft, lean CLAY (CL), mps = 10mm, dry, no odor | | 10 | | | | 90 | N | M | M | M |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 25
Rock Cored (ft)
Samples 5S

**Boring No. SB-14-146**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-14-146
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 48/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CL | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | | | 608.1 25.0 | CL | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above, but softer | | | | | | | | | | |
| | | | | | | Bottom of exploration at 25.0 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-14-146

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-15-150**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 20, 2012
Finish July 20, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation Datum 633.1
Location See Plan
N 320,733
E 13,403,268

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 30/60 | 0.0 5.0 | 632.4 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | | SP | PID = 3.9 ppm<br>Dense, brown, poorly graded SAND (SP), mps = 5mm, slight petroleum-like odor, moist<br>Black at 3.5 feet, strong petroleum-like odor<br>Analytical soil sample collected from 2 to 4 ft bgs.<br>PID = 1.3 ppm | | | | | 95 | 5 | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | 628.1 5.0 | MH | PID = 2.3 ppm<br>Soft, gray, elastic SILT (MH), mps = fine sand, slight petroleum-like odor, moist | | | | | TR | 100 | R | M | M | M |
| | | | | 626.6 6.5 | CH | PID = 2.5 ppm<br>Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL-<br>PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 623.1 10.0 | | PID = ND ppm<br>Bottom of exploration at 10 ft | | | | | | | | | | |

1.5-inch temporary PVC well screened from 1 to 6 ft bgs.

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-15-150**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-16-116**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 25, 2012
Finish June 25, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 633.1
Location See Plan
N 320,799
E 13,403,782

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 43/60 | 0.0 5.0 | | | CONCRETE | | | | | | | | | | |
| | | | | 631.9 1.3 | SW-SM | Analytical soil sample collected from 1 to 2 ft bgs. | | | 10 | 50 | 30 | 10 | | | | |
| | | | | 631.6 1.5 | SW-SM | Loose, brown, well-graded SAND with silt (SW-SM), mps = 4mm, hydrocarbon like odor, dry | | | | 10 | 10 | 80 | | | | |
| | | | | | | PID = 1.1 ppm | | | | | | | | | | |
| | | | | 630.1 3.0 | OL/OH | Very stiff, dark brown, organic SOIL, (OL-OH), mps = 2mm, no odor, dry | | | 15 | 50 | 25 | 10 | | | | |
| | | | | | SW-SM | PID = 0.2 ppm | | | | | | | | | | |
| | | | | 628.4 4.8 | CL | Loose, light brown, well graded SAND with silt (SW-SM), mps = 4mm, no odor, dry | | | | | | | | | | |
| 5 | | S2 39/60 | 5.0 10.0 | | | PID = 0.1 ppm | 2 | 5 | | | | 95 | N | M | M | M |
| | | | | | | PID = 0.1 ppm | | | | | | | | | | |
| | | | | | | Medium stiff to soft, gray-brown, lean CLAY (CL), mps = 30mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = 0.1 ppm | | | | | | | | | | |
| | | | | 624.4 8.8 | CH | PID = ND ppm | 2 | 5 | | | | 95 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 59/60 | 10.0 15.0 | | | Stiff, gray-brown, fat CLAY (CH), mps = 20mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| 15 | | S4 60/60 | 15.0 20.0 | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 20 | | | | 620.0 | CH | | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 20
Rock Cored (ft) -
Samples 4S

**Boring No. SB-16-116**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-16-116
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| | | | | | | Bottom of exploration at 20 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-16-116

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-18-117**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 16, 2012
Finish July 16, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation Datum 633.1
Location See Plan
N 320,916
E 13,403,609

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 48/60 | 0.0 5.0 | 632.3 | | | | | | | | | | | | |
| | | | | 0.8 | SP | Dense, brown, poorly graded SAND (SP), mps = 10mm, no odor, dry -FILL- PID = ND ppm | | | | | | | | | | |
| | | | | 630.1 | | Analytical soil sample collected from 2 to 4 ft bgs. | | | | | | | | | | |
| | | | | 3.0 | CL | PID = ND ppm Soft, black to gray, sandy lean CLAY (CL), mps = fine sand, slight soapy odor, moist PID = ND ppm | | | | | | | | | | |
| 5 | | S2 51/60 | 5.0 10.0 | 627.6 | | | | | | | | | | | | |
| | | | | 5.5 627.1 | SC | Dense, gray clayey SAND (SC), mps = 10mm, no odor, wet -FILL- | | | | | | | | | | |
| | | | | 6.0 | CH | Stiff, gray, lean CLAY (CH), mps = 10mm, no odor, moist PID = ND ppm PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.1 10.0 | | PID = ND ppm Bottom of exploration at 10 ft | | | | | | | | | | |
| | | | | | | 1.5-inch temporary PVC well screened from 3 to 8 ft bgs. | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-18-117**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-19-115**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 17, 2012
Finish July 17, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 321,005
E 13,403,751

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 37/60 | 0.0 5.0 | 632.4 | | CONCRETE | | | | | | | | | | |
| | | | | 0.7 | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps =5mm, no odor, dry -FILL- PID = ND ppm PID = ND ppm | | | | | 90 | 10 | | | | |
| | | | | 629.0 | | | | | | | | | | | | |
| | | | | 4.0 | CH | Medium stiff to stiff, brown to gray at 4.5 feet, fat CLAY (CH), mps = 5mm, no odor, moist, thin sand stringer at 5 feet(<1"thick) PID = ND ppm PID = ND ppm | | | | 2 | 3 | 95 | N | H | H | H |
| 5 | | S2 48/60 | 5.0 10.0 | 626.5 | | | | | | | | | | | | |
| | | | | 6.5 | SC | Dense, brown, clayey SAND (SC), mps = fine sand, no odor, wet -ALLUVIUM- | | | | | 60 | 40 | | | | |
| | | | | 625.8 | | | | | | | | | | | | |
| | | | | 7.3 | CH | Similar as 4.0 feet - 6.5 feet | | | | | | | | | | |
| | | | | 625.0 | | | | | | | | | | | | |
| | | | | 8.0 | SC | PID = ND ppm | | | | | | | | | | |
| | | | | 624.5 | | | | | | | | | | | | |
| | | | | 8.5 | CH | Similar as 6.5 feet - 7.25 feet, wet Similar as 4.0 feet - 6.5 feet, gray fat clay | | | | | | | | | | |
| 10 | | | | 623.0 | | | | | | | | | | | | |
| | | | | 10.0 | | PID = ND ppm Bottom of exploration at 10 ft | | | | | | | | | | |

1.5-inch temporary well screened from 4 to 9 ft bgs.

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-19-115**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-19-153**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 25, 2012
Finish July 25, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 632.7
Datum
Location See Plan
N 320,999
E 13,403,811

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | 631.9 | | CONCRETE | | | | | | | | | | |
| | | | | 631.4 0.8 | | PID = ND ppm | | | | | | | | | | |
| | | | | 1.3 | SP-SC | GRAVEL/CINDERS<br>Loose, red, poorly graded SAND with clay (SP-SC), mps = fine sand, no odor, wet | | | | | 90 | 10 | | | | |
| | | | | 629.4 3.3 | | -FILL- | | | | | | | | | | |
| | | | | 629.2 3.5 | SP | PID = ND ppm | | TR | | | 100 TR | 99 | N | H | H | H |
| | | | | | CH | Fine SAND (SP), wet<br>-FILL- | | | | | | | | | | |
| 5 | | S2 44/60 | 5.0 10.0 | | | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL-<br>Analytical soil sample collected from 3.5 to 5.5 ft bgs. | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>PID = ND ppm<br>Similiar as above<br>PID = ND ppm | | | | | | | | | | |
| 10 | | | | 622.7 10.0 | | PID = ND ppm<br>Bottom of exploration at 10 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-19-153**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-22-118**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 16, 2012
Finish July 16, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 321,061
E 13,403,514

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 32/60 | 0.0 5.0 | 632.1 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | SP | Dense, brown, poorly graded SAND (SP), mps = fine sand, no odor, dry -FILL- PID = ND ppm | | | | | 100 | TR | | | | |
| | | | | | | Analytical soil sample collected from 2 to 4 feet bgs. PID = ND ppm | | | | | | | | | | |
| | | | | | | Concrete Present | | | | | | | | | | |
| 5 | | S2 14/18 | 5.0 6.5 | | | | | | | | | | | | | |
| | | | | 626.6 6.5 | SP | Similiar as above, concrete at 6.5 ft PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 6.5 ft (Refusal) | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 6.5
Rock Cored (ft)
Samples 2S

**Boring No. SB-22-118**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-23-149**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 21, 2012
Finish June 21, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.2
Datum
Location See Plan
N 321,038
E 13,403,311

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 36/60 | 0.0 5.0 | 633.1 0.1 | SW-SM | CONCRETE (10.0 Inches) | 10 | 15 | 15 | 40 | 10 | 10 | | | | |
| | | | | | | Loose, well graded SAND with silt and gravel (SW-SM), brown, mps = 50mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 628.7 | | PID = ND ppm | | | | | | | | | | |
| | | | | 4.5 628.2 | CL | | | | | 10 | 15 | 75 | N | H | H | H |
| 5 | | S2 44/60 | 5.0 10.0 | 5.0 | CH | Soft, sandy lean CLAY (CL), brown with black discoloration, mps = 4mm, no odor, dry | | | | | | 100 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Very stiff, yellow-brown to gray brown, fat CLAY (CH), mps = 0.75mm, no odor, dry<br>Soft from 7.25 - 7.5 ft | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 624.7 | | PID = ND ppm | | | | | | | | | | |
| | | | | 8.5 | CL | | 3 | 2 | | | | 95 | N | M | M | M |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 623.2 | | | | | | | | | | | | |
| 10 | | S3 59/60 | 10.0 15.0 | 10.0 | CL | Soft, gray-brown, lean CLAY (CL), mps = 15mm, no odor, dry | 2 | 3 | | | | 95 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Very stiff, gray-brown, fat CLAY (CL), mps = 25mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | | | | | PID = ND ppm | | | | | | | | | | |
| | | S4 51/60 | 15.0 20.0 | 617.7 15.5 | CL | | | 5 | | 10 | 15 | 70 | N | M | M | M |
| | | | | 616.9 | | PID = ND ppm | | | | | | | | | | |
| | | | | 16.3 | CL | Soft, gray-brown, sandy lean CLAY (CL), mps = 10mm, no odor, dry | | 10 | | | | 90 | N | M | M | M |
| | | | | | | Soft to medium stiff, gray-brown, lean CLAY (CL), mps = 10mm, no odor, moist on outside, dry inside, | | | | | | | | | | |
| | | | | 615.2 | | | | | | | | | | | | |
| | | | | 18.0 | CH | PID = ND ppm | 3 | 2 | | | | 95 | N | N | H | H |
| | | | | | | Stiff, gray-brown, fat CLAY (CH), mps = 20mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 20 | | | | 613.2 | | | | | | | | | | | | |

## Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 25
Rock Cored (ft) -
Samples 5S

**Boring No. SB-23-149**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-23-149
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60/60 | 20.0 25.0 | | CH | PID = ND ppm<br>Medium stiff, gray-brown, fat CLAY (CH)<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 25 | | | | 608.2 25.0 | | PID = ND ppm<br>Bottom of exploration at 25.0 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-23-149

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-26-130**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 18, 2012
Finish July 18, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.2
Datum
Location See Plan
N 320,005
E 13,403,316

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 27/60 | 0.0 5.0 | | | CONCRETE<br>PID = ND ppm | | | | | | | | | | |
| | | | | 631.7 1.5 | CH | Medium stiff, dark brown, fat CLAY (CH), mps = 5mm, no odor, moist -FILL-<br>PID = ND ppm | | TR | TR | | 5 | 95 | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 52/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, less sand<br>PID = ND ppm | | TR | | | TR | 99 | | | | |
| 10 | | S3 51/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, gray<br>PID = ND ppm | | | | | | | | | | |
| 15 | | S4 60/60 | 15.0 20.0 | | | PID = ND ppm<br>Analytical soil sample collected from 16 to 18 ft bgs. | | | | | | | | | | |
| | | | | | CH | Similiar as above<br>PID = ND ppm | | | | | | | | | | |
| 20 | | | | 613.2 20.0 | | PID = ND ppm | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 20
Rock Cored (ft)
Samples 4S
**Boring No. SB-26-130**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-26-130
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Bottom of exploration at 20 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-26-130

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-27-158**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 19, 2012
Finish July 19, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,306
E 13,403,537

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 37/60 | 0.0 5.0 | 631.8 | | CONCRETE (16") | | | | | | | | | | |
| | | | | 1.3 | SP | PID = ND ppm<br>Dense, light brown, poorly graded SAND (SP), mps = 5mm, no odor, dry<br>-FILL-<br>PID = ND ppm | | TR | | | 99 | TR | | | | |
| | | | | 628.6 | | | | | | | | | | | | |
| 5 | | S2 50/60 | 5.0 10.0 | 4.5 | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 5mm, no odor, moist<br>-FILL-<br>PID = ND ppm<br>PID = ND ppm<br>Wet at 8 ft<br>PID = ND ppm | | TR | | | 90 | 10 | | | | |
| | | | | 623.6 | | | | | | | | | | | | |
| | | | | 9.5 | CH | Stiff, brown, fat CLAY (CH), mps = 5mm, no odor, moist<br>-TILL-<br>PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 623.1 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |

1.5-inch temporary PVC well screened from 5 to 10 ft bgs.

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-27-158**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-27-159**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 19, 2012
Finish July 19, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,129
E 13,403,578

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 25/60 | 0.0 5.0 | 632.1 1.0 | | CONCRETE | | | | | | | | | | |
| | | | | | SP | PID = ND ppm<br>Dense, brown, poorly graded SAND (SP), mps = 3mm, petroleum odor, dry<br>-FILL-<br>PID = ND ppm<br>PID = ND ppm | | | TR | | 95 | 5 | | | | |
| 5 | | S2 52/60 | 5.0 10.0 | 627.6 5.5 | CH | Stiff, brown with gray mottling, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL-<br>PID = ND ppm<br>Analytical soil sample collected from 7 to 9 ft bgs.<br>PID = ND ppm<br>PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | S3 36/36 | 10.0 23.0 | | CH | PID = ND ppm<br>Similiar as above, gray<br>PID = ND ppm | | | | | | | | | | |
| | | | | 620.1 13.0 | | Bottom of exploration at 13 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 13
Rock Cored (ft)
Samples 3S

**Boring No. SB-27-159**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-27-159
File No. 37290-014
Sheet No. 2 of 1

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-27-159

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-27-160**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 17, 2012
Finish July 17, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,047
E 13,403,595

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 36/60 | 0.0 5.0 | | | CONCRETE | | | | | | | | | | |
| | | | | 631.6 1.5 | SP-SC | PID = ND ppm<br>Dense, brown, poorly graded SAND with clay (SP-SC), mps = 5mm, no odor, dry | | TR | | | 90 | 10 | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 52/60 | 5.0 10.0 | 628.1 5.0 | CH | Stiff, brown, fat CLAY (CH), mps = 10mm, no odor, moist, gray at 8' | | TR | | | TR | 99 | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.1 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-27-160**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-27-161**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 17, 2012
Finish July 17, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,163
E 13,403,783

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 38/60 | 0.0 5.0 | | | CONCRETE | | | | | | | | | | |
| | | | | 631.6 1.5 | CL | PID = ND ppm<br>Medium stiff, brown, sandy lean CLAY (CL), mps = 5mm, no odor, dry<br>-FILL- | | TR | TR | 10 | 10 | 80 | S | M | L | M |
| | | | | 630.1 3.0 | SP-SC | PID = ND ppm | | | | | 65 | 35 | | | | |
| | | | | 629.6 3.5 | | PID = ND ppm | | | | | TR | 99 | N | H | H | H |
| | | | | 628.6 4.5 | CH | Brown interbedded poorly graded SAND (SP-SC) with fat CLAY (CH), no odor, moist, mps = fine sand<br>-FILL- | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 54/60 | 5.0 10.0 | | | PID = ND ppm<br>Stiff, brown, fat CLAY (CH), mps = 5mm, no odor, moist<br>-TILL- | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, gray at 8', hard | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.1 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-27-161**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-28-152**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 24, 2012
Finish July 24, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,448
E 13,403,334

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 21/60 | 0.0 5.0 | 632.8 0.2 | SP-SC | CONCRETE (20 inches) | | | | | 90 | 10 | | | | |
| | | | | | | PID = 3.3 ppm | | | | | | | | | | |
| | | | | | | Dense, brown to gray, poorly graded SAND with clay (SP-SC), mps = 20mm, ammonia / petroleum-like odor, moist -FILL- | | | | | | | | | | |
| | | | | | | PID = 4.8 ppm | | | | | | | | | | |
| | | | | | | Analytical soil collected from 4 to 6 ft bgs. | | | | | | | | | | |
| 5 | | S2 33/60 | 5.0 10.0 | | | PID = 6.7 ppm | | | | | | | | | | |
| | | | | | | PID = 7.7 ppm | | | | | | | | | | |
| | | | | | SP-SC | Similiar as above, wet at 6.5 feet | | | | | | | | | | |
| | | | | | | PID = 8.1 ppm | | | | | | | | | | |
| | | | | 623.5 9.5 | | CONCRETE | | | | | | | | | | |
| 10 | | | | 623.0 10.0 | | PID = 7.3 ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |
| | | | | | | 1.5-inch temporary PVC well screened from 5 to 10 ft bgs. | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 08/01/12 | | | | 9.28 | 6.19 |

**Sample ID**

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-28-152**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-28-164**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 21, 2012
Finish June 21, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.0
Datum
Location See Plan
N 320,474
E 13,403,275

