US EPA RECORDS CENTER REGION 5
549122

January 11, 2018

Reference No. 032504-15

Mr. Howard Caine
United States Environmental Protection Agency
Region V (SR-6J)
77 W. Jackson Boulevard
Chicago, Illinois
60604

Dear Mr. Caine:

Re: Progress Report No. 141
Groundwater and Landfill RD/RA
Reporting Period: October 1 through December 31, 2018
Rasmussen Landfill (Site), Livingston Co., Michigan

1. Introduction

This Progress Report is submitted in accordance with Paragraph 26 of the Consent Decree, Civil Action No. 92 40071. This report summarizes the activities performed during the reporting period and describes the activities to continue or which are scheduled to start during the next reporting period.

2. Activities Performed During this Reporting Period

2.1 Operation and Maintenance

The quarterly round of groundwater elevations were measured on December 26, 2017. The corresponding groundwater contour map is provided on Figure 1.

GHD collected quarterly groundwater samples on December 12, 14, 15, 16, 19 and 20, 2017, for the Groundwater Remediation Monitoring Program. The results from these samples are discussed below.

2.2 Reports

Quarterly Progress Report No. 140 was submitted to USEPA and Michigan Department of Environmental Quality (MDEQ) on September 10, 2017.

3. Summary of Findings

Fourth Quarter 2017 Groundwater Quality Monitoring

The results of the fourth quarter 2017 sampling are provided in Tables 1 through 4. Figure 2 is a Site location map showing the wells included in the quarterly Groundwater Remediation Monitoring Program.

GHD
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REGISTERED COMPANY FOR ISO 9001 ENGINEERING DESIGN

When GHD attempted to collect a sample form monitoring well 81-8, located immediately south of Spicer road, there was insufficient recharge to collect a groundwater sample. On December 15, 2017, GHD pulled the pump from the well, measured the depth to water, and sounded the well bottom. The measured well bottom is approximately 0.5 feet higher than the elevation indicated on the well log. Therefore, the well screen may be partially plugged but there is still approximate 2.5 foot length of well screen that is unrestricted. The groundwater elevation was 870.96 feet above mean sea level (AMSL), which is significantly lower than typical groundwater elevations measured in 81-8, which usually range from 879 to 880 ft AMSL. The adjacent sparge well continues to function and Compounds of Concern (COCs) are not typically detected in 81-8 groundwater samples when this occurs. The RSRG is evaluating options to repair or replace the well and will take the appropriate measures to ensure a representative sample can be collected during the first quarter 2018 sampling event.

During the fourth quarter 2017 sampling event, six of the 25 monitoring wells sampled had COCs at concentrations above Part 201 December 2013 Generic Residential Drinking Water Cleanup Criteria (RDWCC).

Specifically, the six monitoring wells with COCs exceeding RDWCC are:

- CRA-RA-22 2.5 μg/L vinyl chloride
- CRA-RA-24 4.1 μg/L vinyl chloride
- CRA-RA-26S 78 μg/L trichloroethene
- CRA-RA-27 10/9.5 μg/L vinyl chloride (duplicate sample)
- CRA-RA-30 3.6 μg/L vinyl chloride
- CRA-RA-33 2.5 μg/L vinyl chloride

These the same six monitoring wells had COCs above RDWCC during the third quarter 2017 sampling event.

4. Problems Encountered

On Friday, October 20, 2017 upon arrival for the weekly inspection, the system was down but no alarm call had been received from the Site autodialer. Upon further investigation, the phone line was not functioning and the site autodialer was not able to call out. The site treatment system was not functioning because the compressor electrical breaker had tripped.

On Tuesday, November 28, 2017 it was noted that flow through the site ozone generator had decreased dramatically. Ozonology (the system vendor) was contacted to troubleshoot the flow issue. Although airflow through the ozone generator had dropped significantly, overall system pressure remained at normal operating levels. However, with restricted air flow through the ozone generator, ozone concentrations were reduced.

5. Corrective Measures to Rectify Problems

On October 20, 2017, after discovering the Site treatment system was down without an alarm call out, AT&T service was contacted to fix issues with the Site phone line.

On October 20, 2017, GHD restarted the system after resetting the main electrical breaker for the system compressor. No residual problems existed and an initial cause for the circuit issue was not identified.

On Tuesday, November 28, 2017, flow through the ozone generator had decreased significantly. Ozonology, the system vendor, contacted the manufacturer of the ozone generator for troubleshooting. The manufacturer suggested that a low-pressure airstream could possibly remove debris that may be blocking the interior chambers of the unit. The debris inside the generator was likely from buildup of very fine desiccant dust that had come from the oxygen concentrator. On Wednesday, November 29, 2017, GHD returned to the site with a small compressor and the suggested fittings for injecting air into the plugged unit. Air was first injected into the unit outlet port and a small amount of white powder was blown out of the inlet port. Compressed air was then pushed into the inlet port and the process was repeated several more times. By alternating the air injection through the outlet and inlet ports, it was thought the debris might be "rocked back and forth" and finally dislodged from the unit chambers. After reinstalling the generator piping and restarting the system, flow through the generator was actually worse than when the air injection process began. Ozonology was contacted again and they placed a second call to the generator manufacturer. It was then suggested that the system be de-energized and the unit filled with isopropyl alcohol to dissolve the debris inside the unit chambers. On Thursday, November 30, 2017, the unit was de-energized and isopropyl alcohol was injected into the unit until all internal chambers were full. The unit was then allowed to sit for several hours to allow the alcohol to dissolve the obstructions. After the alcohol had been drained from the unit, a steady stream of air was injected to remove all foreign matter and to thoroughly dry the interior of the unit. After re-energizing the generator, conditions improved significantly and the air flow returned to normal. On, December 1, 2017, flow was again showing signs of restriction but adjustment of a fitting on the outlet side of the generator returned the unit to normal airflow.

A preventative maintenance plan is now being developed, along with possible installation of an inline filter to remove desiccant dust originating from the oxygen concentrator. The manufacturer of the ozone generator has also suggested periodic removal and delivery of the unit to their facility in Wisconsin for cleaning and possible electronic upgrades.

