

MEMO

To: Brandon Pursel, USEPA
From: Francis Biehl, PE and Jason Martinez
CC: Grant Trigger, RACER Trust; David Favero, RACER Trust
Date: July 14, 2017

Project #: R2330022
Re: RACER Van Buren Landfill Site – Spring 2017 Semi-Annual Ground Water Sampling Results

Tables, Figures and Attachments Included in this Memo are:

- Table 1, Analytes for Semi-Annual Ground Water Monitoring
- Table 2, Summary of Groundwater Sample Results (Non-Residential)
- Table 3, Summary of Groundwater Sample Results (Residential)
- Table 4, Total Depth to Bottom of Wells and Estimated Sediment Accumulation
- Figure 1, Site Location Map
- Figure 2, Groundwater Elevation Contour Map (October 2016)
- Figure 3, Monitoring Well Analytical Summary Through October 2016
- Figure 4, Iron Concentration Contours (October 2016)
- Attachment 1, Low Flow Ground Water Field Sampling Forms
- Attachment 2, Laboratory Analytical Data Reports

The Mannik & Smith Group, Inc. (MSG) has been performing site investigation activities at the Van Buren Landfill (VBL) Property located northeast of the Ecorse Road / Michigan Avenue intersection in Van Buren Township, Wayne County, Michigan (Site) on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust. *Figure 1, Site Location Map*, depicts the location of the Site relative to nearby roads and major topographic features.

Previous phases of investigation and associated findings were documented in the following reports: *Phase IA Site Investigation*, dated February 19, 2013; *RACER Van Buren Landfill Site – Phase IB Site Investigation*, dated November 20, 2013; *Phase II Site Investigation*, dated March 12, 2014; *Phase III Site Investigation*, dated September 4, 2014; and *RACER Van Buren Landfill Site – Phase IV Site Investigation*, dated July 23, 2015. Previous Semi Annual Ground Water Sampling reports for the Fall, 2015, Spring, 2016 and Fall 2017 semi-annual ground water sampling events were sent in March and August of 2016, and February 2017 respectively (results for all other semi-annual sampling events were discussed in the investigation reports).

The Spring 2017 Semi Annual Ground Water Sampling activities completed on the General Motors Property are summarized in a separate memo.

FALL 2016 SEMI-ANNUAL GROUND WATER MONITORING EVENT

Since September 2012, MSG has conducted semi-annual ground water monitoring in accordance with *USEPA Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* and the *Site Sampling Analysis Plan (SAP)*. Proposed modifications to the Semi-Annual Ground Water Sampling Plan were approved by the USEPA Project Manager, Christopher Black via email on November 10, 2015. The modifications included analyzing for total and dissolved Aluminum, Iron and

Manganese from all monitoring wells and VOCs from MW-1, MW-23, and MW-24. *Table 1, Analytes for Semi-Annual Ground Water Monitoring* depicts the analyte list utilized during the Spring 2017 semi-annual ground water monitoring.

The Spring 2017 Semi-Annual Ground Water Sampling event was completed between April 24, 2017 and May 1, 2017 by Jason Martinez, Andrew Biehl and Diane Shimshock and included sampling of monitoring wells associated with the Site. Furthermore, in order to assess ground water quality south of Ecorse Road and to assist in confirmation of background concentrations (primarily for dissolved iron, aluminum, and manganese), a monitoring well located at the former GM Willow Run Powertrain Plant (CRA-266M) was sampled and a static water level was measured to aid in the ground water flow assessment. Unlike previous semi-annual ground water monitoring events, static ground water elevations at three (3) other wells (CRA-265M, CRA-833M, and CRA-834M) that are close to CRA-266M were not measured since these wells were locked (MSG had requested these wells be unlocked). Finally, total well depths were measured at every well to calculate the amount of sediment accumulation in each well.

Ground water sampling field sheets can be found in *Attachment 1, April 2017 Field Sheets*. Ground water sampling activities were conducted in general accordance with *USEPA Low-flow (Minimal Drawdown) Ground-Water Sampling Procedures* and the Site *SAP/QAPP*. Samples were analyzed for total and dissolved Aluminum, Iron and Manganese. Samples from wells MW-1, MW-23, and MW-24 were analyzed for VOCs in addition to the dissolved metals listed above.