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 35/60 | 0.0 5.0 | | | CONCRETE- (2.66') | | | | | | | | | | |
| | | | | 630.3 2.7 | SW-SM | Loose well graded brown SAND with silt and gravel (SW-SM), mps=25 mm, no odor, dry | 2 | 13 | 10 | 40 | 15 | 10 | | | | |
| | | | | 629.3 3.8 | CH | PID = 0.4 ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | 100 | N | H | H | H |
| 5 | | S2 50/60 | 5.0 10.0 | | | Medium stiff, brown, fat CLAY (CH), mps = 0.75mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 626.5 6.5 | CL | PID = ND ppm | | | | | | 100 | N | M | M | M |
| | | | | 625.5 7.5 | CH | Soft, brown, lean CLAY (CL), mps = 0.75mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = ND ppm | 5 | 15 | | | | 80 | N | H | H | H |
| | | | | 624.0 9.0 | CH | Stiff, brown, fat CLAY with gravel (CH), mps = 25mm, no odor, dry | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | 100 | N | H | H | H |
| 10 | | S3 54/60 | 10.0 15.0 | 623.0 10.0 | CL | Stiff, brown, fat CLAY (CH), mps = 0.75mm, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | 100 | N | M | M | M |
| | | | | | | Medium stiff to soft, brown, lean CLAY (CL), mps = 0.75mm, moist on outside of clay core, dry on inside, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | | | 618.0 15.0 | CL | PID = ND ppm | | | | | | | | | | |
| | | S4 60/60 | 15.0 20.0 | | CH | Similiar as above | | 2 | | | | 98 | N | H | H | H |
| | | | | | | Medium stiff, gray-brown, fat CLAY (CH), mps = 15mm, dry, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 20 | | | | | CH | PID = ND ppm | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 25
Rock Cored (ft) -
Samples 5S

**Boring No. SB-28-164**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-28-164
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 48/60 | 20.0 25.0 | | CH | Similiar as above<br>Similar as above, more gravel<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | 8 | | | | 92 | N | H | H | H |
| 25 | | | | 608.0 25.0 | CH | Similiar as above<br>Bottom of exploration at 25.0 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-28-164

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-28-165**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,216
E 13,403,218

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | HSA | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 9 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 33/60 | 0.0 5.0 | 632.2 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | 631.5 1.5 | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | GRAVEL -FILL | | | | | | | | | | |
| | | | | | | Stiff, brown, fat CLAY (CH), mps = 10mm, no odor, moist -TILL- | | TR | | | TR | 99 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, gray at 7ft | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 8 to 10 ft bgs. | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.0 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |
| | | | | | | 2-inch temporary PVC well installed from 5 to 10 ft bgs. | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-28-165**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-28-166**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 24, 2012
Finish July 24, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,342
E 13,403,352

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 31/60 | 0.0 5.0 | 631.5 | | CONCRETE | | | | | | | | | | |
| 1.5 | | | | | SP-SC | PID = ND ppm<br>Dense, brown, poorly graded SAND (SP-SC), mps = 20mm, slight greasy odor, moist<br>-FILL-<br>PID = ND ppm<br>Analytical soil sample collected from 4 to 6 ft bgs.<br>PID = ND ppm | | TR | | | 90 | 10 | | | | |
| 5 | | S2 50/60 | 5.0 10.0 | 627.0 | | | | | | | | | | | | |
| 6.0 | | | | | CH | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL-<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 623.0 | | | | | | | | | | | | |
| 10.0 | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-28-166**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-28-167**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 24, 2012
Finish July 24, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,445
E 13,403,425

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 36/60 | 0.0 5.0 | 631.6 1.3 | | CONCRETE (20") | | | | | | | | | | |
| | | | | | SW-SC | PID = 3.3 ppm<br>Dense, brown to gray poorly graded SAND with clay (SW-SC), mps= 10mm, petroleum like odor, oily appearance, moist<br>-FILL-<br>Analytical soil sample collected from 2 to 4 ft bgs. | | TR | | | 90 | 10 | | | | |
| | | | | 629.0 4.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Stiff, gray, fat CLAY (CH) mps = 10mm, no odor, moist<br>-TILL- | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 24/24 | 10.0 12.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 621.0 12.0 | CH | Similiar as above<br>PID = ND ppm<br>Bottom of exploration at 12 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 12
Rock Cored (ft)
Samples 3S

**Boring No. SB-28-167**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-28-168**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 23, 2012
Finish July 23, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,474
E 13,403,275

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 41/60 | 0.0 5.0 | 632.4 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | | SP-SC | Medium dense, brown, poorly graded SAND with clay (SP-SC), mps = 10mm, no odor, dry -FILL- PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | 628.6 4.5 | CH | PID = ND ppm Stiff, gray, fat CLAY (CH), mps = 5mm, no odor, moist -TILL- | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | Analytical soil sample collected from 6 to 8 ft bgs. PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, soft at 7 ft - 8 ft PID = ND ppm PID = ND ppm | | | | | | | | | | |
| 10 | | S3 24/24 | 10.0 12.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | 621.1 12.0 | CH | Similiar as above, stiff PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 12 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 12
Rock Cored (ft)
Samples 3S

**Boring No. SB-28-168**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-28-169**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 26, 2012
Finish July 26, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,624
E 13,403,237

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | | | CONCRETE (17.5") | | | | | | | | | | |
| | | | | | | PID = 1.1 ppm | | | | | | | | | | |
| | | | | 631.1 2.0 | SC/CH | Analytical soil sample collected from 1.5 to 3.5 ft bgs. | | | | 40 5 | 30 5 90 | 30 90 10 | N | M | M | M |
| | | | | | SP-SC | Loose, medium stiff, interbedded clayey SAND (SP-SC) and fat CLAY (CH), poorly graded | | | | | | | | | | |
| | | | | 629.1 4.0 | | PID = 2.0 ppm | | | | | | | | | | |
| | | | | | | Sand with CLAY (SP-SC), mps = 10mm, petroleum-like odor, moist -FILL- | | | | | | | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | | | PID = 0.3 ppm | | | | | | | | | | |
| | | | | | CH | PID = 0.3 ppm | | TR | | | TR | 99 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Stiff, brown to gray, fat CLAY (CH), mps = 10mm, no odor, moist -TILL- | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | | | Similiar as above | | | | | | | | | | |
| 10 | | | | 623.1 10.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-28-169**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-29-103**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 30, 2012
Finish July 30, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 632.7
Datum
Location See Plan
N 321,129
E 13,404,203

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 40/60 | 0.0 5.0 | 631.9 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | | SP-SC | Analytical soil sample collected from 0 to 2 ft bgs. Dense, tan to black, poorly graded SAND with clay (SP-SC), mps = 10mm, no odor, moist -FILL- PID = ND ppm PID = ND ppm | | TR | | | 90 | 10 | | | | |
| | | | | 628.2 4.5 | MH | Soft, gray, elastic SILT (MH), mps = silt, no odor, moist PID = ND ppm | | | | | | 100 | S | M | M | M |
| 5 | | S2 54/60 | 5.0 10.0 | 626.2 6.5 | CH | PID = ND ppm Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist PID = ND ppm | | TR | | | TR | 39 | N | H | H | H |
| 10 | | | | 622.7 10.0 | | PID = ND ppm Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S
**Boring No. SB-29-103**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-29-114**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 631.9
Datum
Location See Plan
N 321,113
E 13,403,816

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | 630.9 | | CONCRETE/GRAVEL | | | | | | | | | | |
| | | | | 1.0 | SP-SC | Dense, brown to black, poorly graded SAND with clay (SP-SC), mps = 5mm, slight sulfur odor at 2ft - 4ft, wet at 3ft - 4ft (from surface water) -FILL- PID = ND ppm Analytical soil sample collected from 2 to 4 ft bgs. PID = ND ppm | | | | | 90 | 10 | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | 626.9 5.0 | CH | PID = ND ppm Stiff, gray, fat CLAY, mps = 10mm, no odor, moist -TILL- PID = ND ppm PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 621.9 10.0 | | PID = ND ppm Bottom of exploration at 10 ft | | | | | | | | | | |

## Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-29-114**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-30-162**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation Datum 633.4
Location See Plan
N 321,012
E 13,402,705

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 40/60 | 0.0 5.0 | 632.7 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | 631.9 1.5 | CL | PID = ND ppm<br>Crushed Gravel<br>-FILL- | | TR | | 10 | 10 | 80 | S | M | M | H |
| | | | | 630.4 3.0 | SP-SC | PID = ND ppm<br>Soft, black, sandy, lean CLAY (CL), mps = 20mm, no odor, moist<br>-FILL-<br>Analytical soil sample collected from 2 to 4 ft bgs. | | | | | 90 | 10 | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | 627.9 5.5 | CH | PID = ND ppm<br>Dense, gray, poorly graded SAND with clay (SP-SC), mps = 10mm, no odor, moist<br>FILL | | | | | | | | | | |
| | | | | | | PID = ND ppm<br>Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL- | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.4 10.0 | | PID = ND ppm<br>Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-30-162**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-30-163**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 21, 2012
Finish June 21, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 632.9
Location See Plan
N 321,049
E 13,402,803

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 26/60 | 0.0 5.0 | 631.9 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | SW-SM | Loose, light brown, well graded SAND with silt and gravel (SW-SM), mps = 25mm, no odor, dry PID = ND ppm | 5 | 15 | 15 | 40 | 15 | 10 | | | | |
| | | | | 628.6 4.3 | CL | Soft brown, sandy lean CLAY (CL), mps = mm, no odor, dry PID = ND ppm | | | 5 | 20 | 10 | 65 | N | M | M | M |
| 5 | | S2 39/60 | 5.0 10.0 | 625.9 | | | | | | | | | | | | |
| | | | | 7.0 | SC | Loose, brown, clayey SAND with gravel (SC), mps = 15mm, no odor, wet PID = ND ppm | 5 | 10 | 10 | 35 | 10 | 30 | | | | |
| | | | | 624.9 8.0 | CL | Soft, sandy, lean CLAY (CL), mps = 4mm, no odor, moist | | | 5 | 20 | 10 | 65 | N | H | H | H |
| | | | | 623.9 9.0 | CH | Stiff, gray-brown, fat CLAY (CH), mps = 0.75mm, no odor, dry PID = ND ppm | | | | | | 100 | N | H | H | H |
| 10 | | S3 53/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, mps = 10mm PID = ND ppm | | | | | | | | | | |
| 15 | | S4 35/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, slightly softer, altough not enough to be considered lean clay PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 25
Rock Cored (ft) -
Samples 5S

**Boring No. SB-30-163**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-30-163
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 50/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Stiff, gray-brown, fat CLAY (CH), mps = 10mm, no odor, dry | | 2 | | | | 98 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| 25 | | | | 607.9 25.0 | | Similiar as above | | | | | | | | | | |
| | | | | | | Bottom of exploration at 25.0 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-30-163

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-30-170**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 25, 2012
Finish June 25, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.2
Datum
Location See Plan
N 320,926
E 13,402,744

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 41/60 | 0.0 5.0 | 631.9 | | CONCRETE | | | | | | | | | | |
| | | | | 1.3 631.2 | OL/ OH | Loose, dark brown, gravely, organic soil with SAND (OL/OH), mps = 30mm, | 5 | 10 | 10 | 10 | 10 | 55 | | | | |
| | | | | 2.0 | CH | Stiff, dark brown to dark gray, fat clay (CH), mps = 1mm, no odor, dry PID = 1.1 ppm | | | | 3 | 3 | 94 | N | H | H | H |
| | | | | 629.7 3.5 629.2 | CL | PID = 0.6 ppm | | | | 5 | 15 | 80 | N | M | M | M |
| | | | | 4.0 | CH | Soft, gray, lean CLAY with sand (CL), dry, no odor | | | | | | 100 | N | H | H | H |
| | | | | | | Very stiff, gray-brown, fat CLAY, CH, mps = 0.75mm, no odor, dry PID = 0.5 ppm | | | | | | | | | | |
| 5 | | S2 43/60 | 5.0 10.0 | | | PID = 0.1 ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm Similiar as above | | | | | | | | | | |
| 10 | | S3 45/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm Similiar as above, mps = 20mm | 5 | 3 | | | | 92 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm Similiar as above, mps = 20mm | 5 | 3 | | | | 92 | N | H | H | H |
| 15 | | S4 60/60 | 15.0 20.0 | | CH | PID = ND ppm Similiar as above, mps = 20mm | 5 | 3 | | | | 92 | N | H | H | H |
| | | | | | CH | PID = ND ppm Similiar as above, mps = 20mm | 5 | 3 | | | | 92 | N | H | H | H |
| | | | | | CH | PID = ND ppm Similiar as above, mps = 20mm | 5 | 3 | | | | 92 | N | H | H | H |
| 20 | | | | 613.0 | CH | | 5 | 3 | | | | 92 | N | H | H | H |

## Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 20
Rock Cored (ft) -
Samples 4S

**Boring No. SB-30-170**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-30-170
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PID = ND ppm<br>Similiar as above, mps = 20mm<br>Bottom of exploration at 20 ft | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-30-170

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-30-171**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 20, 2012
Finish July 20, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,839
E 13,402,744

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 43/60 | 0.0 5.0 | 632.4 | | CONCRETE | | | | | | | | | | |
| | | | | 0.8 | SP-SC | Dense, brown, poorly graded SAND (SP-SC), mps = 5mm, no odor, dry -FILL- PID = ND ppm | | TR | | | 90 | 10 | | | | |
| | | | | 630.1 3.0 | CH | Stiff, brown, fat CLAY (CH), mps = 3mm, no odor, moist -TILL- PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, occasional silt partings present PID = ND ppm | | | | | | | | | | |
| 10 | | S3 60/60 | 10.0 15.0 | | | PID = ND ppm Analytical soil sample collected from 10 to 12 ft bgs. | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| 15 | | | | 618.1 15.0 | | PID = ND ppm Bottom of exploration at 15 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 15
Rock Cored (ft)
Samples 3S

**Boring No. SB-30-171**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-31-142**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start August 1, 2012
Finish August 1, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 632.5
Datum
Location See Plan
N 320,472
E 13,402,963

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | 632.0 0.5 | | ASPHALT<br>Analytical soil sample collected from 0 to 2 ft bgs | | | | | | | | | | |
| | | | | 631.5 1.0 | SM | GRAVEL<br>Dense, black, silty SAND (SM), mps = fine sand, no odor<br>-FILL- | | | | | 60 | 40 | | | | |
| | | | | 630.0 2.5 | CL | PID = ND ppm<br>Medium stiff, gray, sandy lean CLAY (CL), mps = 10mm, no odor, moist | | TR | 10 | 10 | 5 | 75 | S | M | M | M |
| | | | | 629.0 3.5 | CH | -FILL-<br>PID = ND ppm/<br>Stiff, brown, fat CLAY (CH), mps = 10mm, no odor, moist, gray at 5ft | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | -TILL-<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 10 | | | | 622.5 10.0 | | PID = ND ppm<br>Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | | Sample ID | Well Diagram | Summary |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water | O - Open End Rod<br>T - Thin Wall Tube<br>U - Undisturbed Sample<br>S - Split Spoon Sample | Riser Pipe<br>Screen<br>Filter Sand<br>Cuttings<br>Grout<br>Concrete<br>Bentonite Seal | Overburden (ft) 10<br>Rock Cored (ft)<br>Samples 2S<br>**Boring No. SB-31-142** |
| | | | | | | | | |

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-32-147**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 20, 2012
Finish July 20, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.2
Datum
Location See Plan
N 320,921
E 13,403,297

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 37/60 | 0.0 5.0 | 632.4 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | | SP-SC | Dense, light brown to brown, poorly graded SAND with clay (SP-SC), mps = 10mm, no odor, moist -FILL- PID = ND ppm PID = ND ppm PID = ND ppm | | TR | | 10 | 80 | 10 | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | 627.7 5.5 | CH | Stiff, brown, fat CLAY (CH), mps = 5mm, no odor, moist | | TR | | | TR | 99 | N | H | H | H |
| | | | | 627.2 6.0 | MH | -TILL- | | | | | | 100 | S | M | H | M |
| | | | | 626.7 6.5 | | Stiff, brown with gray mottling, elastic SILT (MH), mps = silt, no odor, moist, PID = ND ppm PID = ND ppm Analytical soil sample collected from 8 to 10 ft bgs | | | | | | | | | | |
| | | | | | CH | Stiff, gray-brown, fat CLAY (CH), mps = 5mm, no odor, moist -TILL- | | TR | | | TR | 99 | N | H | H | H |
| 10 | | S3 60/60 | 10.0 15.0 | | | PID = ND ppm PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, gray PID = ND ppm PID = ND ppm | | | | | | | | | | |
| 15 | | | | 618.2 15.0 | | Bottom of exploration at 15 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 15
Rock Cored (ft)
Samples 3S

**Boring No. SB-32-147**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-32-148**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 20, 2012
Finish July 20, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.1
Datum
Location See Plan
N 320,965
E 13,403,272

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 50/54 | 0.0 5.0 | 632.4 0.8 | | CONCRETE | | | | | | | | | | |
| | | | | | SP-SC | PID = ND ppm | | TR | | | 90 | 10 | | | | |
| | | | | | | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 5mm, no odor, moist | | | | | | | | | | |
| | | | | | | -FILL- | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 2.5 to 4.5 ft bgs. | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 628.6 4.5 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 4.5 ft (refusal) | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 4.5
Rock Cored (ft)
Samples 1S

**Boring No. SB-32-148**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-33-104**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 30, 2012
Finish July 30, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.3
Datum
Location See Plan
N 321,088
E 13,404,210

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 42/60 | 0.0 5.0 | 632.6 | | CONCRETE<br>Analytical soil sample collected from 0 to 2 ft bgs. | | | | | | | | | | |
| | | | | 0.8 | SP | PID = ND ppm | | TR | | | 99 | TR | | | | |
| | | | | | | Dense, brown, poorly graded SAND (SP), mps = fine sand, no odor, moist<br>Dark brown 1.5' - 2', slight sulfur odor<br>-FILL-<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 5 | | S2 44/60 | 5.0 10.0 | 627.8 | | | | | | | | | | | | |
| | | | | 5.5 | CH | Soft, gray, fat clay, mps = 10mm, no odor, moist, re-worked material<br>PID = ND ppm | | | | 5 | 5 | 90 | N | H | H | H |
| | | | | 626.3 | | | | | | | | | | | | |
| | | | | 7.0 | CH | Stiff, gray, fat clay, mps = 10mm, no odor, moist<br>-TILL-<br>PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | S3 39/60 | 10.0 15.0 | | | PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | SAA<br>PID = ND ppm | | | | | | | | | | |
| 15 | | S4 60/60 | 15.0 20.0 | | | PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| | | | | | CH | SAA<br>PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 40
Rock Cored (ft)
Samples 8S