6. Contacts and Significant Correspondence with Public Representatives

Communication	Date	Subject of Correspondence/Discussion
Quarterly Report	September 10, 2017	Report No. 140 submitted to H. Caine (USEPA) and K. Krawczyk (MDEQ)

Communication	Date	Subject of Correspondence/Discussion
Numerous emails	September 18, through November 29, 2017	Coordination for December 1, 2017 Site visit
Site visit	December 1, 2017	H. Caine, K. Krawczyk, B. Bartholomy, S. Rapai meet on Site

7. Planned Upcoming Activities/Schedule

Activities planned for the first quarter of 2018 include:

- Continuing the operation of ozone sparging system
- Continuing to monitor for the presence of ozone at each sparge vault
- The first quarter 2018 groundwater sampling event, which is scheduled for the week of March 15, 2018 (The wells to be sampled in the first quarter of 2018 are listed in Table 5)

Should you have any questions on the above, please do not hesitate to contact the undersigned.

Yours truly,

GHD

For Arthur Rapai

Bart Bartholomy

AJD/cb/53

Encl.

cc: Mike Stoelton, JCI
Colleen Liddell, Ford
Karyllan Dodson Mack, BASF
Michael Simpson (e-copy only)
Steven Nadeau, Honigman

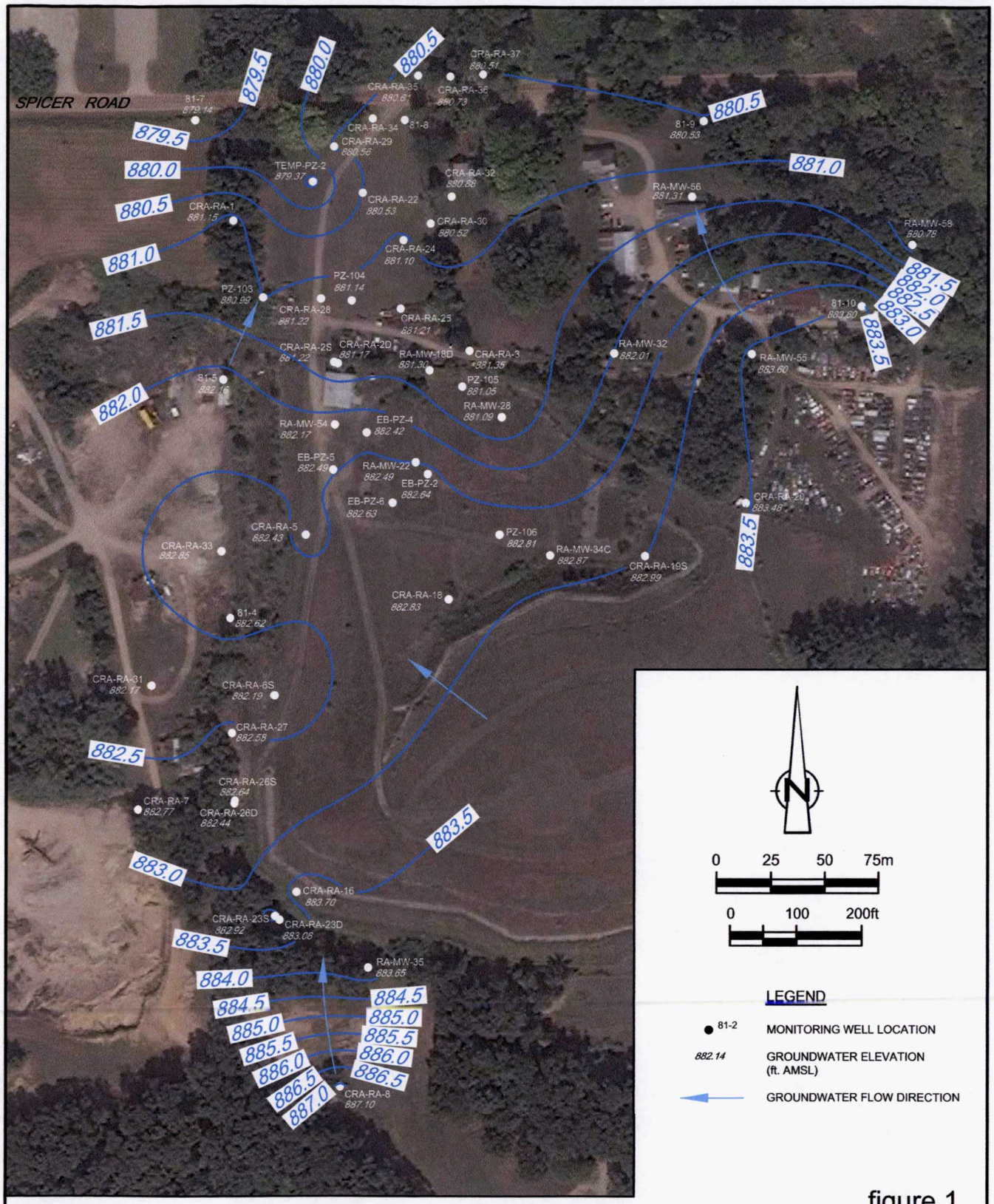

figure 1

GROUNDWATER ELEVATION CONTOURS (UPPER AQUIFER)
DECEMBER 26, 2017
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

GHD

32504-15(CAIN053)GN-WA001 JAN 8, 2018

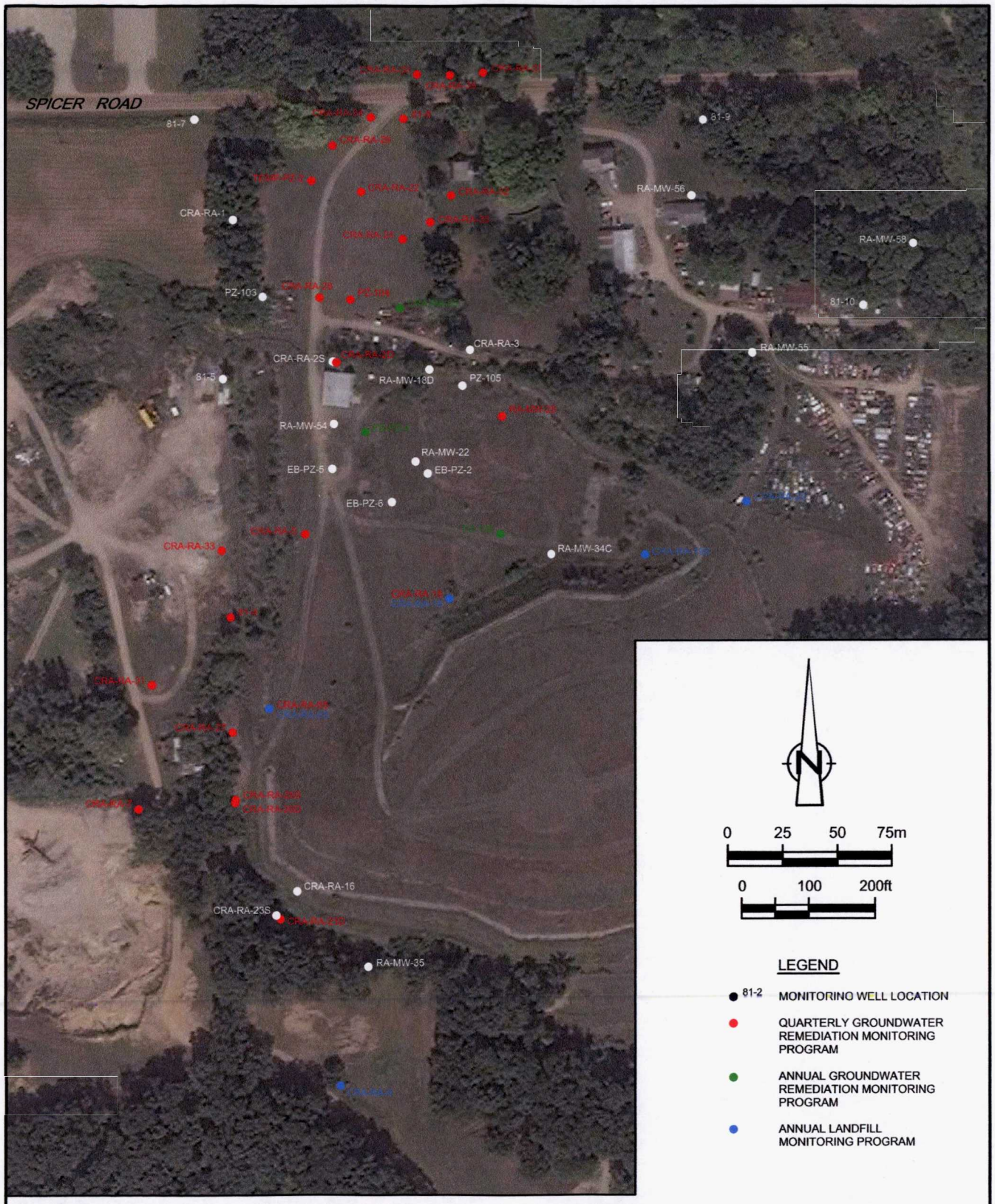

figure 2

2018 GROUNDWATER MONITORING PROGRAMS
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

GHD

32504-15(CAIN053)GN-WA002 JAN 8, 2018

Table 1

Analytical Results - Northern Plumes
Rasmussen Landfill Site
Livingston County, Michigan