HYDROGEOLOGY

Depth to groundwater was measured in all existing monitoring wells located on the Van Buren Landfill Site and associated adjacent properties. Based on the collected data, ground water appears to flow radially from a local ground water high (ground water mounding) in the central portion of the Site similar to what has been presented in previous reports. Ground water elevation contours and ground water flow from the Spring 2017 ground water hydraulic monitoring data are illustrated on *Figure 2, Ground Water Elevation Contour Map (April 2017)*.

GROUND WATER SAMPLE RESULTS

A summary of ground water sample analytical results compared to non-residential cleanup criteria are summarized in *Table 2, Summary of Ground Water Sample Results (Non-Residential)*. Results compared to residential cleanup criteria are summarized in *Table 3 Summary of Ground Water Sample Results (Residential)*. In addition, total well depths along with estimated sediment accumulation for each well are summarized in *Table 4, Total Depth to Bottom of Wells and Estimated Sediment Accumulation*. The laboratory reports can be found in *Attachment 2, Laboratory Analytical Data Reports*. The distribution of contaminants detected at concentrations exceeding applicable criteria (Health-Based DW) are depicted on *Figure 3, Monitoring Well Analytical Summary through April 2017 Semi-Annual Ground Water Monitoring (Exceedances Only)*.

SUMMARY AND RECOMMENDATIONS

In summary, the ground water sample analytical results from the Spring 2017 Semi-Annual Ground Water Sampling Event were very similar to previous ground water sampling results. The results indicate that ground water samples collected to date from wells along the northern and western perimeter of the Site (monitoring wells MW-1, MW-7, MW-9, and MW-10) contain concentrations of dissolved iron above applicable criteria (MDEQ Part 201 Non-residential Health-Based DW criteria). Samples collected from MW-11 (also located at the northern perimeter of the Site) continue to contain dissolved aluminum, iron and manganese concentrations below MDEQ Part 201 Non-residential Health-Based DW criteria. Further north beyond MW-1, MW-10, MW-22 and MW-24 and on the adjacent property, samples collected from MW-26, MW-25 continue to contain dissolved aluminum, iron and manganese concentrations below MDEQ Part 201 Residential Health-Based DW criteria indicating the extent of migration.

It is apparent upon examination of the ground water sample analytical results that ground water south of the Site along Ecorse Road (MW-20) contain dissolved iron at concentrations above MDEQ Part 201 Residential Health-Based DW criteria, the Willow Run Airport wells (MW-35 and MW-36) contain concentrations of dissolved Aluminum, Iron or Manganese below MDEQ Part 201 Residential Health-Based DW criteria, and that these concentrations have generally remained consistent for all sampling events.

Based on dissolved iron concentrations over time and (more importantly) within periphery monitoring wells located off-Site (depicted in the attached supporting documentation), in conjunction with the length of time that the landfill has been closed

(approximately 46 years) the contaminant plume related to the Site (i.e., existing area of groundwater contamination) appears to be stable. .

There is a concern that the total results are being influenced by sediment build up in the wells and in turn, by turbidity of the water as a result of the sampling activities. Therefore it is believed that dissolved metal concentrations are more representative of ground water quality compared to total metals. Total Well Depths were compared to earlier well depths during development of the well and the amount of sediment accumulation in each well was calculated. The result was that eleven (11) monitoring wells (excluding those monitoring wells on the GM Site and discussed in the report "General Motors Property – Spring 2017 Semi-Annual Ground Water Sampling Results") on and around the Site have an estimated sediment accumulation of over 0.5 feet. The eleven (11) wells will be redeveloped prior to the Fall 2017 monitoring. All subsequent monitoring events will include the measurement and recording of sediment volume within each monitoring well and purging of water to attempt to lower turbidity to less than 10 NTU before a water sample is collected.

Lastly, as a note, the Michigan Department of Environmental Quality (MDEQ) is in the process of amending Part 201 Generic Cleanup Criteria draft criteria. Implementation of these new criteria would change residential and non-residential health-based drinking water criteria for dissolved iron from 2,000 ug/L to 4,200 ug/L and from 5,600 ug/L to 13,000 ug/L, respectively. This change along the Van Buren Township Well Survey that did not indicate any wells in the area of impact, would eliminate the need to further delineate dissolved iron to the east beyond what has already been done and further supports not performing further delineation to the northwest.

TABLES



FIGURES



ATTACHMENT 1

LOW FLOW GROUND WATER FIELD SAMPLING FORMS



ATTACHMENT 2

LABORATORY ANALYTICAL DATA REPORTS