**Boring No. SB-33-104**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

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# TEST BORING REPORT

**Boring No.** SB-33-104
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 51/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | SAA | | | | | | | | | | |
| 25 | | S6 60/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | SAA | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | SAA | | | | | | | | | | |
| 35 | | S8 60/60 | 35.0 40.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | SAA | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 40 | | | | 593.3 40.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 40 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-33-104

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

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# TEST BORING REPORT

**Boring No. SB-33-105**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 30, 2012
Finish July 30, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.3
Datum
Location See Plan
N 321,019
E 13,404,237

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 40/60 | 0.0 5.0 | 632.8 | | CONCRETEAnalytical soil sample collected from 0 to 5 ft bgs. | | | | | | | | | | |
| | | | | 0.5 | SP-SC | Dense, brown, poorly graded SAND with clay (SP-SC), mps = 10mm, slight petroleum-like odor, moist -FILL- PID = 28.9 ppm PID = 22.4 ppm | | TR | | | 90 | 10 | | | | |
| 5 | | S2 48/60 | 5.0 10.0 | | | PID = 16.7 ppm | | | | | | | | | | |
| | | | | | SP-SC | Similiar as above, wet PID = 1.2 ppm PID = 0.5 ppm | | | | | | | | | | |
| | | | | 624.8 8.5 | CH | Soft, gray-brown, fat CLAY (CH), mps = 10mm, no odor, moist -FILL- PID = ND ppm | | TR | | 5 | 5 | 90 | S | M | H | M |
| 10 | | S3 60/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm PID = ND ppm | | | | | | | | | | |
| 15 | | S4 48/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above PID = ND ppm | | | | | | | | | | |
| | | | | 614.8 18.5 | SP | Dense, brown, poorly graded SAND (SP), mps = fine sand, no odor, moist -FILL- | | | | | 100 | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 08/01/2012 | | | | 9.23 | 3.25 |

**Sample ID**

O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

Overburden (ft) 22
Rock Cored (ft)
Samples 5S

**Boring No. SB-33-105**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

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# TEST BORING REPORT

**Boring No.** SB-33-105
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 24/24 | 20.0 22.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 611.3 22.0 | | Bottom of exploration at 22 ft (refusal) | | | | | | | | | | |
| | | | | | | 1.5-inch temporary PVC well screened from 4 to 9 ft bgs. | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-33-105

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-33-106**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start July 27, 2012
Finish July 27, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.0
Datum
Location See Plan
N 320,941
E 13,404,206

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 33/60 | 0.0 5.0 | 632.5 0.5 | | GRAVEL | | | | | | | | | | |
| | | | | | CH | Soft to medium stiff, brown with gray mottling, fat CLAY with sand (CH), mps = 20mm, no odor, moist PID = ND ppm | | TR | | 5 | 10 | 85 | S | H | H | M |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 42/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above -FILL- PID = ND ppm Analytical soil sample collected from 8 to 10 ft bgs. | | | | | | | | | | |
| | | | | 623.5 9.5 | SP-SC | Medium dense, brown, poorly graded sand with clay, mps = 10mm, slight petroleum-like odor, moist -FILL- PID = 1.5 ppm | | TR | | | 90 | 10 | | | | |
| 10 | | S3 36/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP-SC | Similiar as above, moist PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 50/60 | 15.0 20.0 | | SP-SC | Similiar as above, wet at 17 ft PID = ND ppm | | | | | | | | | | |
| | | | | 615.5 17.5 | CH | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist -TILL- PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 40
Rock Cored (ft)
Samples 8S

**Boring No. SB-33-106**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-33-106
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 60/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| 25 | | S6 60/60 | 25.0 30.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 30 | | S7 60/60 | 30.0 35.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above<br>Analytical soil samples collected from 32-34 ft bgs. | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 35 | | S8 60/60 | 35.0 40.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 40 | | | | 593.0 40.0 | | PID = ND ppm<br>Bottom of exploration at 40 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-33-106

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-33-108**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 25, 2012
Finish June 25, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation 633.4
Datum
Location See Plan
N 321,060
E 13,404,135

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 20/60 | 0.0 5.0 | 632.4 | | CONCRETE | | | | | | | | | | |
| | | | | 1.0 | | No Recovery 1' - 3' | | | | | | | | | | |
| | | | | | SW-SM | PID = ND ppm<br>Loose, brown, well graded SAND, with silt and gravel (SW-SM), mps = 25mm, no odor, wet | 5 | 10 | 15 | 40 | 20 | 10 | | | | |
| 5 | | S2 30/60 | 5.0 10.0 | | | PID = ND ppm<br>No Recovery 5' - 7.5'<br>PID = 0.1 ppm | | | | | | | | | | |
| | | | | 625.9 7.5 | | Similiar as above | 5 | 10 | 15 | 40 | 20 | 10 | | | | |
| | | | | | CH | PID = ND ppm<br>Similiar as above | | | | | | | | | | |
| | | | | | SW-SM | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 25/60 | 10.0 15.0 | | | Similiar as above, except moist from 9' - 10'<br>No Recovery 10' - 13'<br>PID = ND ppm | | | | | | | | | | |
| | | | | 620.4 13.0 | CL | Soft, brown, lean CLAY (CL), mps = 20mm, no odor, moist | 2 | 3 | | | | 95 | N | M | M | M |
| | | | | 619.4 14.0 | CH | PID = ND ppm<br>Stiff, brown, fat CLAY (CH), mps = 20mm, no odor, dry | 2 | 3 | | | | 95 | N | H | H | H |
| 15 | | S4 29/60 | 15.0 20.0 | | | PID = ND ppm<br>No Recovery 15' - 17.5' | | | | | | | | | | |
| | | | | 615.1 18.3 | CH | Similiar as above | | | | | | | | | | |
| | | | | | SW-SM | PID = ND ppm<br>Dense, brown, well graded SAND, with silt and gravel (SW-SM), mps = 40mm, no odor, dry | 10 | 10 | 15 | 35 | 20 | 10 | | | | |
| 20 | | | | 613.4 20.0 | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 20
Rock Cored (ft) -
Samples 4S

**Boring No. SB-33-108**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-33-108
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 20 ft | | | | | | | | | | |

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** SB-33-108

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-34-109**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.6
Datum
Location See Plan
N 320,965
E 13,404,140

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 24/60 | 0.0 5.0 | 632.6 | | CONCRETE<br>Analytical soil sample collected from 0 to 2 ft bgs. | | | | | | | | | | |
| | | | | 1.0 | SP | Dense, brown, fine SAND (SP), mps = 3mm, no odor, moist<br>-FILL-<br>PID = ND ppm | | TR | | | 100 | TR | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | S2 49/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP | Similiar as above | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 624.1 | | PID = ND ppm | | | | | | | | | | |
| | | | | 9.5 | CH | | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 623.6 10.0 | | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL-<br>Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-34-109**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-36-110**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 25, 2012
Finish July 25, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.3
Datum
Location See Plan
N 320,934
E 13,404,025

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 30/60 | 0.0 5.0 | 632.6 | | CONCRETE<br>Analytical soil sample collected from 0.5 to 2.5 ft bgs. | | | | | | | | | | |
| | | | | 0.8<br>632.1 | | GRAVEL | | | | | | | | | | |
| | | | | 1.3 | SP | -FILL-<br>PID = ND ppm | | TR | | | 99 | TR | | | | |
| | | | | | | Dense, brown, poorly graded SAND (SP), mps = 10mm, no odor, moist to wet | | 99 | | | TR | | | | | |
| | | | | | | -FILL-<br>PID = ND ppm<br>Pea gravel at 4-5' - 5' | | | | | | | | | | |
| 5 | | S2 49/60 | 5.0 10.0 | 628.3<br>5.0 | CH | PID = ND ppm<br>PID = ND ppm<br>Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL-<br>PID = ND ppm<br>PID = ND ppm | | TR | | | TR | 99 | | | | |
| 10 | | | | 623.3<br>10.0 | | PID = ND ppm<br>Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | | Sample ID | Well Diagram | Summary |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water | O - Open End Rod<br>T - Thin Wall Tube<br>U - Undisturbed Sample<br>S - Split Spoon Sample | Riser Pipe<br>Screen<br>Filter Sand<br>Cuttings<br>Grout<br>Concrete<br>Bentonite Seal | Overburden (ft) 10<br>Rock Cored (ft)<br>Samples 2S<br>**Boring No. SB-36-110** |
| | | | | | | | | |

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-36-111**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 25, 2012
Finish July 25, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation Datum 633.4
Location See Plan
N 320,962
E 13,403,990

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 30/60 | 0.0 5.0 | 632.6 | | CONCRETE<br>Analytical soil sample collected from 0.5 to 2.5 ft bgs. | | | | | | | | | | |
| | | | | 632.1 0.8 | | GRAVEL | | | | | | | | | | |
| | | | | 1.3 | SP | -FILL- | | | | | 100 | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Dense, red, poorly graded SAND (SP), mps = fine sand, no odor, wet (from surface water) | | | | | | | | | | |
| | | | | | | -FILL- | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 5 | | | | 628.4 | | | | | | | | | | | | |
| | | S2 48/60 | 5.0 10.0 | 5.0 | CH | PID = ND ppm | | TR | | TR | 99 | N | H | H | H | |
| | | | | | | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist | | | | | | | | | | |
| | | | | | | -TILL- | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.4 | | | | | | | | | | | | |
| | | | | 10.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
- O - Open End Rod
- T - Thin Wall Tube
- U - Undisturbed Sample
- S - Split Spoon Sample

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary
- Overburden (ft) 10
- Rock Cored (ft)
- Samples 2S

**Boring No. SB-36-111**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-36-112**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.3
Datum
Location See Plan
N 321,017
E 13,404,036

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 33/60 | 0.0 5.0 | 632.8 0.5 | | CONCRETE<br>Analytical soil sample collected from 0 to 2 ft bgs. | | | | | | | | | | |
| | | | | | SP-SC | Dense, brown to black, poorly graded SAND with clay (SP-SC), mps = 10mm, no odor, moist<br>-FILL-<br>PID = ND ppm<br>PID = ND ppm | | | | | 90 | 10 | | | | |
| | | | | 628.8 4.5 | CH | Stiff, brown to gray, fat CLAY (CH), mps = 10mm, no odor, moist<br>-TILL-<br>PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | PID = ND ppm<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.3 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-36-112**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-36-113**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation Datum 633.6
Location See Plan
N 320,988
E 13,404,067

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 40/60 | 0.0 5.0 | 632.9 | | TILE/CONCRETE | | | | | | | | | | |
| | | | | 0.8 | GP | Loose, red-brown, poorly graded, gravel with SAND (GP), mps = 10mm, no odor, moist | | 70 | 10 | 10 | 5 | 5 | | | | |
| | | | | 631.6 | | -FILL- | | | | | | | | | | |
| | | | | 2.0 | SP | PID = ND ppm | | | | | 100 | TR | | | | |
| | | | | | | Dense, brown, poorly graded SAND (SP), mps = 3mm, no odor, moist, black, petroleum like odor at 4.5ft - 5ft | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = 1.7 ppm | | | | | | | | | | |
| 5 | | | | 628.6 | | Analytical soil sample collected from 3 to 5 ft bgs. | | | | | | | | | | |
| | | S2 60/60 | 5.0 10.0 | 5.0 | CH | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist | | TR | | | TR | 99 | N | H | H | H |
| | | | | | | -TILL- | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Occasional silt lens (<1") present | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.6 10.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-36-113**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-37-107**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 25, 2012
Finish July 25, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.4
Datum
Location See Plan
N 320,978
E 13,403,941

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 33/60 | 0.0 5.0 | 632.4 | | CONCRETE | | | | | | | | | | |
| | | | | 631.9 1.0 | | Gravel | | | | | | | | | | |
| | | | | 1.5 | | -FILL- PID = ND ppm | | | | | | | | | | |
| | | | | 630.4 3.0 | | Black foundry sand, wet -FILL- | | | | | | | | | | |
| | | | | | SP | Dense, gray, poorly graded SAND (SP), mps = fine sand, slight stagnant odor, wet (from surface water) -FILL- Analytical soil sample collected from 3 to 5 ft bgs. | | | | | 100 | | | | | |
| 5 | | S2 60/60 | 5.0 10.0 | 628.4 5.0 | CH | PID = ND ppm PID = ND ppm Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist PID = ND ppm PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 623.4 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-37-107**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-38-100**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 27, 2012
Finish July 27, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 634.4
Datum
Location See Plan
N 321,079
E 13,404,435

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 48/60 | 0.0 5.0 | 633.9 | | TOPSOIL ORGANICS | | | | | | | | | | |
| | | | | 0.5 | | GRAVEL/FINES/SAND -FILL- PID = ND ppm | | | | | | | | | | |
| | | | | 632.4 2.0 | CL | Medium stiff, brown to black, sandy lean CLAY (CL), mps = 10mm, slight petroleum like odor, moist -FILL- | | TR | | 15 | 15 | 70 | | | | |
| | | | | 630.9 3.5 | SP | PID = ND ppm | | | | | 100 | | | | | |
| | | | | 629.9 4.5 | CH | Dense, brown, poorly graded SAND (SP), no odor, moist -FILL- | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | 627.9 6.5 | MH | Stiff, brown, with gray mottling, fat CLAY (CH), mps = 10mm, no odor, moist -TILL- | | | | | | 100 | S | M | M | M |
| | | | | 626.9 7.5 | CH | PID = ND ppm Soft, red-brown, elastic SILT (MH), mps = silt, no odor, wet PID = ND ppm | | | | | | | | | | |
| 10 | | | | 624.4 10.0 | | Similar as 4.5 feet to 6.5 feet PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-38-100**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-38-101**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 634.6
Datum
Location See Plan
N 321,033
E 13,404,362

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 48/60 | 0.0 5.0 | 633.6 | CL | Soft, brown, sandy lean CLAY (CL), mps=10mm, no odor, moist -FILL- | | TR | 10 | 10 | 10 | 70 | S | M | M | H |
| | | | | 1.0 | | Gravel/sand/fines -FILL- PID = ND ppm | | | | | | | | | | |
| | | | | 631.6 3.0 | ML | Analytical soil sample collected from 2.5 to 4.5 ft bgs. Soft, black, sandy SILT (ML), mps=fine sand, sulfur odor, moist | | | | | 30 | 70 | R | L | L | L |
| | | | | 630.6 4.0 | ML | Similar as above - brown, no odor, wet PID = ND ppm | | | | | | | | | | |
| 5 | | S2 50/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | 626.6 8.0 | CH | Stiff, gray, fat CLAY (CH), mps=10mm, no odor, moist -TILL- PID = ND ppm | | TR | | | TR | 99 | N | H | H | H |
| 10 | | | | 624.6 10.0 | | Bottom of exploration at 10 ft | | | | | | | | | | |
| | | | | | | 1.5-inch temporary PVC well screened from 2.5 to 7.5 ft bgs. | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-38-101**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-38-102**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 31, 2012
Finish July 31, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 634.3
Datum
Location See Plan
N 320,933
E 13,404,417

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 45/60 | 0.0 5.0 | | | Soft, brown, sandy lean CLAY (CL), MPS = 10mm, no odor, moist -FILL- | | TR | 10 | 10 | 10 | 70 | S | M | M | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Analytical soil sample collected from 2 to 4 ft bgs. | | | | | | | | | | |
| | | | | 631.3 3.0 | ML | PID = ND ppm | | | | | 20 | 80 | R | L | L | L |
| | | | | 630.3 4.0 | ML | Soft, black, sandy SILT (ML), mps = fine sand, sulfur odor, moist -FILL- | | | | | | | | | | |
| | | | | | | Similiar as above - brown, no odor, wet | | | | | | | | | | |
| 5 | | S2 54/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 627.3 7.0 | CH | Stiff, gray, fat CLAY (CH), mps = 10mm, no odor, moist -TILL- | | TR | | | TR | 97 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | | | 624.3 10.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-38-102**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-39-134**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 21, 2012
Finish June 21, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 632.9
Location See Plan
N 320,198
E 13,403,105

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 24/60 | 0.0 5.0 | 631.9 1.0 | | CONCRETE | | | | | | | | | | |
| | | | | | SW-SM | Loose, brown, well graded SAND with silt, gravel (SW-SM), mps = 50mm, no odor, dry | 10 | 10 | 15 | 40 | 15 | 10 | | | | |
| 5 | | | | 627.9 5.0 | | PID = 0.2 ppm | | | | | | | | | | |
| | | S2 | 5.0 10.0 | 627.4 5.5 | | Concrete, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 5.5 ft (refusal) | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 5.5
Rock Cored (ft) -
Samples 2S

**Boring No. SB-39-134**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-40-135**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 24, 2012
Finish July 24, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.2
Datum
Location See Plan
N 320,306
E 13,403,093

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 45/60 | 0.0 5.0 | 632.4 | | CONCRETE | | | | | | | | | | |
| | | | | 0.8 | SP | Dense, brown, poorly graded SAND (SP), mps = fine sand, no odor, dry -FILL- | | | | | 100 | | | | | |
| | | | | 631.2 | | | | | | | | | | | | |
| | | | | 2.0 630.7 | | PID = ND ppm | | | | | | | | | | |
| | | | | 2.5 | SP | CONCRETE Analytical soil sample collected from 2 to 4 ft bgs. | | | | | 100 | | | | | |
| | | | | | | Similar as 0.75' - 2', poorly graded sand, slight greasy odor PID = ND ppm | | | | | | | | | | |
| 5 | | S2 50/60 | 5.0 10.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | SP | Similiar as above, wet PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.2 10.0 | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Bottom of exploration at 10 ft | | | | | | | | | | |

1.5-inch temporary PVC well screened from 5 to 10 feet bgs.