Sample Location	Sample ID	Date Sampled	Parameter	1,1,1-TRICHLOROETHANE	1,2-DICHLOROETHENE (TOTAL)	2-BUTANONE	4-METHYL-2-PENTANONE	ACETONE	BENZENE	CHLOROBENZENE	ETHYLBENZENE	METHYLENE CHLORIDE	TOLUENE	TRICHLOROETHENE	VINYL CHLORIDE	XYLENES (TOTAL)
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			RDWCC (1)	200	70 (2)	13,000	1,800	730	5	100	74	5	790	5	2	280
CRA-RA-22	GW-SR-2069	3/15/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(1.0)	ND(1.0)	3.6	ND(1.0)
CRA-RA-22	GW-SR-2070	3/15/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(1.0)	ND(1.0)	3.6	ND(1.0)
CRA-RA-22	GW-SR-2088	6/8/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(1.0)	ND(1.0)	2.6	ND(1.0)
CRA-RA-22	GW-SR-2113	9/7/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(1.0)	ND(1.0)	4.0	ND(1.0)
CRA-RA-22	GW-SR-2141	12/14/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(1.0)	ND(1.0)	2.5	ND(1.0)
			Change												Down 1.5 µg/L	
CRA-RA-24	GW-SR-2044	11/17/2016		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	4.8	ND(1.0)
CRA-RA-24	GW-SR-2066	3/15/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	4.7	ND(1.0)
CRA-RA-24	GW-SR-2085	6/7/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	4.4	ND(1.0)
CRA-RA-24	GW-SR-2138	12/12/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(1.0)	ND(1.0)	4.1	ND(1.0)
			Change												Down 0.3 µg/L	
CRA-RA-25	GW-SR-1826	9/2/2014		ND(1.0)	1.1	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.1	ND(1.0)
CRA-RA-25	GW-SR-1921	9/2/2015		ND(1.0)	1.1	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-25	GW-SR-2011	9/1/2016		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-25	GW-SR-2110	9/6/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-28	GW-SR-2064	3/15/2017		ND(1.0)	2.8	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-28	GW-SR-2083	6/7/2017		ND(1.0)	2.8	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-28	GW-SR-2108	9/6/2017		ND(1.0)	3.6	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-28	GW-SR-2136	12/12/2017		ND(1.0)	3.5	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change		Down 0.1 µg/L											
CRA-RA-29		3/21/2017								Not sampled; insufficient water in well						
CRA-RA-29	GW-SR-2090	6/8/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-29	GW-SR-2115	9/7/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-29	GW-SR-2143	12/14/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-30	GW-SR-2067	3/15/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	3.5	ND(1.0)
CRA-RA-30	GW-SR-2087	6/7/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	3.5	ND(1.0)
CRA-RA-30	GW-SR-2113	9/13/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	4.4	ND(1.0)
CRA-RA-30	GW-SR-2139	12/12/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	3.6	ND(1.0)
			Change												Down 0.8 µg/L	
CRA-RA-32	GW-SR-2047	3/15/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-32	GW-SR-2086	6/7/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-32	GW-SR-2112	9/6/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-32	GW-SR-2140	12/12/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-34	GW-BW-01	3/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-34	GW-BW-001	6/9/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-34	GW-BW-002	6/9/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-34	GW-BW-001	9/6/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-34	GW-BW-001	12/16/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-35	GW-BW-04	3/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-35	GW-BW-05	3/10/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.0	ND(1.0)
CRA-RA-35	GW-BW-05	6/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-35	GW-BW-004	9/6/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-35	GW-BW-005	9/6/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-35	GW-BW-005	12/16/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-36	GW-BW-03	3/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-36	GW-BW-004	6/9/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-36	GW-BW-003	9/6/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-36	GW-BW-000	12/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-36	GW-BW-004	12/16/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-37	GW-BW-02	3/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-37	GW-BW-003	6/9/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-37	GW-BW-002	9/6/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-37	GW-BW-002	12/16/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
PZ-104	GW-SR-2065	3/15/2017		ND(1.0)	2.6	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.0	ND(1.0)
PZ-104	GW-SR-2084	6/7/2017		ND(1.0)	2.6	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.0	ND(1.0)
PZ-104	GW-SR-2109	9/6/2017		ND(1.0)	2.5	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.0	ND(1.0)
PZ-104	GW-SR-2137	12/12/2017		ND(1.0)	2.3	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.1	ND(1.0)
			Change		Down 0.2 µg/L										Up 0.1 µg/L	
TEMP-PZ-2	GW-SR-2071	3/15/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
TEMP-PZ-2	GW-SR-2089	6/8/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
TEMP-PZ-2	GW-SR-2049	11/18/2016		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
TEMP-PZ-2	GW-SR-2142	12/14/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
81-8	GW-SR-2081	3/21/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
81-8	GW-SR-2091	6/8/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
81-8	GW-SR-2116	9/7/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
81-8	GW-SR-2117	9/7/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						

Notes:

(1) Part 201 December 2013 Generic Residential Drinking Water Cleanup Criteria.
(2) The criterion provided is for the isomer cis-1,2-dichloroethene, the lower of the two criteria for 1,2-dichloroethene isomers. The criterion for trans 1,2-dichloroethene is 100 µg/L.

Table 2

Analytical Results - PDSLD Area Plumes
Rasmussen Landfill Site
Livingston County, Michigan

Sample Location	Sample ID	Date Sampled	Parameter	1,1,1-TRICHLOROETHANE	1,2-DICHLOROETHENE (TOTAL)	2-BUTANONE	4-METHYL-2-PENTANONE	ACETONE	BENZENE	CHLOROBENZENE	ETHYLBENZENE	METHYLENE CHLORIDE	TOLUENE	TRICHLOROETHENE	VINYL CHLORIDE	XYLENES (TOTAL)
			Units RDWCC(1)	µg/L 200	µg/L 70 (2)	µg/L 13,000	µg/L 1,800	µg/L 730	µg/L 5	µg/L 100	µg/L 74	µg/L 5	µg/L 790	µg/L 5	µg/L 2	µg/L 280
CRA-RA-2D	GW-SR-2060	3/14/2017		ND(2.9)	ND(2.9)	ND(29)	ND(29)	ND(29)	ND(2.9)	75	ND(2.9)	ND(2.9)	ND(2.9)	ND(2.9)	ND(2.9)	ND(2.9)
CRA-RA-2D	GW-SR-2082	6/7/2017		ND(2.5)	ND(2.5)	ND(25)	ND(25)	ND(25)	ND(2.5)	72	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)
CRA-RA-2D	GW-SR-2107	9/6/2017		ND(3.3)	ND(3.3)	ND(33)	ND(33)	ND(33)	ND(3.3)	78	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)
CRA-RA-2D	GW-SR-2135	12/12/2017		ND(3.3)	ND(3.3)	ND(33)	ND(33)	ND(33)	ND(3.3)	72	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)
			Change							Down 6 µg/L						
CRA-RA-18	GW-SR-2063	3/14/2017		66	ND(2.0)	ND(20)	ND(20)	ND(20)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
CRA-RA-18	GW-SR-2104	6/13/2017		61	ND(2.5)	ND(25)	ND(25)	ND(25)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)
CRA-RA-18	GW-SR-2118	9/11/2017		49	ND(2.0)	ND(20)	ND(20)	ND(20)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
CRA-RA-18	GW-SR-2149	12/19/2017		75	ND(3.3)	ND(33)	ND(33)	ND(33)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)
			Change	Up 26 µg/L												
EB-PZ-4	GW-SR-1729	8/27/2013		ND(1.4)	ND(1.4)	ND(14)	ND(14)	ND(14)	ND(1.4)	41	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	2.2	ND(1.4)
EB-PZ-4	GW-SR-1827	9/2/2014		ND(1.4)	ND(1.4)	ND(14)	ND(14)	ND(14)	ND(1.4)	43	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)	ND(1.4)
EB-PZ-4	GW-SR-1911	9/1/2015		ND(1.8)	ND(1.8)	ND(10)	ND(10)	ND(10)	ND(1.8)	46	ND(1.8)	ND(1.8)	ND(1.8)	ND(1.8)	ND(1.8)	ND(1.8)
EB-PZ-4	GW-SR-2026	9/5/2016		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	46	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
EB-PZ-4	GW-SR-2122	9/12/2017		ND(1.7)	ND(1.7)	ND(20)	ND(20)	ND(20)	ND(1.7)	37	ND(1.7)	ND(1.7)	ND(1.7)	ND(1.7)	ND(1.7)	ND(1.7)
			Change							Down 9 µg/L						
PZ-106	GW-SR-1828	9/2/2014		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
PZ-106	GW-SR-1912	9/1/2015		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
PZ-106	GW-SR-2023	9/4/2016		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
PZ-106	GW-SR-2119	9/11/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
RA-MW-28	GW-SR-2062	3/14/2017		6.0	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
RA-MW-28	GW-SR-2101	6/13/2017		7.5	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
RA-MW-28	GW-SR-2121	9/12/2017		5.7	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
RA-MW-28	GW-SR-2148	12/19/2017		8.4	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change	Up 2.7 µg/L												

Notes:

(1) Part 201 December 2013 Generic Residential Drinking Water Cleanup Criteria
(2) The criterion provided is for the isomer cis-1,2-dichloroethene, the lower of the two criteria for 1,2-dichloroethene isomers. The criterion for trans 1,2-dichloroethene is 100 µg/L.

Table 3

Analytical Results - Southern Vinyl Chloride Plume
Rasmussen Landfill Site
Livingston County, Michigan

Sample Location	Sample ID	Date Sampled	Parameter	1,1,1-TRICHLOROETHANE	1,2-DICHLOROETHENE (TOTAL)	2-BUTANONE	4-METHYL-2-PENTANONE	ACETONE	BENZENE	CHLOROBENZENE	ETHYLBENZENE	METHYLENE CHLORIDE	TOLUENE	TRICHLOROETHENE	VINYL CHLORIDE	XYLENES (TOTAL)
			Units RDWCC(1)	µg/L 200	µg/L 70 (2)	µg/L 13,000	µg/L 1,800	µg/L 730	µg/L 5	µg/L 100	µg/L 74	µg/L 5	µg/L 790	µg/L 5	µg/L 2	µg/L 280
CRA-RA-5	GW-SR-2061	3/14/2017		16	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-5	GW-SR-2096	6/12/2017		29	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-5	GW-SR-2123	9/12/2017		14	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-5	GW-SR-2147	12/19/2017		22	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change	Up 8 µg/L												
CRA-RA-6S	GW-SR-2078	3/20/2017		1.6	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-6S	GW-SR-2097	6/12/2017		2.1	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.2	ND(1.0)
CRA-RA-6S	GW-SR-2126	9/12/2017		1.9	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-6S	GW-SR-2150	12/19/2017		2.7	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change	Up 0.8 µg/L											Down 0.2 µg/L	
CRA-RA-7	GW-SR-2080	3/20/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-7	GW-SR-2093	6/11/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-7	GW-SR-2125	9/12/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-7	GW-SR-2053	12/15/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-27	GW-SR-2072	3/16/2017		ND(1.0)	1.9	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	8.6	ND(1.0)
CRA-RA-27	GW-SR-2098	6/12/2017		ND(1.0)	2.5	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	12	ND(1.0)
CRA-RA-27	GW-SR-2127	9/12/2017		ND(1.0)	2.2	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	9.9	ND(1.0)
CRA-RA-27	GW-SR-2151	12/19/2017		ND(1.0)	3.4	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	10	ND(1.0)
CRA-RA-27	GW-SR-2152	12/19/2017	*Duplicate*	ND(1.0)	3.6	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	9.5	ND(1.0)
			Change		Up 1.3 µg/L										Down 0.25 µg/L	
CRA-RA-31	GW-SR-2079	3/20/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-31	GW-SR-2092	6/11/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-31	GW-SR-2124	9/12/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-31	GW-SR-2144	12/15/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-31	GW-SR-2145	12/15/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-33	GW-BW-06	3/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	1.9	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.1	ND(1.0)
CRA-RA-33	GW-BW-006	6/10/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	1.5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.3	ND(1.0)
CRA-RA-33	GW-BW-006	9/6/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	1.6	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	3.2	ND(1.0)
CRA-RA-33	GW-BW-006	12/16/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	1.6	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	2.5	ND(1.0)
									Stable						Down 0.7 µg/L	
81-4	GW-SR-2075	3/14/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.7	ND(1.0)
81-4	GW-SR-2105	6/13/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.9	ND(1.0)
81-4	GW-SR-2132	9/13/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	2.0	ND(1.0)
81-4	GW-SR-2156	12/20/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.4	ND(1.0)
			Change												Down 0.4 µg/L	

Notes:

(1) Part 201 December 2013 Generic Residential Drinking Water Cleanup Criteria
(2) The criterion provided is for the isomer cis-1,2-dichloroethene, the lower of the two criteria for 1,2-dichloroethene isomers. The criterion for trans 1,2-dichloroethene is 100 µg/L.

Table 4

Analytical Results - Southern TCE Plume
Rasmussen Landfill Site
Livingston County, Michigan