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-40-135**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-41-141**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 2
Start June 22, 2012
Finish June 22, 2012
Driller L. Weiss
H&A Rep. M. Castles-Humphrey
Elevation Datum 633.1
Location See Plan
N 320,520
E 13,403,096

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | - | Macro | - | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | - | 1.75 | - | Bit Type: N/A |
| Hammer Weight (lb) | - | - | - | Drill Mud: None |
| Hammer Fall (in.) | - | - | - | Casing: |
| | | | | Hoist/Hammer: N/A |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 19/60 | 0.0 5.0 | | | CONCRETE (3.33 ft) | | | | | | | | | | |
| | | | | 629.7 3.3 | SM | Analytical soil sample collected from 3 to 5 ft bgs. Loose, gray with black discoloration at 3.5' - 4', silty SAND (SM), mps = 2mm, moist on outside, dry inside, strong hydrocarbon like odor | | | | 40 | 30 | 30 | | | | |
| | | | | 628.6 4.5 | CH | PID = 0.6 ppm | | | | | | 100 | | | | |
| 5 | | S2 48/60 | 5.0 10.0 | | | Very stiff, gray, fat CLAY, (CL), mps = 0.75mm, dry, slight hydrocarbon like odor | | | | | | | | | | |
| | | | | | | PID = 0.8 ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above, no odor after 5 ft | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 10 | | S3 44/60 | 10.0 15.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| | | | | 620.6 12.5 | CL | Similiar as above | | | | | | 100 | N | M | M | M |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | 619.6 13.5 | CH | Medium stiff to soft gray, lean CLAY (CL), mps = 0.75mm, dry inside, a little moist outside, no odor | | | | | | 100 | N | H | H | H |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 15 | | S4 48/60 | 15.0 20.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | | Stiff, gray, fat CLAY (CH), mps = 0.75mm, dry, no odor | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | 3 | 2 | | | | 95 | N | H | H | H |
| | | | | | | Similiar as above, mps = 20mm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | PID = ND ppm | | | | | | | | | | |
| 20 | | | | | | Similiar as above | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

**Sample ID**
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

**Well Diagram**
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (ft) | 25 |
| Rock Cored (ft) | - |
| Samples | 5S |

**Boring No. SB-41-141**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** SB-41-141
File No. 37290-014
Sheet No. 2 of 2

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | S5 54/60 | 20.0 25.0 | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above<br>PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| | | | | | CH | Similiar as above<br>PID = ND ppm | | | | | | | | | | |
| | | | | | | PID = ND ppm | | | | | | | | | | |
| 25 | | | | 608.1 25.0 | | Bottom of exploration at 25.0 ft<br>PID = ND ppm | | | | | | | | | | |

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

**Boring No.** SB-41-141

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. SB-42-119**

Project Former GMPT Livonia, 12200 Middlebelt Road, Livonia, MI
Client RACER Trust
Contractor Boart Longyear

File No. 37290-014
Sheet No. 1 of 1
Start July 26, 2012
Finish July 26, 2012
Driller M. Hefferan
H&A Rep. Corey Barnett
Elevation 633.2
Datum
Location See Plan
N 320,742
E 13,403,439

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | | Macro | -- | Rig Make & Model: Geoprobe |
| Inside Diameter (in.) | | 1.75 | -- | Bit Type: Cutting Head |
| Hammer Weight (lb) | | | - | Drill Mud: None |
| Hammer Fall (in.) | | | - | Casing: |
| | | | | Hoist/Hammer: Winch Automatic Hammer |
| | | | | PID Make & Model: |

| Depth (ft) | Sampler Blows per 6 in. | Sample No. & Rec. (in.) | Sample Depth (ft) | Stratum Change Elev/Depth (ft) | USCS Symbol | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | S1 48/60 | 0.0 5.0 | 632.2 1.0 | | CONCRETE | | | | | | | | | | |
| | | | | | CH | PID = ND ppm<br>Soft/loose, interbedded fat CLAY and poorly graded SAND (CH), mps = 10mm, no odor, moist | | | | | | 100 | | | | |
| | | | | 631.2 2.0 | SP | -FILL- | | | | | | | | | | |
| | | | | 630.2 3.0 | CH | Analytical soil sample collected from 3 to 5 ft bgs. | | | | | 5 | 95 | | | | |
| | | | | 629.2 4.0 | SP | | | | | | | | | | | |
| | | | | 628.7 4.5 | CH | Stiff, brown to gray, fat CLAY (CH), mps = 10mm, no odor, moist, occasional silt lens present | | TR | | | TR | 99 | N | H | H | H |
| 5 | | S2 60/60 | 5.0 10.0 | | | PID = ND ppm<br>-TILL-<br>PID = ND ppm<br>PID = ND ppm | | | | | | | | | | |
| 10 | | | | 623.2 10.0 | | PID = ND ppm<br>Bottom of exploration at 10 ft | | | | | | | | | | |

| Water Level Data | | | | | |
|---|---|---|---|---|---|
| Date | Time | Elapsed Time (hr.) | Depth (ft) to: Bottom of Casing | Bottom of Hole | Water |
| | | | | | |

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 10
Rock Cored (ft)
Samples 2S

**Boring No. SB-42-119**

**Field Tests:** **Dilatancy**: R - Rapid S - Slow N - None
**Toughness**: L - Low M - Medium H - High
**Plasticity**: N - Nonplastic L - Low M - Medium H - High
**Dry Strength**: N - None L - Low M - Medium H - High V - Very High

***Note: Maximum particle size is determined by direct observation within the limitations of sampler size.**

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

H&A-TEST BORING-07-1 HA-LIB07-1NEWROC.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\37290_RACER_LIVONIA\GINT LOGS\37290-014TB.GPJ Feb 5, 13