Sample Location	Sample ID	Date Sampled	Parameter	1,1,1-TRICHLOROETHANE	1,2-DICHLOROETHENE (TOTAL)	2-BUTANONE	4-METHYL-2-PENTANONE	ACETONE	BENZENE	CHLOROBENZENE	ETHYLBENZENE	METHYLENE CHLORIDE	TOLUENE	TRICHLOROETHENE	VINYL CHLORIDE	XYLENES (TOTAL)
				Volatile Organics												
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			RDWCC(1)	200	70 (2)	13,000	1,800	730	5	100	74	5	790	5	2	280
CRA-RA-23D	GW-SR-2076	3/19/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.3	ND(1.0)	ND(1.0)
CRA-RA-23D	GW-SR-2077	3/19/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.3	ND(1.0)	ND(1.0)
CRA-RA-23D	GW-SR-2106	6/13/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	2.1	ND(1.0)	ND(1.0)
CRA-RA-23D	GW-SR-2130	9/13/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.5	ND(1.0)	ND(1.0)
CRA-RA-23D	GW-SR-2131	9/13/2017	*Duplicate*	ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.6	ND(1.0)	ND(1.0)
CRA-RA-23D	GW-SR-2155	12/20/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	2	ND(1.0)	ND(1.0)
			Change											Up 0.4 µg/L		
CRA-RA-26D	GW-SR-2074	3/16/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-26D	GW-SR-2100	6/12/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-26D	GW-SR-2129	9/12/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
CRA-RA-26D	GW-SR-2154	12/20/2017		ND(1.0)	ND(1.0)	ND(10)	ND(10)	ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
			Change							Stable; all Non-Detect						
CRA-RA-26S	GW-SR-2073	3/16/2017		ND(4.0)	ND(4.0)	ND(40)	ND(40)	ND(40)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	75	ND(4.0)	ND(4.0)
CRA-RA-26S	GW-SR-2099	6/12/2017		ND(5.0)	ND(5.0)	ND(50)	ND(50)	ND(50)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	98	ND(5.0)	ND(5.0)
CRA-RA-26S	GW-SR-2128	9/12/2017		ND(3.3)	ND(3.3)	ND(33)	ND(33)	ND(33)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	ND(3.3)	69 J	ND(3.3)	ND(3.3)
CRA-RA-26S	GW-SR-2153	12/20/2017		ND(2.5)	ND(2.5)	ND(25	ND(25)	ND(25)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	78	ND(2.5)	ND(2.5)
			Change											Up 9 µg/L		

Notes:

(1) Part 201 December 2013 Generic Residential Drinking Water Cleanup Criteria.
(2) The criterion provided is for the isomer cis-1,2-dichloroethene, the lower of the two criteria for 1,2-dichloroethene isomers. The criterion for trans 1,2-dichloroethene is 100 µg/L.

Table 5

2018 Groundwater Sampling Program
Rasmussen Landfill Site
Livingston County, Michigan

Quarterly Sampling - VOCs	Annual Landfill Monitoring Program - VOCs, SVOCs & Metals	Additional Annual Samples - VOCs
	(2nd Quarter)	*(3rd Quarter)*
81-4	CRA-RA-6S (included in quarterly sampling)	CRA-RA-25
81-8	CRA-RA-8	EB-PZ-4
CRA-RA-2D	CRA-RA-18 (included in quarterly sampling)	PZ-106
CRA-RA-5	CRA-RA-19S	RA-MW-47
CRA-RA-6S	CRA-RA-20	Rasmussen Water Supply Well
CRA-RA-7		
CRA-RA-18		
CRA-RA-22		
CRA-RA-23D		
CRA-RA-24		
CRA-RA-26D		
CRA-RA-26S		
CRA-RA-27		
CRA-RA-28		
CRA-RA-29		
CRA-RA-30		
CRA-RA-31		
CRA-RA-32		
CRA-RA-33		
CRA-RA-34		
CRA-RA-35		
CRA-RA-36		
CRA-RA-37		
PZ-104		
RA-MW-28		
TEMP-PZ-2		

Rasmussen 32504

Ozone Sparge System Inspection

DATE	Oct. 6, 2017	Oct. 11, 2017	Oct. 20, 2017	Oct. 26, 2017	Nov. 3, 2017
OPERATOR SIGNATURE	L Rapai	L Rapai	L Rapai	L Rapai	L Rapai

Air Compressor					
			Down/Restart		
Output Pressure psi	120	115	120	115	110
Temperature F	183	181	180	183	179
Run Time hours	5307		5429	5573	5765

Air Sep					
Receiver Pressure psi	55	56	55	55	54
Feed Air Pressure psi	110	110	120	110	120
Cycle Pressure psi	70	70	70	70	70
Holding Tank Pressure psi	42	42	42	42	42
Run Time hours	120070.6		120405.7	120550.3	120742.8

Air Dryer					
Temp. Indicator - color	Green	Green	Green	Green	Green

Ozone Generator					
Oxygen Supply, LPM	7	7	7	7	7
% O3 capacity	45	45	45	45	~~38~~ 45
Regulator #1 psi	40	38	42	40	38
Regulator #2 psi	24	26	22	22	22
Alarm Reading ppm, O3	–	–	–	–	–
Zone On	1	2	1	3	1
Zone Time hours	1/2	1/2	1/2	2	1/2

Distribution Panel					
CFM	0.8	0.8	0.8	0.8	0.8
O3 Feed Conc. Ppm O3					

Comments: Oct. 20 Site Visit - Compressor Down With No Alarm Call - Site Phone Line is Down - Called AT&T For Service

Rasmussen 32504

Ozone Sparge System Inspection

DATE	Nov. 10 2017	Nov. 16, 2017	Nov. 22, 2017	Dec. 1, 2017	Dec. 8, 2017
OPERATOR SIGNATURE	L Rapai	L Rapai	L Rapai	L Rapai	

Air Compressor					
Output Pressure psi	115	115	115	115	115
Temperature F	181	180	182	179	180
Run Time hours		6077	6215	6412	6581

Air Sep					
Receiver Pressure psi	55	56	56	56	54
Feed Air Pressure psi	110	110	110	110	110
Cycle Pressure psi	70	70	70	70	70
Holding Tank Pressure psi	42	42	42	47	42
Run Time hours		121056.7	121195.8	121393.8	121563.2

Air Dryer					
Temp. Indicator - color	GREEN	GREEN	GREEN	GREEN	GREEN

Ozone Generator					
Oxygen Supply, LPM	7	7	6	7	7
% O3 capacity	45	45	45	45	70
Regulator #1 psi	38	40	37	42	40
Regulator #2 psi	22	22	24	22	20
Alarm Reading ppm, O3	–	–	–	–	–
Zone On	2	1	3	3	3
Zone Time hours	1/2	1/2	~~1/2~~ 2	2	2

Distribution Panel					
CFM	0.8	0.8	0.8	0.8	0.8
O3 Feed Conc. Ppm O3					

Comments: 2000 HR PM ON COMPRESSOR

Rasmussen 32504

Ozone Sparge System Inspection

DATE	Dec. 15, 2017	Dec. 20, 2017	Dec. 27, 2017		
OPERATOR SIGNATURE	A Rapai	A Rapai	A Rapai		