# APPENDIX B

## Summary of Soil and Groundwater Analytical Data

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-02 | AOI-02 | AOI-04 | AOI-04 | AOI-04 | AOI-05 | AOI-06 | AOI-06 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-02-131 | SB-02-132 | SB-04-126 | SB-04-157 | SB-04-157 | SB-05-127 | SB-06-136 | SB-06-137 |
| Sample Name | | SB131(06-20-2012)(1-2) | SB132(07-18-12)(20-22) | SB126-(07-25-12) (24-26) | SB157(07-17-12)(3-5) | SB157(07-17-12)(8-10) | SB127(06-18-2012)(3-5) | SB136-(07-23-12) (22-24) | SB137-(07-23-12) (22-24) |
| Sample Date | | 6/20/2012 | 7/18/2012 | 7/25/2012 | 7/17/2012 | 7/17/2012 | 6/18/2012 | 7/23/2012 | 7/23/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 1 - 2 (ft) | 20 - 22 (ft) | 24 - 26 (ft) | 3 - 5 (ft) | 8 - 10 (ft) | 3 - 5 (ft) | 22 - 24 (ft) | 22 - 24 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | |
| Arsenic, Total | SW6020 | **0.8** | **4.73** | **4.55** | **0.98** | **8.58** | **0.42** | **4.75** | **7.03** |
| Barium, Total | SW6020 | **81** | **32.1** | **61.3** | **20.3** | **67.2** | **21.3** | **61.8** | **47.6** |
| Cadmium, Total | SW6020 | **0.24** | **0.22** | **0.25** | **0.21** | 0.2 U | 0.2 U | **0.25** | **0.2** |
| Chromium, Total | SW6020 | **4.14** | **5.76** | **9.39** | **1.85** | **11.4** | **1.43** | **6.83** | **5.79** |
| Copper, Total | SW6020 | **14.5** | **17.9** | **19.8** | **5.54** | **18.3** | **2.73** | **16.3** | **17.5** |
| Lead, Total | SW6020 | **8.61** | **7.96** | **8.34** | **2.72** | **8.52** | **2.26** | **9.09** | **9.04** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium, Total | SW6020 | 0.5 U | **0.66** | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Silver, Total | SW6020 | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.2 U | 0.1 U | 0.1 U |
| Zinc, Total | SW6020 | **15.5** | **31.4** | **37.1** | **13.6** | **38.6** | **4.36** | **39.1** | **31.6** |
| **Other (%)** | | | | | | | | | |
| Total Solids | SM2540B | **82** | **86** | **85** | **91** | **81** | **91** | **85** | **86** |
| **PCBs (mg/kg)** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| 2-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(b)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(g,h,i)perylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(k)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Chrysene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Dibenz(a,h)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluorene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Naphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Phenanthrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 1.5 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| 1,1,1-Trichloroethane | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| 1,1,2-Trichloroethane | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| 1,1-Dichloroethane | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| 1,1-Dichloroethene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| 1,2,3-Trichlorobenzene | SW8260 | 0.47 U | - | - | - | - | 0.39 U | - | - |
| 1,2,3-Trichloropropane | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| 1,2,3-Trimethylbenzene | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.47 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.39 U | 0.1 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-02 | AOI-02 | AOI-04 | AOI-04 | AOI-04 | AOI-05 | AOI-06 | AOI-06 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-02-131 | SB-02-132 | SB-04-126 | SB-04-157 | SB-04-157 | SB-05-127 | SB-06-136 | SB-06-137 |
| Sample Name | | SB131(06-20-2012)(1-2) | SB132(07-18-12)(20-22) | SB126-(07-25-12) (24-26) | SB157(07-17-12)(3-5) | SB157(07-17-12)(8-10) | SB127(06-18-2012)(3-5) | SB136-(07-23-12) (22-24) | SB137-(07-23-12) (22-24) |
| Sample Date | | 6/20/2012 | 7/18/2012 | 7/25/2012 | 7/17/2012 | 7/17/2012 | 6/18/2012 | 7/23/2012 | 7/23/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 1 - 2 (ft) | 20 - 22 (ft) | 24 - 26 (ft) | 3 - 5 (ft) | 8 - 10 (ft) | 3 - 5 (ft) | 22 - 24 (ft) | 22 - 24 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.4 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.3 U | 0.07 U | 0.07 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.03 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.02 U | 0.07 U | 0.07 U |
| 1,2-Dichlorobenzene | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |
| 1,2-Dichloroethane | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| 1,2-Dichloropropane | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| 1,3,5-Trimethylbenzene | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| 1,3-Dichlorobenzene | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |
| 1,4-Dichlorobenzene | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 1.1 U | 0.99 U | 1 U | 0.9 U | 1.1 U | 0.89 U | 1 U | 0.98 U |
| 2-Hexanone | SW8260 | 4 U | 3 U | 3 U | 3 U | 4 U | 3 U | 3 U | 3 U |
| 2-Methylnaphthalene | SW8260 | 0.47 U | - | - | - | - | 0.39 U | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | 0.07 U | - | - | - | - | 0.06 U | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 4 U | 3 U | 3 U | 3 U | 4 U | 3 U | 3 U | 3 U |
| Acetone | SW8260 | 1 U | 0.99 U | 1 U | 0.9 U | 1.1 U | 1 U | 1 U | 0.98 U |
| Acrylonitrile | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| Benzene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Bromobenzene | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| Bromodichloromethane | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |
| Bromoform | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.2 U | 0.3 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Chlorobenzene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Chlorobromomethane | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| Chloroethane | SW8260 | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| cis-1,3-Dichloropropene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Cyclohexane | SW8260 | - | 0.07 U | 0.07 U | 0.06 U | 0.07 U | - | 0.07 U | 0.07 U |
| Cymene (p-Isopropyltoluene) | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| Dibromochloromethane | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |
| Dibromomethane | SW8260 | 0.4 U | - | - | - | - | 0.3 U | - | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.4 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.3 U | 0.07 U | 0.07 U |
| Ethyl Ether | SW8260 | 0.3 U | - | - | - | - | 0.2 U | - | - |
| Ethylbenzene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Hexachloroethane | SW8260 | 0.4 U | - | - | - | - | 0.4 U | - | - |
| Iodomethane | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| Isopropylbenzene | SW8260 | 0.4 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.3 U | 0.07 U | 0.07 U |
| m&p-Xylene | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |
| Methyl acetate | SW8260 | - | 3 U | 3 U | 3 U | 4 U | - | 3 U | 3 U |
| Methyl cyclohexane | SW8260 | - | **0.1** | **0.19** | 0.06 U | 0.07 U | - | **0.22** | **0.15** |
| Methyl Tert Butyl Ether | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.2 U | 0.3 U | 0.3 U |
| Methylene chloride | SW8260 | 0.1 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.1 U | 0.3 U | 0.3 U |
| Naphthalene | SW8260 | 0.47 U | - | - | - | - | 0.39 U | - | - |
| n-Butylbenzene | SW8260 | 0.07 U | - | - | - | - | 0.06 U | - | - |
| n-Propylbenzene | SW8260 | 0.1 U | - | - | - | - | 0.1 U | - | - |
| o-Xylene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Styrene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| tert-Butylbenzene | SW8260 | 0.07 U | - | - | - | - | 0.06 U | - | - |
| Tetrachloroethene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Tetrahydrofuran | SW8260 | 1 U | - | - | - | - | 1 U | - | - |
| Toluene | SW8260 | 0.1 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.1 U | 0.07 U | 0.07 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-02 | AOI-02 | AOI-04 | AOI-04 | AOI-04 | AOI-05 | AOI-06 | AOI-06 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-02-131 | SB-02-132 | SB-04-126 | SB-04-157 | SB-04-157 | SB-05-127 | SB-06-136 | SB-06-137 |
| Sample Name | | SB131(06-20-2012)(1-2) | SB132(07-18-12)(20-22) | SB126-(07-25-12) (24-26) | SB157(07-17-12)(3-5) | SB157(07-17-12)(8-10) | SB127(06-18-2012)(3-5) | SB136-(07-23-12) (22-24) | SB137-(07-23-12) (22-24) |
| Sample Date | | 6/20/2012 | 7/18/2012 | 7/25/2012 | 7/17/2012 | 7/17/2012 | 6/18/2012 | 7/23/2012 | 7/23/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 1 - 2 (ft) | 20 - 22 (ft) | 24 - 26 (ft) | 3 - 5 (ft) | 8 - 10 (ft) | 3 - 5 (ft) | 22 - 24 (ft) | 22 - 24 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| trans-1,3-Dichloropropene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| trans-1,4-Dichloro-2-butene | SW8260 | 0.07 U | - | - | - | - | 0.06 U | - | - |
| Trichloroethene | SW8260 | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U | 0.06 U | 0.07 U | 0.07 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | - | 0.1 U | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U | 0.1 U |
| Vinyl chloride | SW8260 | 0.07 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.06 U | 0.1 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-06 | AOI-06 | AOI-07 | AOI-09 | AOI-10 | AOI-12 | AOI-12 | AOI-13 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-06-138 | SB-06-139 | SB-07-140 | SB-09-123 | SB-10-124 | SB-12-120 | SB-12-121 | SB-13-144 |
| Sample Name | | SB138(07-19-12)(22.5-24.5) | SB139-(07-24-12) (22-24) | SB140(07-19-12)(10-12) | SB123(07-16-12)(6-8) | SB124(07-16-12)(4-6) | SB120 (07-26-12) (4-6) | SB121(06-25-2012)(3-5) | SB144 (07-26-12) (1.5-3.5) |
| Sample Date | | 7/19/2012 | 7/24/2012 | 7/19/2012 | 7/16/2012 | 7/16/2012 | 7/26/2012 | 6/25/2012 | 7/26/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 22.5 - 24.5 (ft) | 22 - 24 (ft) | 10 - 12 (ft) | 6 - 8 (ft) | 4 - 6 (ft) | 4 - 6 (ft) | 3 - 5 (ft) | 1.5 - 3.5 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | |
| Arsenic, Total | SW6020 | **4.34** | **0.94** | **1.27** | **2.21** | **0.95** | **3.49** | **2.01** | **0.44** |
| Barium, Total | SW6020 | **53** | **5.51** | **54.1** | **58.9** | **18.7** | **54.7** | **49.7** | **27.5** |
| Cadmium, Total | SW6020 | **0.22** | 0.2 U | 0.2 U | **0.31** | 0.2 U | **0.21** | 0.2 U | 0.2 U |
| Chromium, Total | SW6020 | **5.93** | **1.32** | **4.94** | **5.38** | **2.39** | **7.59** | **4.24** | **3.04** |
| Copper, Total | SW6020 | **15.9** | **3.36** | **11.2** | **19.7** | **4.33** | **17.2** | **7.35** | **4.95** |
| Lead, Total | SW6020 | **7.34** | **2.35** | **7.38** | **10.5** | **6.27** | **8.97** | **6.8** | **3.57** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium, Total | SW6020 | 0.5 U | 0.5 U | 0.5 U | **0.64** | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Silver, Total | SW6020 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.2 U | 0.1 U |
| Zinc, Total | SW6020 | **30.5** | **12.4** | **22.5** | **30** | **8.82** | **34.8** | **21** | **10.7** |
| **Other (%)** | | | | | | | | | |
| Total Solids | SM2540B | **86** | **79** | **79** | **80** | **84** | **81** | **84** | **92** |
| **PCBs (mg/kg)** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| 2-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Acenaphthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Acenaphthylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Benzo(a)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Benzo(a)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Benzo(b)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Benzo(g,h,i)perylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Benzo(k)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Chrysene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Dibenz(a,h)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Fluorene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Naphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Phenanthrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| Pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.4 U |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| 1,1,1-Trichloroethane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1,2-Trichloroethane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1-Dichloroethane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1-Dichloroethene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,2,3-Trichlorobenzene | SW8260 | - | - | - | - | - | - | 0.46 U | - |
| 1,2,3-Trichloropropane | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| 1,2,3-Trimethylbenzene | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.46 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-06 | AOI-06 | AOI-07 | AOI-09 | AOI-10 | AOI-12 | AOI-12 | AOI-13 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-06-138 | SB-06-139 | SB-07-140 | SB-09-123 | SB-10-124 | SB-12-120 | SB-12-121 | SB-13-144 |
| Sample Name | | SB138(07-19-12)(22.5-24.5) | SB139-(07-24-12) (22-24) | SB140(07-19-12)(10-12) | SB123(07-16-12)(6-8) | SB124(07-16-12)(4-6) | SB120 (07-26-12) (4-6) | SB121(06-25-2012)(3-5) | SB144 (07-26-12) (1.5-3.5) |
| Sample Date | | 7/19/2012 | 7/24/2012 | 7/19/2012 | 7/16/2012 | 7/16/2012 | 7/26/2012 | 6/25/2012 | 7/26/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 22.5 - 24.5 (ft) | 22 - 24 (ft) | 10 - 12 (ft) | 6 - 8 (ft) | 4 - 6 (ft) | 4 - 6 (ft) | 3 - 5 (ft) | 1.5 - 3.5 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.4 U | 0.06 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.03 U | 0.06 U |
| 1,2-Dichlorobenzene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |
| 1,2-Dichloroethane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,2-Dichloropropane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,3,5-Trimethylbenzene | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| 1,3-Dichlorobenzene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |
| 1,4-Dichlorobenzene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 1 U | 1.2 U | 1.1 U | 1.1 U | 1 U | 1.1 U | 1.1 U | 0.9 U |
| 2-Hexanone | SW8260 | 3 U | 4 U | 4 U | 4 U | 3 U | 4 U | 4 U | 3 U |
| 2-Methylnaphthalene | SW8260 | - | - | - | - | - | - | 0.46 U | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | - | - | - | - | - | - | 0.07 U | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 3 U | 4 U | 4 U | 4 U | 3 U | 4 U | 4 U | 3 U |
| Acetone | SW8260 | 1 U | 1.2 U | 1.1 U | 1.1 U | 1 U | 1.1 U | 1 U | 0.9 U |
| Acrylonitrile | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| Benzene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Bromobenzene | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| Bromodichloromethane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |
| Bromoform | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.3 U | 0.4 U | 0.4 U | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.3 U | 0.4 U | 0.4 U | 0.4 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Chlorobenzene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Chlorobromomethane | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| Chloroethane | SW8260 | 0.3 U | 0.4 U | 0.4 U | 0.4 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.3 U | 0.4 U | 0.4 U | 0.4 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| cis-1,3-Dichloropropene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Cyclohexane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | - | 0.06 U |
| Cymene (p-Isopropyltoluene) | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| Dibromochloromethane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |
| Dibromomethane | SW8260 | - | - | - | - | - | - | 0.4 U | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.4 U | 0.06 U |
| Ethyl Ether | SW8260 | - | - | - | - | - | - | 0.3 U | - |
| Ethylbenzene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Hexachloroethane | SW8260 | - | - | - | - | - | - | 0.4 U | - |
| Iodomethane | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| Isopropylbenzene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.4 U | 0.06 U |
| m&p-Xylene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |
| Methyl acetate | SW8260 | 3 U | 4 U | 4 U | 4 U | 3 U | 4 U | - | 3 U |
| Methyl cyclohexane | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | - | 0.06 U |
| Methyl Tert Butyl Ether | SW8260 | 0.3 U | 0.4 U | 0.4 U | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U |
| Methylene chloride | SW8260 | 0.3 U | 0.4 U | 0.4 U | 0.4 U | 0.3 U | 0.4 U | 0.1 U | 0.3 U |
| Naphthalene | SW8260 | - | - | - | - | - | - | 0.46 U | - |
| n-Butylbenzene | SW8260 | - | - | - | - | - | - | 0.07 U | - |
| n-Propylbenzene | SW8260 | - | - | - | - | - | - | 0.1 U | - |
| o-Xylene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Styrene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| tert-Butylbenzene | SW8260 | - | - | - | - | - | - | 0.07 U | - |
| Tetrachloroethene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Tetrahydrofuran | SW8260 | - | - | - | - | - | - | 1 U | - |
| Toluene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.1 U | 0.06 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-06 | AOI-06 | AOI-07 | AOI-09 | AOI-10 | AOI-12 | AOI-12 | AOI-13 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-06-138 | SB-06-139 | SB-07-140 | SB-09-123 | SB-10-124 | SB-12-120 | SB-12-121 | SB-13-144 |
| Sample Name | | SB138(07-19-12)(22.5-24.5) | SB139-(07-24-12) (22-24) | SB140(07-19-12)(10-12) | SB123(07-16-12)(6-8) | SB124(07-16-12)(4-6) | SB120 (07-26-12) (4-6) | SB121(06-25-2012)(3-5) | SB144 (07-26-12) (1.5-3.5) |
| Sample Date | | 7/19/2012 | 7/24/2012 | 7/19/2012 | 7/16/2012 | 7/16/2012 | 7/26/2012 | 6/25/2012 | 7/26/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 22.5 - 24.5 (ft) | 22 - 24 (ft) | 10 - 12 (ft) | 6 - 8 (ft) | 4 - 6 (ft) | 4 - 6 (ft) | 3 - 5 (ft) | 1.5 - 3.5 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| trans-1,3-Dichloropropene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| trans-1,4-Dichloro-2-butene | SW8260 | - | - | - | - | - | - | 0.07 U | - |
| Trichloroethene | SW8260 | 0.07 U | 0.08 U | 0.08 U | 0.08 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.1 U | - | 0.1 U |
| Vinyl chloride | SW8260 | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.07 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-13 | AOI-14 | AOI-14 | AOI-15 | AOI-15 | AOI-15 | AOI-16 | AOI-18 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-13-144 | SB-14-145 | SB-14-145 | SB-14-146 | SB-15-150 | SB-15-150 | SB-16-116 | SB-18-117 |
| Sample Name | | SB144 (07-26-12) (7.5-9.5) | SB145 (07-27-12) (2-4) | SB145 (07-27-12) (6-8) | SB146(06-21-2012)(4-5) | DUP2(07-20-12) | SB150(07-20-12)(2-4) | SB116(06252012)(1-2) | SB117(07-16-12)(2-4) |
| Sample Date | | 7/26/2012 | 7/27/2012 | 7/27/2012 | 6/21/2012 | 7/20/2012 | 7/20/2012 | 6/25/2012 | 7/16/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Field Duplicate | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 7.5 - 9.5 (ft) | 2 - 4 (ft) | 6 - 8 (ft) | 4 - 5 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 1 - 2 (ft) | 2 - 4 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | |
| Arsenic, Total | SW6020 | **1.59** | **0.48** | **1.31** | **2.02** | **0.26** | **0.57** | **2.45** | **0.95** |
| Barium, Total | SW6020 | **58** | **17.7** | **72.2** | **62.6** | **5.94** | **7.58** | **64.8** | **50.1** |
| Cadmium, Total | SW6020 | 0.2 U | 0.2 U | 0.2 U | **0.23** | 0.2 U | 0.2 U | 0.2 U | **0.62** |
| Chromium, Total | SW6020 | **6.78** | **3.65** | **8.93** | **5** | **1.03** | **1.5** | **4.07** | **3.42** |
| Copper, Total | SW6020 | **5.91** | **4.51** | **6.23** | **12.6** | **2.8 J** | **4.72 J** | **10.6** | **24** |
| Lead, Total | SW6020 | **4.92** | **2.5** | **5.6** | **8.87** | **1.55** | **1.84** | **9.02** | **8.97** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | **0.053** |
| Selenium, Total | SW6020 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | **0.62** |
| Silver, Total | SW6020 | 0.1 U | 0.1 U | 0.1 U | 0.2 U | 0.1 U | 0.1 U | 0.2 U | 0.1 U |
| Zinc, Total | SW6020 | **19.6** | **8.27** | **23.8** | **22.4** | **5.65** | **6.6** | **18.3** | **10.2** |
| **Other (%)** | | | | | | | | | |
| Total Solids | SM2540B | **87** | **89** | **82** | **80** | **97** | **97** | **91** | **85** |
| **PCBs (mg/kg)** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| 2-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(b)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(g,h,i)perylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(k)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Chrysene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Dibenz(a,h)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluorene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Naphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Phenanthrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| 1,1,1-Trichloroethane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| 1,1,2-Trichloroethane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| 1,1-Dichloroethane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| 1,1-Dichloroethene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| 1,2,3-Trichlorobenzene | SW8260 | - | - | - | 0.5 U | - | - | 0.4 U | - |
| 1,2,3-Trichloropropane | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| 1,2,3-Trimethylbenzene | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.1 U | 0.1 U | 0.09 U | 0.5 U | 0.1 U | 0.1 U | 0.4 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-13 | AOI-14 | AOI-14 | AOI-15 | AOI-15 | AOI-15 | AOI-16 | AOI-18 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-13-144 | SB-14-145 | SB-14-145 | SB-14-146 | SB-15-150 | SB-15-150 | SB-16-116 | SB-18-117 |
| Sample Name | | SB144 (07-26-12) (7.5-9.5) | SB145 (07-27-12) (2-4) | SB145 (07-27-12) (6-8) | SB146(06-21-2012)(4-5) | DUP2(07-20-12) | SB150(07-20-12)(2-4) | SB116(06252012)(1-2) | SB117(07-16-12)(2-4) |
| Sample Date | | 7/26/2012 | 7/27/2012 | 7/27/2012 | 6/21/2012 | 7/20/2012 | 7/20/2012 | 6/25/2012 | 7/16/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Field Duplicate | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 7.5 - 9.5 (ft) | 2 - 4 (ft) | 6 - 8 (ft) | 4 - 5 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 1 - 2 (ft) | 2 - 4 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.4 U | 0.05 U | 0.05 U | 0.3 U | 0.07 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.03 U | 0.05 U | 0.05 U | 0.02 U | 0.07 U |
| 1,2-Dichlorobenzene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |
| 1,2-Dichloroethane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| 1,2-Dichloropropane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| 1,3,5-Trimethylbenzene | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| 1,3-Dichlorobenzene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |
| 1,4-Dichlorobenzene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 0.96 U | 0.94 U | 0.67 U | 1.1 U | 0.82 U | 0.78 U | 0.91 U | 1 U |
| 2-Hexanone | SW8260 | 3 U | 3 U | 2 U | 4 U | 3 U | 3 U | 3 U | 3 U |
| 2-Methylnaphthalene | SW8260 | - | - | - | 0.5 U | - | - | 0.4 U | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | - | - | - | 0.08 U | - | - | 0.06 U | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 3 U | 3 U | 2 U | 4 U | 3 U | 3 U | 3 U | 3 U |
| Acetone | SW8260 | 0.96 U | 0.94 U | 0.67 U | **2** | 0.82 U | 0.78 U | 1 U | 1 U |
| Acrylonitrile | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| Benzene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Bromobenzene | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| Bromodichloromethane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |
| Bromoform | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.3 U | 0.3 U | 0.2 U | 0.3 U | 0.3 U | 0.3 U | 0.2 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.3 U | 0.3 U | 0.2 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Chlorobenzene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Chlorobromomethane | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| Chloroethane | SW8260 | 0.3 U | 0.3 U | 0.2 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.3 U | 0.3 U | 0.2 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| cis-1,3-Dichloropropene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Cyclohexane | SW8260 | 0.06 U | 0.06 U | 0.04 U | - | 0.05 U | 0.05 U | - | 0.07 U |
| Cymene (p-Isopropyltoluene) | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| Dibromochloromethane | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |
| Dibromomethane | SW8260 | - | - | - | 0.4 U | - | - | 0.3 U | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.4 U | 0.05 U | 0.05 U | 0.3 U | 0.07 U |
| Ethyl Ether | SW8260 | - | - | - | 0.3 U | - | - | 0.2 U | - |
| Ethylbenzene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Hexachloroethane | SW8260 | - | - | - | 0.5 U | - | - | 0.4 U | - |
| Iodomethane | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| Isopropylbenzene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.4 U | 0.05 U | 0.05 U | 0.3 U | 0.07 U |
| m&p-Xylene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |
| Methyl acetate | SW8260 | 3 U | 3 U | 2 U | - | 3 U | 3 U | - | 3 U |
| Methyl cyclohexane | SW8260 | 0.06 U | 0.06 U | 0.04 U | - | 0.05 U | 0.05 U | - | 0.07 U |
| Methyl Tert Butyl Ether | SW8260 | 0.3 U | 0.3 U | 0.2 U | 0.3 U | 0.3 U | 0.3 U | 0.2 U | 0.3 U |
| Methylene chloride | SW8260 | 0.3 U | 0.3 U | 0.2 U | 0.2 U | 0.3 U | 0.3 U | 0.1 U | 0.3 U |
| Naphthalene | SW8260 | - | - | - | 0.5 U | - | - | 0.4 U | - |
| n-Butylbenzene | SW8260 | - | - | - | 0.08 U | - | - | 0.06 U | - |
| n-Propylbenzene | SW8260 | - | - | - | 0.2 U | - | - | 0.1 U | - |
| o-Xylene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Styrene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| tert-Butylbenzene | SW8260 | - | - | - | 0.08 U | - | - | 0.06 U | - |
| Tetrachloroethene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Tetrahydrofuran | SW8260 | - | - | - | 2 U | - | - | 1 U | - |
| Toluene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.2 U | 0.05 U | 0.05 U | 0.1 U | 0.07 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-13 | AOI-14 | AOI-14 | AOI-15 | AOI-15 | AOI-15 | AOI-16 | AOI-18 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-13-144 | SB-14-145 | SB-14-145 | SB-14-146 | SB-15-150 | SB-15-150 | SB-16-116 | SB-18-117 |
| Sample Name | | SB144 (07-26-12) (7.5-9.5) | SB145 (07-27-12) (2-4) | SB145 (07-27-12) (6-8) | SB146(06-21-2012)(4-5) | DUP2(07-20-12) | SB150(07-20-12)(2-4) | SB116(06252012)(1-2) | SB117(07-16-12)(2-4) |
| Sample Date | | 7/26/2012 | 7/27/2012 | 7/27/2012 | 6/21/2012 | 7/20/2012 | 7/20/2012 | 6/25/2012 | 7/16/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Field Duplicate | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 7.5 - 9.5 (ft) | 2 - 4 (ft) | 6 - 8 (ft) | 4 - 5 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 1 - 2 (ft) | 2 - 4 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| trans-1,3-Dichloropropene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| trans-1,4-Dichloro-2-butene | SW8260 | - | - | - | 0.08 U | - | - | 0.06 U | - |
| Trichloroethene | SW8260 | 0.06 U | 0.06 U | 0.04 U | 0.08 U | 0.05 U | 0.05 U | 0.06 U | 0.07 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.1 U | 0.1 U | 0.09 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | 0.1 U | 0.1 U | 0.09 U | - | 0.1 U | 0.1 U | - | 0.1 U |
| Vinyl chloride | SW8260 | 0.1 U | 0.1 U | 0.09 U | 0.08 U | 0.1 U | 0.1 U | 0.06 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-19 | AOI-22 | AOI-26 | AOI-27 | AOI-27 | AOI-28 | AOI-28 | AOI-28 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-19-153 | SB-22-118 | SB-26-130 | SB-27-158 | SB-27-159 | SB-28-152 | SB-28-166 | SB-28-166 |
| Sample Name | | SB153-(07-25-12) (3.5-5.5) | SB118(07-19-12)(2-4) | SB130(07-18-12)(16-18) | SB158(07-19-12)(3-5) | SB159(07-19-12)(7-9) | SB152-(07-24-12) (4-6) | DUP3-(07-24-12) | SB166-(07-24-12) (4-6) |
| Sample Date | | 7/25/2012 | 7/19/2012 | 7/18/2012 | 7/19/2012 | 7/19/2012 | 7/24/2012 | 7/24/2012 | 7/24/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Field Duplicate | Normal |
| Sample Depth (bgs) | Analyical | 3.5 - 5.5 (ft) | 2 - 4 (ft) | 16 - 18 (ft) | 3 - 5 (ft) | 7 - 9 (ft) | 4 - 6 (ft) | 4 - 6 (ft) | 4 - 6 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | |
| Arsenic, Total | SW6020 | **2.07** | **0.79** | **3.78** | **1.4** | **1.83** | 0.2 U | **1.52** | **1.43** |
| Barium, Total | SW6020 | **51.7** | **5.78** | **70** | **12.8** | **40.6** | **9.21** | **9.32** | **7.46** |
| Cadmium, Total | SW6020 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium, Total | SW6020 | **4.63** | **0.98** | **6.85** | **2.09** | **5.47** | **2.89** | **2.08** | **2.47** |
| Copper, Total | SW6020 | **8.63** | **1.73** | **19** | **3.95** | **5.98** | **1.65** | **6.56** | **16.2** |
| Lead, Total | SW6020 | **5.21** | **1.6** | **8.76** | **3.32** | **5.84** | **2.24** | **4.08** | **3.75** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium, Total | SW6020 | 0.5 U | 0.5 U | **0.67** | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Silver, Total | SW6020 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Zinc, Total | SW6020 | **21** | **5.94** | **28.6** | **8.31** | **19.6** | **11.3** | **11.8** | **12.3** |
| **Other (%)** | | | | | | | | | |
| Total Solids | SM2540B | **80** | **92** | **80** | **92** | **85** | **89** | **88** | **94** |
| **PCBs (mg/kg)** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| 2-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Acenaphthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Acenaphthylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Benzo(a)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Benzo(a)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Benzo(b)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Benzo(g,h,i)perylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Benzo(k)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Chrysene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Dibenz(a,h)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Fluorene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Naphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Phenanthrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| Pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.7 U | 0.3 U | 0.3 U |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,1,2-Trichloroethane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,1-Dichloroethane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,1-Dichloroethene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,2,3-Trichlorobenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trichloropropane | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.2 U | 0.1 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-19 | AOI-22 | AOI-26 | AOI-27 | AOI-27 | AOI-28 | AOI-28 | AOI-28 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-19-153 | SB-22-118 | SB-26-130 | SB-27-158 | SB-27-159 | SB-28-152 | SB-28-166 | SB-28-166 |
| Sample Name | | SB153-(07-25-12) (3.5-5.5) | SB118(07-19-12)(2-4) | SB130(07-18-12)(16-18) | SB158(07-19-12)(3-5) | SB159(07-19-12)(7-9) | SB152-(07-24-12) (4-6) | DUP3-(07-24-12) | SB166-(07-24-12) (4-6) |
| Sample Date | | 7/25/2012 | 7/19/2012 | 7/18/2012 | 7/19/2012 | 7/19/2012 | 7/24/2012 | 7/24/2012 | 7/24/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Field Duplicate | Normal |
| Sample Depth (bgs) | Analyical | 3.5 - 5.5 (ft) | 2 - 4 (ft) | 16 - 18 (ft) | 3 - 5 (ft) | 7 - 9 (ft) | 4 - 6 (ft) | 4 - 6 (ft) | 4 - 6 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,2-Dichlorobenzene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,2-Dichloroethane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,2-Dichloropropane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,3,5-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 1,4-Dichlorobenzene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 1.1 U | 0.88 U | 1.1 U | 0.88 U | 1 U | 0.96 U | 0.94 U | 0.86 U |
| 2-Hexanone | SW8260 | 4 U | 3 U | 4 U | 3 U | 3 U | 3 U | 3 U | 3 U |
| 2-Methylnaphthalene | SW8260 | - | - | - | - | - | - | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | - | - | - | - | - | - | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 4 U | 3 U | 4 U | 3 U | 3 U | 3 U | 3 U | 3 U |
| Acetone | SW8260 | 1.1 U | 0.88 U | 1.1 U | 0.88 U | 1 U | 0.96 U | 0.94 U | 0.86 U |
| Acrylonitrile | SW8260 | - | - | - | - | - | - | - | - |
| Benzene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Bromobenzene | SW8260 | - | - | - | - | - | - | - | - |
| Bromodichloromethane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Bromoform | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Chlorobenzene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Chlorobromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Chloroethane | SW8260 | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| cis-1,3-Dichloropropene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Cyclohexane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Cymene (p-Isopropyltoluene) | SW8260 | - | - | - | - | - | - | - | - |
| Dibromochloromethane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Dibromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Ethyl Ether | SW8260 | - | - | - | - | - | - | - | - |
| Ethylbenzene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Hexachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| Iodomethane | SW8260 | - | - | - | - | - | - | - | - |
| Isopropylbenzene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| m&p-Xylene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | **0.22** | 0.06 U | 0.06 U |
| Methyl acetate | SW8260 | 4 U | 3 U | 4 U | 3 U | 3 U | 3 U | 3 U | 3 U |
| Methyl cyclohexane | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Methyl Tert Butyl Ether | SW8260 | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Methylene chloride | SW8260 | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Naphthalene | SW8260 | - | - | - | - | - | - | - | - |
| n-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| n-Propylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| o-Xylene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | **0.08** | 0.06 U | 0.06 U |
| Styrene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| tert-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| Tetrachloroethene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Tetrahydrofuran | SW8260 | - | - | - | - | - | - | - | - |
| Toluene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-19 | AOI-22 | AOI-26 | AOI-27 | AOI-27 | AOI-28 | AOI-28 | AOI-28 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-19-153 | SB-22-118 | SB-26-130 | SB-27-158 | SB-27-159 | SB-28-152 | SB-28-166 | SB-28-166 |
| Sample Name | | SB153-(07-25-12) (3.5-5.5) | SB118(07-19-12)(2-4) | SB130(07-18-12)(16-18) | SB158(07-19-12)(3-5) | SB159(07-19-12)(7-9) | SB152-(07-24-12) (4-6) | DUP3-(07-24-12) | SB166-(07-24-12) (4-6) |
| Sample Date | | 7/25/2012 | 7/19/2012 | 7/18/2012 | 7/19/2012 | 7/19/2012 | 7/24/2012 | 7/24/2012 | 7/24/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Field Duplicate | Normal |
| Sample Depth (bgs) | Analyical | 3.5 - 5.5 (ft) | 2 - 4 (ft) | 16 - 18 (ft) | 3 - 5 (ft) | 7 - 9 (ft) | 4 - 6 (ft) | 4 - 6 (ft) | 4 - 6 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| trans-1,3-Dichloropropene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| trans-1,4-Dichloro-2-butene | SW8260 | - | - | - | - | - | - | - | - |
| Trichloroethene | SW8260 | 0.08 U | 0.06 U | 0.08 U | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.06 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.2 U | 0.1 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | 0.2 U | 0.1 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Vinyl chloride | SW8260 | 0.2 U | 0.1 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-28 | AOI-28 | AOI-28 | AOI-29 | AOI-29 | AOI-30 | AOI-30 | AOI-30 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-28-167 | SB-28-168 | SB-28-169 | SB-29-103 | SB-29-114 | SB-30-162 | SB-30-163 | SB-30-171 |
| Sample Name | | SB167-(07-24-12) (2-4) | SB168-(07-23-12) (6-8) | SB169 (07-26-12) (1.5-3.5) | SB103 (07-30-12) (0-2) | SB114 (07-31-12) (2-4) | SB162 (07-31-12) (2-4) | SB165 (07-31-12) (8-10) | DUP1(07-20-12) |
| Sample Date | | 7/24/2012 | 7/23/2012 | 7/26/2012 | 7/30/2012 | 7/31/2012 | 7/31/2012 | 7/31/2012 | 7/20/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field Duplicate |
| Sample Depth (bgs) | Analyical | 2 - 4 (ft) | 6 - 8 (ft) | 1.5 - 3.5 (ft) | 0 - 2 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 8 - 10 (ft) | 10 - 12 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | |
| Arsenic, Total | SW6020 | 0.2 U | **2.28** | **0.44** | **0.47** | **0.44** | **1.98** | **4.59** | **4.05** |
| Barium, Total | SW6020 | **24** | **47.9** | **31.5** | **12.7** | **26.8** | **64.7** | **72.2** | **19.8** |
| Cadmium, Total | SW6020 | 0.2 U | **0.21** | 0.2 U | 0.2 U | 0.2 U | **0.82** | 0.2 U | 0.2 U |
| Chromium, Total | SW6020 | **3.61** | **6.47** | **3.52** | **1.2** | **3.11** | **7.31** | **15.3** | **3.67** |
| Copper, Total | SW6020 | **2.56** | **11.6** | **4.8** | **3.64** | **7.91** | **31.6** | **19.1** | **15.1** |
| Lead, Total | SW6020 | **2.36** | **7.24** | **4** | **4.87** | **5.45** | **35.9** | **9.05** | **5.59** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | **0.1** | 0.05 U | 0.05 U |
| Selenium, Total | SW6020 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Silver, Total | SW6020 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Zinc, Total | SW6020 | **8.42** | **31.2** | **11.8** | **5.7** | **12.7** | **62.7** | **42.1** | **24.7** |
| **Other (%)** | | | | | | | | | |
| Total Solids | SM2540B | **79** | **79** | **89** | **91** | **87** | **85** | **82** | **92** |
| **PCBs (mg/kg)** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| 2-Methylnaphthalene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthylene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Anthracene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)anthracene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)pyrene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(b)fluoranthene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(g,h,i)perylene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(k)fluoranthene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Chrysene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Dibenz(a,h)anthracene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluoranthene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluorene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Naphthalene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Phenanthrene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Pyrene | SW8270C | 0.4 U | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1,2-Trichloroethane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1-Dichloroethane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,1-Dichloroethene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,2,3-Trichlorobenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trichloropropane | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-28 | AOI-28 | AOI-28 | AOI-29 | AOI-29 | AOI-30 | AOI-30 | AOI-30 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-28-167 | SB-28-168 | SB-28-169 | SB-29-103 | SB-29-114 | SB-30-162 | SB-30-163 | SB-30-171 |
| Sample Name | | SB167-(07-24-12) (2-4) | SB168-(07-23-12) (6-8) | SB169 (07-26-12) (1.5-3.5) | SB103 (07-30-12) (0-2) | SB114 (07-31-12) (2-4) | SB162 (07-31-12) (2-4) | SB165 (07-31-12) (8-10) | DUP1(07-20-12) |
| Sample Date | | 7/24/2012 | 7/23/2012 | 7/26/2012 | 7/30/2012 | 7/31/2012 | 7/31/2012 | 7/31/2012 | 7/20/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field Duplicate |
| Sample Depth (bgs) | Analyical | 2 - 4 (ft) | 6 - 8 (ft) | 1.5 - 3.5 (ft) | 0 - 2 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 8 - 10 (ft) | 10 - 12 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,2-Dichlorobenzene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,2-Dichloroethane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,2-Dichloropropane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,3,5-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 1,4-Dichlorobenzene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 1.1 U | 1.2 U | 0.93 U | 0.88 U | 0.98 U | 1 U | 1.1 U | 0.87 U |
| 2-Hexanone | SW8260 | 4 U | 4 U | 3 U | 3 U | 3 U | 3 U | 4 U | 3 U |
| 2-Methylnaphthalene | SW8260 | - | - | - | - | - | - | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | - | - | - | - | - | - | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 4 U | 4 U | 3 U | 3 U | 3 U | 3 U | 4 U | 3 U |
| Acetone | SW8260 | 1.1 U | 1.2 U | 0.93 U | 0.88 U | 0.98 U | 1 U | 1.1 U | 0.87 U |
| Acrylonitrile | SW8260 | - | - | - | - | - | - | - | - |
| Benzene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Bromobenzene | SW8260 | - | - | - | - | - | - | - | - |
| Bromodichloromethane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Bromoform | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.4 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.4 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Chlorobenzene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Chlorobromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Chloroethane | SW8260 | 0.4 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.4 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| cis-1,3-Dichloropropene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Cyclohexane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Cymene (p-Isopropyltoluene) | SW8260 | - | - | - | - | - | - | - | - |
| Dibromochloromethane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Dibromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Ethyl Ether | SW8260 | - | - | - | - | - | - | - | - |
| Ethylbenzene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Hexachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| Iodomethane | SW8260 | - | - | - | - | - | - | - | - |
| Isopropylbenzene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| m&p-Xylene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Methyl acetate | SW8260 | 4 U | 4 U | 3 U | 3 U | 3 U | 3 U | 4 U | 3 U |
| Methyl cyclohexane | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Methyl Tert Butyl Ether | SW8260 | 0.4 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Methylene chloride | SW8260 | 0.4 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Naphthalene | SW8260 | - | - | - | - | - | - | - | - |
| n-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| n-Propylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| o-Xylene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Styrene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| tert-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| Tetrachloroethene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Tetrahydrofuran | SW8260 | - | - | - | - | - | - | - | - |
| Toluene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-28 | AOI-28 | AOI-28 | AOI-29 | AOI-29 | AOI-30 | AOI-30 | AOI-30 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-28-167 | SB-28-168 | SB-28-169 | SB-29-103 | SB-29-114 | SB-30-162 | SB-30-163 | SB-30-171 |
| Sample Name | | SB167-(07-24-12) (2-4) | SB168-(07-23-12) (6-8) | SB169 (07-26-12) (1.5-3.5) | SB103 (07-30-12) (0-2) | SB114 (07-31-12) (2-4) | SB162 (07-31-12) (2-4) | SB165 (07-31-12) (8-10) | DUP1(07-20-12) |
| Sample Date | | 7/24/2012 | 7/23/2012 | 7/26/2012 | 7/30/2012 | 7/31/2012 | 7/31/2012 | 7/31/2012 | 7/20/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Field Duplicate |
| Sample Depth (bgs) | Analyical | 2 - 4 (ft) | 6 - 8 (ft) | 1.5 - 3.5 (ft) | 0 - 2 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 8 - 10 (ft) | 10 - 12 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| trans-1,3-Dichloropropene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| trans-1,4-Dichloro-2-butene | SW8260 | - | - | - | - | - | - | - | - |
| Trichloroethene | SW8260 | 0.08 U | 0.08 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Vinyl chloride | SW8260 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-30 | AOI-31 | AOI-32 | AOI-32 | AOI-33 | AOI-33 | AOI-33 | AOI-33 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-30-171 | SB-31-142 | SB-32-147 | SB-32-148 | SB-33-104 | SB-33-105 | SB-33-106 | SB-33-106 |
| Sample Name | | SB171(07-20-12)(10-12) | SB142 (08-01-12) (0-2) | SB147(07-20-12)(8-10) | SB148(07-20-12)(2.5-4.5) | SB104 (07-30-12) (0-2) | SB105 (07-30-12) (0-2) | SB106 (07-27-12) (32-34) | SB106 (07-27-12) (8-10) |
| Sample Date | | 7/20/2012 | 8/1/2012 | 7/20/2012 | 7/20/2012 | 7/30/2012 | 7/30/2012 | 7/27/2012 | 7/27/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 10 - 12 (ft) | 0 - 2 (ft) | 8 - 10 (ft) | 2.5 - 4.5 (ft) | 0 - 2 (ft) | 0 - 2 (ft) | 32 - 34 (ft) | 8 - 10 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | |
| Arsenic, Total | SW6020 | **4.48** | **1.55** | **3.12** | **0.97** | **0.4** | **1.43** | **5.41** | **0.44** |
| Barium, Total | SW6020 | **19.8** | **25.1** | **27.7** | **27** | **7.97** | **10.1** | **66.6** | **25.7** |
| Cadmium, Total | SW6020 | 0.2 U | **0.23** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | **0.25** | 0.2 U |
| Chromium, Total | SW6020 | **2.83** | **4.45** | **5.99** | **2.26** | **2.17** | **2.44** | **9.27** | **2.83** |
| Copper, Total | SW6020 | **13.3** | **5.9** | **15** | **5.15** | **2.44** | **5.73** | **16.4** | **2.88** |
| Lead, Total | SW6020 | **5.87** | **12.9** | **7.3** | **4.87** | **2.36** | **3.07** | **8.4** | **3.18** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium, Total | SW6020 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Silver, Total | SW6020 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Zinc, Total | SW6020 | **29.5** | **19.5** | **24.8** | **8.05** | **3.62** | **13.4** | **34.8** | **7.45** |
| **Other (%)** | | | | | | | | | |
| Total Solids | SM2540B | **90** | **83** | **85** | **86** | **88** | **91** | **83** | **89** |
| **PCBs (mg/kg)** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| 2-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Acenaphthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Acenaphthylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Benzo(a)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Benzo(a)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Benzo(b)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Benzo(g,h,i)perylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Benzo(k)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Chrysene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Dibenz(a,h)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Fluorene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Naphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Phenanthrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| Pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 1.8 U | 0.3 U | 0.3 U |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,1,2-Trichloroethane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,1-Dichloroethane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,1-Dichloroethene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,2,3-Trichlorobenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trichloropropane | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-30 | AOI-31 | AOI-32 | AOI-32 | AOI-33 | AOI-33 | AOI-33 | AOI-33 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-30-171 | SB-31-142 | SB-32-147 | SB-32-148 | SB-33-104 | SB-33-105 | SB-33-106 | SB-33-106 |
| Sample Name | | SB171(07-20-12)(10-12) | SB142 (08-01-12) (0-2) | SB147(07-20-12)(8-10) | SB148(07-20-12)(2.5-4.5) | SB104 (07-30-12) (0-2) | SB105 (07-30-12) (0-2) | SB106 (07-27-12) (32-34) | SB106 (07-27-12) (8-10) |
| Sample Date | | 7/20/2012 | 8/1/2012 | 7/20/2012 | 7/20/2012 | 7/30/2012 | 7/30/2012 | 7/27/2012 | 7/27/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 10 - 12 (ft) | 0 - 2 (ft) | 8 - 10 (ft) | 2.5 - 4.5 (ft) | 0 - 2 (ft) | 0 - 2 (ft) | 32 - 34 (ft) | 8 - 10 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,2-Dichlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,2-Dichloroethane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,2-Dichloropropane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,3,5-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 1,4-Dichlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 0.91 U | 1.1 U | 1 U | 1 U | 0.97 U | 0.91 U | 1.1 U | 0.94 U |
| 2-Hexanone | SW8260 | 3 U | 4 U | 3 U | 3 U | 3 U | 3 U | 4 U | 3 U |
| 2-Methylnaphthalene | SW8260 | - | - | - | - | - | - | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | - | - | - | - | - | - | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 3 U | 4 U | 3 U | 3 U | 3 U | 3 U | 4 U | 3 U |
| Acetone | SW8260 | 0.91 U | 1.1 U | 1 U | 1 U | 0.97 U | 0.91 U | 1.1 U | 0.94 U |
| Acrylonitrile | SW8260 | - | - | - | - | - | - | - | - |
| Benzene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Bromobenzene | SW8260 | - | - | - | - | - | - | - | - |
| Bromodichloromethane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Bromoform | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Chlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Chlorobromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Chloroethane | SW8260 | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| cis-1,3-Dichloropropene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Cyclohexane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Cymene (p-Isopropyltoluene) | SW8260 | - | - | - | - | - | - | - | - |
| Dibromochloromethane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Dibromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Ethyl Ether | SW8260 | - | - | - | - | - | - | - | - |
| Ethylbenzene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Hexachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| Iodomethane | SW8260 | - | - | - | - | - | - | - | - |
| Isopropylbenzene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| m&p-Xylene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Methyl acetate | SW8260 | 3 U | 4 U | 3 U | 3 U | 3 U | 3 U | 4 U | 3 U |
| Methyl cyclohexane | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Methyl Tert Butyl Ether | SW8260 | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Methylene chloride | SW8260 | 0.3 U | 0.4 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.3 U |
| Naphthalene | SW8260 | - | - | - | - | - | - | - | - |
| n-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| n-Propylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| o-Xylene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Styrene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| tert-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| Tetrachloroethene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Tetrahydrofuran | SW8260 | - | - | - | - | - | - | - | - |
| Toluene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-30 | AOI-31 | AOI-32 | AOI-32 | AOI-33 | AOI-33 | AOI-33 | AOI-33 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-30-171 | SB-31-142 | SB-32-147 | SB-32-148 | SB-33-104 | SB-33-105 | SB-33-106 | SB-33-106 |
| Sample Name | | SB171(07-20-12)(10-12) | SB142 (08-01-12) (0-2) | SB147(07-20-12)(8-10) | SB148(07-20-12)(2.5-4.5) | SB104 (07-30-12) (0-2) | SB105 (07-30-12) (0-2) | SB106 (07-27-12) (32-34) | SB106 (07-27-12) (8-10) |
| Sample Date | | 7/20/2012 | 8/1/2012 | 7/20/2012 | 7/20/2012 | 7/30/2012 | 7/30/2012 | 7/27/2012 | 7/27/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 10 - 12 (ft) | 0 - 2 (ft) | 8 - 10 (ft) | 2.5 - 4.5 (ft) | 0 - 2 (ft) | 0 - 2 (ft) | 32 - 34 (ft) | 8 - 10 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| trans-1,3-Dichloropropene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| trans-1,4-Dichloro-2-butene | SW8260 | - | - | - | - | - | - | - | - |
| Trichloroethene | SW8260 | 0.06 U | 0.07 U | 0.07 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U | 0.06 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Vinyl chloride | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-34 | AOI-36 | AOI-36 | AOI-36 | AOI-36 | AOI-36 | AOI-37 | AOI-38 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-34-109 | SB-36-110 | SB-36-111 | SB-36-112 | SB-36-112 | SB-36-113 | SB-37-107 | SB-38-100 |
| Sample Name | | SB109 (07-31-12) (0-2) | SB110-(07-25-12) (0.5-2.5) | SB111-(07-25-12) (0.5-2.5) | DUP 4 (07-31-12) | SB112 (07-31-12) (0-2) | SB113 (07-31-12) (3-5) | SB107-(07-25-12) (3-5) | SB100 (07-27-12) (2-4) |
| Sample Date | | 7/31/2012 | 7/25/2012 | 7/25/2012 | 7/31/2012 | 7/31/2012 | 7/31/2012 | 7/25/2012 | 7/27/2012 |
| Sample Type | | Normal | Normal | Normal | Field Duplicate | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 0 - 2 (ft) | 0.5 - 2.5 (ft) | 0.5 - 2.5 (ft) | 0 - 2 (ft) | 0 - 2 (ft) | 3 - 5 (ft) | 3 - 5 (ft) | 2 - 4 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | | | | |
| Arsenic, Total | SW6020 | **1.34** | **1.32** | **1.31** | **1.02** | **1.47** | **0.41** | 0.2 U | **1.09** |
| Barium, Total | SW6020 | **6.65** | **13** | **11.1** | **36.4** | **38.4** | **12.8** | **14.2** | **27.8** |
| Cadmium, Total | SW6020 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | **0.27** |
| Chromium, Total | SW6020 | **2.26** | **2.58** | **2.06** | **4.17** | **4.29** | **3.64** | **1.04** | **3.14** |
| Copper, Total | SW6020 | **3.78** | **3.89** | **3.3** | **5.9** | **6.76** | **3.96** | **0.58** | **17.4** |
| Lead, Total | SW6020 | **2.57** | **3.13** | **2.66** | **22.1** | **43.8** | **2.56** | **2.06** | **38.4** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium, Total | SW6020 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Silver, Total | SW6020 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Zinc, Total | SW6020 | **9.07** | **9.71** | **9.71** | **28.6** | **24.9** | **9.52** | **1.89** | **31.1** |
| **Other (%)** | | | | | | | | | |
| Total Solids | SM2540B | **97** | **92** | **94** | **88** | **81** | **81** | **88** | **85** |
| **PCBs (mg/kg)** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | **1** | **0.4** | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| 2-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **0.6** |
| Benzo(a)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **2.5** |
| Benzo(a)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **3.4** |
| Benzo(b)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **5.3** |
| Benzo(g,h,i)perylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **1.9** |
| Benzo(k)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **5.8** |
| Chrysene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **2.6** |
| Dibenz(a,h)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **0.5** |
| Fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **5** |
| Fluorene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **1.6** |
| Naphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Phenanthrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **2.6** |
| Pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U | **4.7** |
| **Volatile Organic Compounds (mg/kg)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,1,2-Trichloroethane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,1-Dichloroethane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,1-Dichloroethene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,2,3-Trichlorobenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trichloropropane | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,3-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.1 U | 0.1 U | 0.1 U | **0.4** | **0.6** | 0.1 U | 0.1 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-34 | AOI-36 | AOI-36 | AOI-36 | AOI-36 | AOI-36 | AOI-37 | AOI-38 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-34-109 | SB-36-110 | SB-36-111 | SB-36-112 | SB-36-112 | SB-36-113 | SB-37-107 | SB-38-100 |
| Sample Name | | SB109 (07-31-12) (0-2) | SB110-(07-25-12) (0.5-2.5) | SB111-(07-25-12) (0.5-2.5) | DUP 4 (07-31-12) | SB112 (07-31-12) (0-2) | SB113 (07-31-12) (3-5) | SB107-(07-25-12) (3-5) | SB100 (07-27-12) (2-4) |
| Sample Date | | 7/31/2012 | 7/25/2012 | 7/25/2012 | 7/31/2012 | 7/31/2012 | 7/31/2012 | 7/25/2012 | 7/27/2012 |
| Sample Type | | Normal | Normal | Normal | Field Duplicate | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 0 - 2 (ft) | 0.5 - 2.5 (ft) | 0.5 - 2.5 (ft) | 0 - 2 (ft) | 0 - 2 (ft) | 3 - 5 (ft) | 3 - 5 (ft) | 2 - 4 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,2-Dichlorobenzene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,2-Dichloroethane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,2-Dichloropropane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| 1,3,5-Trimethylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | SW8260 | 0.05 U | 0.06 U | 0.06 U | **0.12** | **0.18** | 0.07 U | 0.06 U | 0.07 U |
| 1,4-Dichlorobenzene | SW8260 | 0.05 U | 0.06 U | 0.06 U | **0.15** | **0.23** | 0.07 U | 0.06 U | 0.07 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 0.81 U | 0.89 U | 0.84 U | 0.94 U | 1.1 U | 1.1 U | 0.96 U | 1 U |
| 2-Hexanone | SW8260 | 3 U | 3 U | 3 U | 3 U | 4 U | 4 U | 3 U | 3 U |
| 2-Methylnaphthalene | SW8260 | - | - | - | - | - | - | - | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | - | - | - | - | - | - | - | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 3 U | 3 U | 3 U | 3 U | 4 U | 4 U | 3 U | 3 U |
| Acetone | SW8260 | 0.81 U | 0.89 U | 0.84 U | 0.94 U | 1.1 U | 1.1 U | 0.96 U | 1 U |
| Acrylonitrile | SW8260 | - | - | - | - | - | - | - | - |
| Benzene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Bromobenzene | SW8260 | - | - | - | - | - | - | - | - |
| Bromodichloromethane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Bromoform | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Chlorobenzene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Chlorobromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Chloroethane | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| cis-1,3-Dichloropropene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Cyclohexane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Cymene (p-Isopropyltoluene) | SW8260 | - | - | - | - | - | - | - | - |
| Dibromochloromethane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Dibromomethane | SW8260 | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Ethyl Ether | SW8260 | - | - | - | - | - | - | - | - |
| Ethylbenzene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Hexachloroethane | SW8260 | - | - | - | - | - | - | - | - |
| Iodomethane | SW8260 | - | - | - | - | - | - | - | - |
| Isopropylbenzene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| m&p-Xylene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Methyl acetate | SW8260 | 3 U | 3 U | 3 U | 3 U | 4 U | 4 U | 3 U | 3 U |
| Methyl cyclohexane | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Methyl Tert Butyl Ether | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U | 0.3 U |
| Methylene chloride | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.4 U | 0.4 U | 0.3 U | 0.3 U |
| Naphthalene | SW8260 | - | - | - | - | - | - | - | - |
| n-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| n-Propylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| o-Xylene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Styrene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| tert-Butylbenzene | SW8260 | - | - | - | - | - | - | - | - |
| Tetrachloroethene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Tetrahydrofuran | SW8260 | - | - | - | - | - | - | - | - |
| Toluene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-34 | AOI-36 | AOI-36 | AOI-36 | AOI-36 | AOI-36 | AOI-37 | AOI-38 |
|---|---|---|---|---|---|---|---|---|---|
| Location Name | | SB-34-109 | SB-36-110 | SB-36-111 | SB-36-112 | SB-36-112 | SB-36-113 | SB-37-107 | SB-38-100 |
| Sample Name | | SB109 (07-31-12) (0-2) | SB110-(07-25-12) (0.5-2.5) | SB111-(07-25-12) (0.5-2.5) | DUP 4 (07-31-12) | SB112 (07-31-12) (0-2) | SB113 (07-31-12) (3-5) | SB107-(07-25-12) (3-5) | SB100 (07-27-12) (2-4) |
| Sample Date | | 7/31/2012 | 7/25/2012 | 7/25/2012 | 7/31/2012 | 7/31/2012 | 7/31/2012 | 7/25/2012 | 7/27/2012 |
| Sample Type | | Normal | Normal | Normal | Field Duplicate | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 0 - 2 (ft) | 0.5 - 2.5 (ft) | 0.5 - 2.5 (ft) | 0 - 2 (ft) | 0 - 2 (ft) | 3 - 5 (ft) | 3 - 5 (ft) | 2 - 4 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| trans-1,3-Dichloropropene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| trans-1,4-Dichloro-2-butene | SW8260 | - | - | - | - | - | - | - | - |
| Trichloroethene | SW8260 | 0.05 U | 0.06 U | 0.06 U | 0.06 U | 0.07 U | 0.07 U | 0.06 U | 0.07 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Vinyl chloride | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-38 | AOI-38 | AOI-40 | AOI-41 | AOI-42 |
|---|---|---|---|---|---|---|
| Location Name | | SB-38-101 | SB-38-102 | SB-40-135 | SB-41-141 | SB-42-119 |
| Sample Name | | SB101 (07-27-12) (2.5-4.5) | SB102 (07-31-12) (2-4) | SB135-(07-24-12) (2-4) | SB141(06-22-2012)(3-5) | SB119-(07-26-12) (3-5) |
| Sample Date | | 7/27/2012 | 7/31/2012 | 7/24/2012 | 6/22/2012 | 7/26/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 2.5 - 4.5 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 3 - 5 (ft) | 3 - 5 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil |
| **Inorganic Compounds (mg/kg)** | | | | | | |
| Arsenic, Total | SW6020 | **0.75** | **0.6** | **2.01** | **0.29** | **1.64** |
| Barium, Total | SW6020 | **31.5** | **50.1** | **16.2** | **10.8** | **26.1** |
| Cadmium, Total | SW6020 | 0.2 U | **0.35** | 0.2 U | 0.2 U | 0.2 U |
| Chromium, Total | SW6020 | **4.37** | **3.75** | **2.8** | **1.29** | **4.51** |
| Copper, Total | SW6020 | **9.39** | **6.97** | **4.56** | **1.24** | **7.24** |
| Lead, Total | SW6020 | **9.83** | **18.8** | **3.19** | **1.8** | **5.43** |
| Mercury, Total | SW7471A | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium, Total | SW6020 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| Silver, Total | SW6020 | 0.1 U | 0.1 U | 0.1 U | 0.2 U | 0.1 U |
| Zinc, Total | SW6020 | **15.7** | **25.1** | **14.1** | **5.97** | **16.1** |
| **Other (%)** | | | | | | |
| Total Solids | SM2540B | **90** | **83** | **91** | **91** | **85** |
| **PCBs (mg/kg)** | | | | | | |
| Aroclor-1016 (PCB-1016) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1221 (PCB-1221) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1232 (PCB-1232) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1242 (PCB-1242) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1248 (PCB-1248) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1254 (PCB-1254) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Aroclor-1260 (PCB-1260) | SW8082 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Semi-Volatile Organic Compounds (mg/kg)** | | | | | | |
| 1-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| 2-Methylnaphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Acenaphthylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(a)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(b)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(g,h,i)perylene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Benzo(k)fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Chrysene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Dibenz(a,h)anthracene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluoranthene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Fluorene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Indeno(1,2,3-cd)pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Naphthalene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Phenanthrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Pyrene | SW8270C | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| **Volatile Organic Compounds (mg/kg)** | | | | | | |
| 1,1,1,2-Tetrachloroethane | SW8260 | - | - | - | 0.1 U | - |
| 1,1,1-Trichloroethane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| 1,1,2,2-Tetrachloroethane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| 1,1,2-Trichloroethane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| 1,1-Dichloroethane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| 1,1-Dichloroethene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| 1,2,3-Trichlorobenzene | SW8260 | - | - | - | 0.39 U | - |
| 1,2,3-Trichloropropane | SW8260 | - | - | - | 0.1 U | - |
| 1,2,3-Trimethylbenzene | SW8260 | - | - | - | 0.1 U | - |
| 1,2,4-Trichlorobenzene | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.39 U | 0.1 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-38 | AOI-38 | AOI-40 | AOI-41 | AOI-42 |
|---|---|---|---|---|---|---|
| Location Name | | SB-38-101 | SB-38-102 | SB-40-135 | SB-41-141 | SB-42-119 |
| Sample Name | | SB101 (07-27-12) (2.5-4.5) | SB102 (07-31-12) (2-4) | SB135-(07-24-12) (2-4) | SB141(06-22-2012)(3-5) | SB119-(07-26-12) (3-5) |
| Sample Date | | 7/27/2012 | 7/31/2012 | 7/24/2012 | 6/22/2012 | 7/26/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 2.5 - 4.5 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 3 - 5 (ft) | 3 - 5 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | |
| 1,2,4-Trimethylbenzene | SW8260 | - | - | - | 0.1 U | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.3 U | 0.07 U |
| 1,2-Dibromoethane (Ethylene Dibromide) | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.02 U | 0.07 U |
| 1,2-Dichlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |
| 1,2-Dichloroethane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| 1,2-Dichloropropane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| 1,3,5-Trimethylbenzene | SW8260 | - | - | - | 0.1 U | - |
| 1,3-Dichlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |
| 1,4-Dichlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |
| 2-Butanone (Methyl Ethyl Ketone) | SW8260 | 0.92 U | 1 U | 0.9 U | 0.89 U | 1 U |
| 2-Hexanone | SW8260 | 3 U | 3 U | 3 U | 3 U | 3 U |
| 2-Methylnaphthalene | SW8260 | - | - | - | 0.39 U | - |
| 2-Phenylbutane (sec-Butylbenzene) | SW8260 | - | - | - | 0.06 U | - |
| 4-Methyl-2-Pentanone (Methyl Isobutyl Ketone) | SW8260 | 3 U | 3 U | 3 U | 3 U | 3 U |
| Acetone | SW8260 | 0.92 U | 1 U | 0.9 U | 1 U | 1 U |
| Acrylonitrile | SW8260 | - | - | - | 0.1 U | - |
| Benzene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Bromobenzene | SW8260 | - | - | - | 0.1 U | - |
| Bromodichloromethane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |
| Bromoform | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |
| Bromomethane (Methyl Bromide) | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.2 U | 0.3 U |
| Carbon disulfide | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Carbon tetrachloride | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Chlorobenzene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Chlorobromomethane | SW8260 | - | - | - | 0.1 U | - |
| Chloroethane | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| Chloroform (Trichloromethane) | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Chloromethane (Methyl Chloride) | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| cis-1,2-Dichloroethene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| cis-1,3-Dichloropropene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Cyclohexane | SW8260 | 0.06 U | 0.07 U | 0.06 U | - | 0.07 U |
| Cymene (p-Isopropyltoluene) | SW8260 | - | - | - | 0.1 U | - |
| Dibromochloromethane | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |
| Dibromomethane | SW8260 | - | - | - | 0.3 U | - |
| Dichlorodifluoromethane (CFC-12) | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.3 U | 0.07 U |
| Ethyl Ether | SW8260 | - | - | - | 0.2 U | - |
| Ethylbenzene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Hexachloroethane | SW8260 | - | - | - | 0.4 U | - |
| Iodomethane | SW8260 | - | - | - | 0.1 U | - |
| Isopropylbenzene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.3 U | 0.07 U |
| m&p-Xylene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |
| Methyl acetate | SW8260 | 3 U | 3 U | 3 U | - | 3 U |
| Methyl cyclohexane | SW8260 | 0.06 U | 0.07 U | 0.06 U | - | 0.07 U |
| Methyl Tert Butyl Ether | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.2 U | 0.3 U |
| Methylene chloride | SW8260 | 0.3 U | 0.3 U | 0.3 U | 0.1 U | 0.3 U |
| Naphthalene | SW8260 | - | - | - | 0.39 U | - |
| n-Butylbenzene | SW8260 | - | - | - | 0.06 U | - |
| n-Propylbenzene | SW8260 | - | - | - | 0.1 U | - |
| o-Xylene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Styrene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| tert-Butylbenzene | SW8260 | - | - | - | 0.06 U | - |
| Tetrachloroethene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Tetrahydrofuran | SW8260 | - | - | - | 1 U | - |
| Toluene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.1 U | 0.07 U |