Air Compressor					
Output Pressure psi	120	120	110		
Temperature F	175	178	180		
Run Time hours	6749		7035		

Air Sep					
Receiver Pressure psi	54	56	54		
Feed Air Pressure psi	110	110	115		
Cycle Pressure psi	70	70	75		
Holding Tank Pressure psi	42	42	42		
Run Time hours	121732.9		122020.0		

Air Dryer					
Temp. Indicator - color	GREEN	GREEN	GREEN		

Ozone Generator					
Oxygen Supply, LPM	7	7	7		
% O3 capacity	70	70	70		
Regulator #1 psi	42	40	40		
Regulator #2 psi	20	22	30		
Alarm Reading ppm, O3	–	–	-		
Zone On	3	1	1		
Zone Time hours	2	1/2	1/2		

Distribution Panel					
CFM	0.8	0.8	0.8		
O3 Feed Conc. Ppm O3					

Comments:

SPARGE WELL PRESSURE READINGS
RASMUSSEN SITE
CRA PROJECT #32504

DATE:	Oct. 20, 26 & 27		DATE:	Nov. 16, 28		DATE:	Dec. 12, 13, 14, 15, 19 & 20	
WELL ID	CFM @ DIST. PANEL	PSI @ WELL	WELL ID	CFM @ DIST. PANEL	PSI @ WELL	WELL ID	CFM @ DIST. PANEL	PSI @ WELL
SW-1	0.8	9	SW-1	0.8	10	SW-1	0.8	10
SW-2	0.8	8	SW-2	0.8	9	SW-2	0.8	9
SW-3	0.8	16	SW-3	0.7	15	SW-3	0.8	15
SW-4	0.7	15	SW-4	0.8	15	SW-4	0.8	15
SW-5	0.8	15	SW-5	0.8	16	SW-5	0.8	15
SW-6	0.8	15	SW-6	0.8	15	SW-6	0.7	15
SW-7	0.7	15	SW-7	0.8	15	SW-7	0.8	16
SW-8	—	—	SW-8	—	—	SW-8	—	—
SW-9	—	—	SW-9	—	—	SW-9	—	—
SW-10	—	—	SW-10	—	—	SW-10	—	—
SW-11	—	—	SW-11	—	—	SW-11	—	—
SW-12	0.8	14	SW-12	0.8	14	SW-12	0.8	13
SW-13	0.8	2	SW-13	0.8	1	SW-13	0.8	1
SW-14	—	—	SW-14	—	—	SW-14	—	—
SW-15	—	—	SW-15	—	—	SW-15	—	—
SW-16	—	—	SW-16	—	—	SW-16	—	—
SW-17	0.8	16	SW-17	0.7	16	SW-17	0.8	15
SW-18	0.8	15	SW-18	0.7	16	SW-18	0.8	16
SW-19	0.8	16	SW-19	0.8	15	SW-19	0.7	16
SW-20	0.7	16	SW-20	0.7	15	SW-20	0.8	16
SW-21	—	—	SW-21	—	—	SW-21	—	—
SW-22	0.7	13	SW-22	0.8	14	SW-22	0.8	14
SW-23	0.8	14	SW-23	0.8	13	SW-23	0.8	13
SW-24	0.8	14	SW-24	0.8	14	SW-24	0.7	14
SW-25	0.8	15	SW-25	0.8	15	SW-25	0.8	16
SW-26	0.7	6	SW-26	0.7	7	SW-26	0.7	6
SW-27	0.8	6	SW-27	0.8	6	SW-27	0.8	7
SW-28	0.8	7	SW-28	0.8	7	SW-28	0.8	7
SW-29	0.8	7	SW-29	0.8	7	SW-29	0.8	6
SW-30	—	—	SW-30	—	—	SW-30	—	—