**APPENDIX B-1**
**SUMMARY OF SOIL ANALYTICAL**
**RACER GMPT LIVONIA**
**LIVONIA, MI**

| AOI | | AOI-38 | AOI-38 | AOI-40 | AOI-41 | AOI-42 |
|---|---|---|---|---|---|---|
| Location Name | | SB-38-101 | SB-38-102 | SB-40-135 | SB-41-141 | SB-42-119 |
| Sample Name | | SB101 (07-27-12) (2.5-4.5) | SB102 (07-31-12) (2-4) | SB135-(07-24-12) (2-4) | SB141(06-22-2012)(3-5) | SB119-(07-26-12) (3-5) |
| Sample Date | | 7/27/2012 | 7/31/2012 | 7/24/2012 | 6/22/2012 | 7/26/2012 |
| Sample Type | | Normal | Normal | Normal | Normal | Normal |
| Sample Depth (bgs) | Analyical | 2.5 - 4.5 (ft) | 2 - 4 (ft) | 2 - 4 (ft) | 3 - 5 (ft) | 3 - 5 (ft) |
| Sample Matrix | Method | Soil | Soil | Soil | Soil | Soil |
| **Volatile Organic Compounds (mg/kg) (con't)** | | | | | | |
| trans-1,2-Dichloroethene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| trans-1,3-Dichloropropene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| trans-1,4-Dichloro-2-butene | SW8260 | - | - | - | 0.06 U | - |
| Trichloroethene | SW8260 | 0.06 U | 0.07 U | 0.06 U | 0.06 U | 0.07 U |
| Trichlorofluoromethane (CFC-11) | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Trifluorotrichloroethane (Freon 113) | SW8260 | 0.1 U | 0.1 U | 0.1 U | - | 0.1 U |
| Vinyl chloride | SW8260 | 0.1 U | 0.1 U | 0.1 U | 0.06 U | 0.1 U |

**Notes and Abbreviations:**
1. U - Not detected, result below shown reporting limit.
   UJ - Not detected, reporting limit estimated
   J - Estimated result
2. Result in **bold** were detected.

**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
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
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 UJ | - | 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
2. Result in **bold** were detected.

# APPENDIX C

## Analytical Data Validation Documentation

**Data Usability Summary Report (DUSR)**
**RACER GMPT LIVONIA**
**Analytical Laboratory: Merit Laboratories, Inc. - East Lansing, MI**
**Sample Delivery Group # S53273**

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-04-004)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540-R-08-01) and/or
  USEPA National Functional Guidelines for Low Concentration Organic Data Review (EPA 540-R-00-006)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996, or Standard Methods for the Examination of Water and Wastewater, Eds 18-20.

This DUSR pertains to the following samples:

| Sample ID |
|---|
| SB132(07-18-12)(20-22) |
| SB130(07-18-12)(16-18) |
| SB159(07-19-12)(7-9) |
| SB158(07-19-12)(3-5) |
| SB138(07-19-12)(22.5-24.5) |
| SB140(07-19-12)(10-12) |
| SB118(07-19-12)(2-4) |
| SB171(07-20-12)(10-12) |
| DUP1(07-20-12) |
| SB147(07-20-12)(8-10) |
| SB148(07-20-12)(2.5-4.5) |
| SB150(07-20-12)(2-4) |
| DUP2(07-20-12) |

Project Samples were analyzed according to the following analytical methods

| | Parameter | Analytical Method | Holding Time Criteria |
|---|---|---|---|
| 1. | Solids, Total | SM2540G | 7 days |
| 2. | ICP/MS Metals | EPA 6020 | 180 days |
| 3. | Mercury | EPA 7471A | 28 days |
| 4. | PCBs | EPA 8082 | 14 days ext/40 days analysis |
| 5. | VOCs | EPA 8260B | 14 days |
| 6. | PAHs | EPA 8270C | 14 days ext/40 days analysis |

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Field Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Target Compound Identification
- Sample Data Reporting Format
- Data Qualifiers
- Summary

**Preservation and Holding Times**

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

**GC/MS Instrument Performance Check**

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

**Initial Calibration Procedures**

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. Nc Qualification of the data is recommended.

**Continuing Calibration Procedures**

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

**Blank Sample Analysis**

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target analytes were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples. No qualification of the data is recommended.

**System Monitoring Compound Recoveries**

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria. No qualification of the data is recommended.

**Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries**

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

**Internal Standard Recoveries**

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

**Duplicate Sample Analysis**

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

**Field Duplicate Sample Analysis**

The overall variability attributable to the sampling procedure, sample matrix, and laboratory procedures, was evaluated by assessing the relative percent difference (RPD) data from field duplicate samples. All calculated RPD values were within matrix specific data quality objectives, with the exception of results qualified "J" as shown in the table(s) below:

| | Original Sample ID. | FD Sample ID. | | Flag Original and FD |
|---|---|---|---|---|
| Target Analyte(s) | SB150(07-20-12)(2-4) | DUP2(07-20-12) | %RPD | sample results with: |
| Copper, Total | 2.8 mg/kg | 4.72 mg/kg | 51% | J |

Action:

*If the sample matrix is solid and the %RPD is greater than 50%, the original sample results are qualified "J". If the sample matrix is water or air and the %RPD is greater than 35%, the original sample results are qualified "J".*

**ICP Interference Check Sample Performance**

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

**ICP Serial Dilution Replicate Percent Difference**

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

**Target Compound Identification**

GC/MS qualitative analysis for organic parameters was performed to remove mis-identifications of the target compounds. The relative retention times (RRT) of all reported target compounds were within +/- 0.06 RRT units of the associated calibration standard RRT, and all ions present in the reference standard spectrum at a relative intensity greater than 10 percent were also present in the sample spectrum. No qualification of the data is recommended.

**Sample Data Reporting Format**

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format or equivalent. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

**Data Qualifiers**

Samples that contain results between the MDL and RL were flagged as estimated, "J", by the laboratory. The data user should be aware that there is a possibility of false positive or mis-identification at the quantitation levels. The laboratory also qualified results when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

**Summary**

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

**Data Usability Summary Report (DUSR)**
**11950 Livonia Plant**
**Analytical Laboratory: Merit Laboratories, Inc. - East Lansing, MI**
**Sample Delivery Group # S53508**

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-04-004)
- USEPA National Functional Guidelines for Organic Data Review (EPA 540-R-08-01) and/or
  USEPA National Functional Guidelines for Low Concentration Organic Data Review (EPA 540-R-00-006)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996, or Standard Methods for the Examination of Water and Wastewater, Eds 18-20.

This DUSR pertains to the following samples:

| Sample ID |
|---|
| MW129(08-08-2012)(1250) |
| 2306-080812-0001 |
| MW105(08-08-2012)(1445) |
| MW101(08-08-2012)(1615) |
| 2306-080912-0001 |
| MW165(08-09-2012)(0825) |
| MW139(08-09-2012)(0915) |
| DUP-01(08-09-12) |

Project Samples were analyzed according to the following analytical methods:

| | Parameter | Analytical Method | Holding Time Criteria |
|---|---|---|---|
| 1. | VOCs | EPA 8260B/624 | 14 days |
| 2. | ICP/MS Metals | EPA 6020/200.8 | 180 days |
| 3. | Mercury | E2451.1 | 28 days |
| 4. | PAHs | EPA 8270C | 7 days ext/40 days analysis |

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed.

- Holding Times
- GC/MS Instrument Performance Check
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Field Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Target Compound Identification
- Sample Data Reporting Format
- Data Qualifiers
- Summary

**Preservation and Holding Times**

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

**GC/MS Instrument Performance Check**

GC/MS instrument performance checks for the instruments used in the analysis of project samples fell within method specific criteria without exception. No qualification of the data is recommended.

**Initial Calibration Procedures**

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

**Continuing Calibration Procedures**

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

**Blank Sample Analysis**

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target analytes were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples. No qualification of the data is recommended.

**System Monitoring Compound Recoveries**

System monitoring/surrogate compounds are added to each sample prior to analysis of organic parameters to confirm the efficiency of the sample preparation procedure. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. The calculated recovery of these compounds fell within the laboratory specific quality control criteria, with the following exception(s):

| Surrogate Percent Recovery Criteria | | | | |
|---|---|---|---|---|
| **Surrogate** | | **Aqueous Matrix (%)** | **Solid Matrix (%)** | |
| Nitrobenzene-d5 | S04 | 10 - 116 | low - high | Base/Neutral |
| 2-Fluorobiphenyl | S05 | 10 - 114 | low - high | Base/Neutral |
| Terphenyl-d14 | S06 | 10 - 141 | low - high | Base/Neutral |

| | | | | | | | | | | Base/Neutral | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **S01** | **S02** | **S03** | **S04** | **S05** | **S06** | **S07** | **S08** | **Positive** | **Non Detect** |
| **Project Sample ID** | **Matrix** | **%R** | **%R** | **%R** | **%R** | **%R** | **%R** | **%R** | **%R** | **Results** | **(ND)** |
| MW105(08-08-2012)(1445) | AQ | | | | 7 | 8.3 | 10.3 | | | J | R |

**Base/Neutral Extractable**

1,1-Biphenyl, 2,2'-oxybis(1-Chloropropane), 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Chloronaphthalene, 2-Fluorobiphenyl, 2-Methylnaphthalene, 2-Nitroaniline, 3,3'-Dichlorobenzidine, 3-Nitroaniline, 4-Bromophenyl phenyl ether, 4-Chloroanaline, 4-Chlorophenyl phenyl ether, 4-Nitroaniline, Acenaphthene, Acenaphthylene, Acetophenone, Anthracene, Atrazine, Benzaldehyde, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis(2-Chloroethoxy)methane, bis(2-Chloroethyl)ether, bis(2-Ethylhexyl)phthalate, Butylbenzylphthalate, Caprolactam, Carbazole, Chrysene, Dibenz(a,h)anthracene, Dibenzofuran, Diethylphthalate, Dimethylphthalate, Di-n-butylphthalate, Di-n-octylphthalate, Fluoranthene, Fluorene, Hexachlorobenzene, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane, Indeno(1,2,3-cd)pyrene, Isophorone, Naphthalene, Nitrobenzene, N-Nitroso-di-n-propylamine, N-Nitrosodiphenylamine, Phenanthrene, Pyrene

**Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries**

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria, with the following exception(s):

| LCS ID / Project Sample MS | Type | Target Analyte(s) | %R Criteria | %R | %RPD | Affected Sample(s) |
|---|---|---|---|---|---|---|
| MW105(08-08-2012)(1445) | MS/MSD | Styrene | 70 - 127 | 73.4 | 142.6 | MW129(08-08-2012)(1250)<br>MW105(08-08-2012)(1445)<br>MW101(08-08-2012)(1615)<br>MW165(08-09-2012)(0825)<br>MW139(08-09-2012)(0915)<br>DUP-01(08-09-12) |

Action:

*If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample and the %R greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the MS/MSD %R is >10%, but less than the lower acceptance limit, associated analyte positive results are qualified "J" and non-detects are qualified "UJ". If the MS/MSD %R is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R". MS/MSD qualifiers are only applied to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.*

| LCS ID / Project Sample MS | Type | Target Analyte(s) | %R Criteria | %R | %RPD | Affected Sample(s) |
|---|---|---|---|---|---|---|
| MW105(08-08-2012)(1445) | MS | 2-Methylnaphthalene | 36 - 120 | 14.2 | | MW129(08-08- |
| | MS | Acenaphthene | 23 - 114 | 13.6 | | MW105(08-08- |
| | MS | Acenaphthylene | 35 - 128 | 15.6 | | MW101(08-08- |
| | MS | Anthracene | 32 - 142 | 16.1 | | MW165(08-09- |
| | MS | Benzo(a)anthracene | 37 - 135 | 16.7 | | MW139(08-09- |
| | MS | Benzo(b)fluoranthene | 29 - 153 | 17.4 | | DUP-01(08-09-12) |
| | MS | Benzo(g,h,i)perylene | 45 - 131 | 14 | | |
| | MS | Benzo(k)fluoranthene | 30 - 136 | 14.8 | | |
| | MS | Chrysene | 39 - 137 | 16.6 | | |
| | MS | Dibenz(a,h)anthracene | 45 - 131 | 14.7 | | |
| | MS | Fluorene | 38 - 128 | 16.1 | | |
| | MS | Fluoranthene | 29 - 136 | 16.7 | | |
| | MS | Indeno(1,2,3-cd)pyrene | 39 - 137 | 14.4 | | |
| | MS | Naphthalene | 22 - 110 | 13.6 | | |
| | MS | Phenanthrene | 36 - 143 | 13.6 | | |
| | MS | Pyrene | 32 - 127 | 16.1 | | |

Action:

*If the LCS %R is greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the LCS %R is less than the lower acceptance limit associated target analyte positive results are qualified "J" and non-detects are qualified "R". If the MS/MSD is from a project sample and the %R greater than the upper acceptance limit, associated target analyte positive results are qualified "J" and non-detects should not be qualified. If the MS/MSD %R is >10%, but less than the lower acceptance limit, associated analyte positive results are qualified "J" and non-detects are qualified "UJ". If the MS/MSD %R is less than 10% associated target analyte positive results are qualified "J" and non-detects are qualified "R". MS/MSD qualifiers are only applied to affected samples of the same matrix. If the MS/MSD is a LAB sample do not qualify project samples.*

**Internal Standard Recoveries**

Internal Standard compounds were added to each sample matrix prior to the analysis of organic parameters to quantify the amount of the target compounds detected within each sample. The calculated response of each IS compound fell within the QA/QC criteria of +100% and – 50% of the corresponding CCV standard. No qualification of the data is recommended.

**Duplicate Sample Analysis**

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

**Field Duplicate Sample Analysis**

The overall variability attributable to the sampling procedure, sample matrix, and laboratory procedures, was evaluated by assessing the relative percent difference (RPD) data from field duplicate samples. All calculated RPD values were within matrix specific data quality objectives, with the exception of results qualified "J" as shown in the table(s) below:

| | Original Sample ID. | FD Sample ID. | | Flag Original and FD |
|---|---|---|---|---|
| Target Analyte(s) | MW139(08-09-2012)(0915) | DUP-01(08-09-12) | %RPD | sample results with: |
| Arsenic, Dissolved | 0.006 mg/L | 0.011 mg/L | 59% | J |

Action:

*If the sample matrix is solid and the %RPD is greater than 50%, the original sample results are qualified "J". If the sample matrix is water or air and the %RPD is greater than 35%, the original sample results are qualified "J".*

**ICP Interference Check Sample Performance**

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

**ICP Serial Dilution Replicate Percent Difference**

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

**Target Compound Identification**

GC/MS qualitative analysis for organic parameters was performed to remove mis-identifications of the target compounds. The relative retention times (RRT) of all reported target compounds were within +/- 0.06 RRT units of the associated calibration standard RRT, and all ions present in the reference standard spectrum at a relative intensity greater than 10 percent were also present in the sample spectrum. No qualification of the data is recommended.

**Sample Data Reporting Format**

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format or equivalent. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

**Data Qualifiers**

Samples that contain results between the MDL and RL were flagged as estimated, "J", by the laboratory. The data user should be aware that there is a possibility of false positive or mis-identification at the quantitation levels. The laboratory also qualified results when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

**Summary**

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

**Data Usability Summary Report (DUSR)**
**RACER GMPT Livonia**
**Analytical Laboratory: Merit Laboratories, Inc. - East Lansing, MI**
**Sample Delivery Group # S54932**

Analytical results for the project samples were reviewed to evaluate the data usability. Data was assessed in accordance with guidance from the following Federal and/or State guidance documents:

- USEPA National Functional Guidelines for Inorganic Data Review (EPA 540-R-04-004)

and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996, or Standard Methods for the Examination of Water and Wastewater, Eds 18-20.

This DUSR pertains to the following samples:

| Sample ID |
|---|
| TW105(12-10-2012)(1415) |
| TW105(12-10-2012)(1415)MS |
| TW105(12-10-2012)(1415)MSD |
| TW135(12-10-2012)(1600) |
| TW129(12-11-2012)(1305) |
| TW152(12-11-2012)(1410) |
| TW158(12-11-2012)(1610) |
| DUP-01(12-11-2012) |
| TW101(12-12-2012)(1100) |
| TW124(12-12-2012)(1340) |
| TW137(12-12-2012)(1445) |
| TW139(12-12-2012)(1650) |

Project Samples were analyzed according to the following analytical methods

| | Parameter | Analytical Method | Holding Time Criteria |
|---|---|---|---|
| 1. | ICP/MS Metals | EPA 6020/200.8 | 180 days |

The following items/criteria applicable to the analysis of project samples and associated QA/QC procedures were reviewed

- Holding Times
- Initial Calibration Procedures
- Continuing Calibration Procedures
- Blank Sample Analysis
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Duplicate Sample Analysis
- Field Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Sample Data Reporting Format
- Data Qualifiers
- Summary

**Preservation and Holding Times**

Maximum allowable holding times, measured from the time of sample collection to the time of sample preparation or analysis, were met for each project sample analyzed as part of this sample delivery group. No qualification of the data is recommended.

**Initial Calibration Procedures**

Initial instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

**Continuing Calibration Procedures**

Continuing calibration verification (CCV) procedures for the analysis of project samples were consistent with the guidelines prescribed by EPA protocols. No Qualification of the data is recommended.

**Blank Sample Analysis**

In accordance with cited USEPA guidelines, positive sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for metals and the common organic laboratory contaminants (methylene chloride, acetone, 2-butanone, cyclohexane, and phthalate esters), or 5 times (5X) the amount for other target compounds. Target analytes were not detected in associated blank samples (trip, equipment, method) prepared and analyzed concurrently with the project samples. No qualification of the data is recommended.

**Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries**

Analytical precision and accuracy was evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds. The reported recovery of MS/MSD and LCS analyses fell within the laboratory QA acceptance criteria. No qualification of the data is recommended.

**Duplicate Sample Analysis**

The replicate percent difference (RPD) was evaluated for each duplicate sample pair to monitor the reproducibility of the data. The RPD for each sample pair was within the QA/QC limit of 30% for aqueous samples and 50% for solid matrices, for those target analytes with sample concentrations >5X the MDL. No qualification of the data is recommended.

**Field Duplicate Sample Analysis**

The overall variability attributable to the sampling procedure, sample matrix, and laboratory procedures, was evaluated by assessing the relative percent difference (RPD) data from field duplicate samples. All calculated RPD values were within matrix specific data quality objectives, with the exception of results qualified "J" as shown in the table(s) below:

| Target Analyte(s) | Original Sample ID. TW158(12-11-2012)(1610) | FD Sample ID. DUP-01(12-11-2012) | %RPD | Flag Original and FD sample results with: |
|---|---|---|---|---|
| Arsenic, Dissolved | 0.01 mg/L | 0.009 mg/L | 11% | |
| Arsenic, Total | 0.019 mg/L | 0.019 U mg/L | 0% | |
| Lead, Dissolved | 0.003 U mg/L | 0.003 U mg/L | 0% | |
| Lead, Total | 0.003 U mg/L | 0.003 U mg/L | 0% | |

Action:

*If the sample matrix is solid and the %RPD is greater than 50%, the original sample results are qualified "J". If the sample matrix is water or air and the %RPD is greater than 35%, the original sample results are qualified "J".*

**ICP Interference Check Sample Performance**

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were all within the acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. No qualification of the data is recommended.

**ICP Serial Dilution Replicate Percent Difference**

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were in accordance with the EPA QA acceptance criteria of less than 10% RPD for those target analytes with sample concentrations >50X the MDL. No qualification of the data is recommended.

**Sample Data Reporting Format**

The sample data are presented using USEPA Contract Laboratory Protocol (CLP) format or equivalent. The data package has been reviewed for completeness and found to contain each required sample result and associated QA/QC report form. The reporting format is complete and compliant with the objectives of the project. No qualification of the data is recommended.

**Data Qualifiers**

Samples that contain results between the MDL and RL were flagged as estimated, "J", by the laboratory. The data user should be aware that there is a possibility of false positive or mis-identification at the quantitation levels. The laboratory also qualified results when target analytes were detected in the associated method/preparation blank sample. Based on a spot check of the data qualifiers used, these flags appeared to be applied to the reported results in accordance with EPA guidance.

**Summary**

The results presented in each report were found to be compliant with the data quality objectives for the project and usable. Based on our review, the usability of the data is 100%, with the few exceptions noted above.

# APPENDIX D

## Laboratory Analytical Data Reports (on CD)