RASMUSSEN LANDFILL SITE
Livingston County, Michigan

Landfill Inspection Form

Inspector: STEVE RAPAI **Signature:** Steve Rapai

Date: FRIDAY, OCT. 6, 2017
Time: 3:00 PM

Weather Conditions: CLOUDY 67° - RAIN THIS MORNING

Observations

Erosion-North Face: OK

Erosion-South Face: OK

Erosion-East Face: OK

Erosion-West Face: OK

Erosion-Misc.: OK

Storm Water Ponds: WET

Drainage Spillways & Outfalls: FLOWING

Roadways: WET

Vegetation: GOOD

Signs, Gates, & Fences: OK

Actions Taken:
NONE

Recommendations:
NONE

RASMUSSEN LANDFILL SITE
Livingston County, Michigan

Landfill Inspection Form

Inspector: STEVE RAPAI **Signature:** Steve Rapai

Date: THURSDAY, OCT. 26, 2017
Time: 3:15 PM

Weather Conditions: CLEAR 55°

Observations

Erosion-North Face: OK

Erosion-South Face: OK

Erosion-East Face: OK

Erosion-West Face: OK

Erosion-Misc.: OK

Storm Water Ponds: DRY

Drainage Spillways & Outfalls: DRY

Roadways: GOOD

Vegetation: GOOD

Signs, Gates, & Fences: OK

Actions Taken:
NONE

Recommendations:
NONE

RASMUSSEN LANDFILL SITE
Livingston County, Michigan

Landfill Inspection Form

Inspector: STEVE RAPAI **Signature:** Steve Rapai

Date: TUESDAY, NOV. 7, 2017
Time: 1:00PM

Weather Conditions: CLEAR 43°F

Observations

Erosion-North Face: OK

Erosion-South Face: OK

Erosion-East Face: OK

Erosion-West Face: OK

Erosion-Misc.: OK

Storm Water Ponds: DRY

Drainage Spillways & Outfalls: DRY

Roadways: OK

Vegetation: DORMANT

Signs, Gates, & Fences: OK

Actions Taken:
NONE

Recommendations:
NONE

RASMUSSEN LANDFILL SITE
Livingston County, Michigan

Landfill Inspection Form

Inspector: STEVE RAPAI **Signature:** Steve Rapai

Date: WEDNESDAY, NOV. 22, 2017
Time: 10:00AM

Weather Conditions: CLEAR 35°F

Observations

Erosion-North Face: OK

Erosion-South Face: OK

Erosion-East Face: OK

Erosion-West Face: OK

Erosion-Misc.: OK

Storm Water Ponds: DRY

Drainage Spillways & Outfalls: DRY

Roadways: OK

Vegetation: DORMANT

Signs, Gates, & Fences: OK

Actions Taken:
NONE

Recommendations:
NONE

RASMUSSEN LANDFILL SITE
Livingston County, Michigan

Landfill Inspection Form

Inspector: STEVE RAPAI **Signature:** Steve Rapai

Date: FRIDAY, DEC 1, 2017
Time: 11:30 AM

Weather Conditions: CLEAR 40°,

Observations

Erosion-North Face: OK

Erosion-South Face: OK

Erosion-East Face: OK

Erosion-West Face: OK

Erosion-Misc.: OK

Storm Water Ponds: DRY

Drainage Spillways & Outfalls: DRY

Roadways: OK

Vegetation: DORMANT

Signs, Gates, & Fences: OK

Actions Taken:
NONE

Recommendations:
NONE

RASMUSSEN LANDFILL SITE
Livingston County, Michigan

Landfill Inspection Form

Inspector: STEVE RAPAI **Signature:** Steve Rapai

Date: WED. DEC. 27, 2017
Time: 2:00PM

Weather Conditions: CLEAR 8°F

Observations

Erosion-North Face: SNOW COVERED

Erosion-South Face:

Erosion-East Face:

Erosion-West Face:

Erosion-Misc.:

Storm Water Ponds:

Drainage Spillways & Outfalls:

Roadways:

Vegetation:

Signs, Gates, & Fences: OK

Actions Taken:
NONE

Recommendations:
NONE

9/27/17

Well ID	32504-25 Level
MW-34C	22.46
MW-35	32.49
MW-41	46.43
MW-42	62.11
MW-47	52.18
MW-54	54.66
MW-55	35.35
MW-56	35.20
MW-58	19.98
EB-PZ-2	39.00
EB-PZ-4	51.99
EB-PZ-5	53.81
EB-PZ-6	53.57
PZ-103	56.77
PZ-104	53.96
PZ-105	50.39
PZ-106	34.99
TEMP-PZ-2	52.59

32504-25 12/12/17

TASK: BEGIN 1/4LY SAMPLE EVENT
GHD: STEVE RAPAI
WEATHER: MOSTLY SUNNY 18°, WINDY, VERY COLD! 4" OF SNOW LAST NIGHT.
H&S: LEVEL D
TAILGATE: WORKING IN SNOW, WORKING WITH PRESERVED SAMPLE BOTTLES, WORKING WITH MP50.
CALIBRATION OF FLOW CELL NF 07716 IN-SITU.

SAMPLE OF CRA-RA-2D BEGAN PURGING @ 1030

TIME	pH	COND.	TURB.	D.O.	TEMP.
1100	6.59	1.39	1.4	0.11	10.74
1105	6.66	1.39	1.1	0.11	10.83
1110	6.70	1.39	1.0	0.13	10.82
1115	6.74	1.40	1.0	0.13	10.82
1120	6.75	1.39	1.0	0.13	10.81
1125	6.76	1.39	1.1	0.13	10.80
1130	6.76	1.39	1.1	0.13	10.80

SAMPLED @ 1131 ID: GW-32504-121217-SR-2135

12/12/17 32504-25

SAMPLE OF CRA-RA-28

TIME	pH	COND	TURB.	D.O.	TEMP.
1140	7.31	0.83	27.4	0.17	11.11
1205	6.87	0.86	1.3	0.15	11.02
1215	6.83	0.87	1.0	0.13	10.92
1220	6.82	0.87	1.1	0.12	10.95
1225	6.82	0.87	0.7	0.11	10.96
1230	6.81	0.87	0.5	0.12	10.95

SAMPLED @ 1231 ID: GW-32504-121217-SR-2136

SAMPLE OF PZ-104

1245	6.73	1.25	23.2	1.71	11.32
1300	6.75	1.25	3.4	0.18	10.87
1310	6.75	1.26	2.0	0.16	10.83
1315	6.75	1.26	1.6	0.17	10.88
1320	6.76	1.27	1.3	0.16	10.89
1325	6.76	1.27	1.1	0.16	10.88

SAMPLED @ 1326 ID: GW-32504-121217-SR-2137

SAMPLE OF CRA-RA-24

1335	6.98	1.06	5.1	0.57	11.51
1355	6.81	1.07	2.9	0.18	10.73
1400	6.81	1.07	2.4	0.17	10.84
1405	6.79	1.07	1.8	0.16	10.85

CONTINUED ON NEXT PAGE

32504-25 12/12/17

SAMPLE OF CRA-RA-24 (CONTINUED)

TIME	pH	COND.	TURB.	D.O.	TEMP.
1410	6.79	1.07	1.3	0.16	10.85
1415	6.79	1.07	0.7	0.17	10.84

SAMPLED @ 1416 ID: GW-32504-121217-SR-2138

SAMPLE OF CRA-RA-~~28~~ 30

1430	6.81	0.97	44.9	0.47	10.55
1450	6.86	0.99	2.8	0.13	10.69
1455	6.86	1.00	0.6	0.13	10.75
1500	6.86	1.00	0.4	0.13	10.75
1505	6.86	0.99	0.5	0.13	10.75
1510	6.86	1.00	0.4	0.13	10.74

SAMPLED @ 1511 ID: GW-32504-121217-SR-2139

SAMPLE OF CRA-RA-32

1525	6.85	0.96	0.0	0.15	10.48
1535	6.84	0.97	0.0	0.13	10.55
1545	6.84	0.97	0.0	0.14	10.50
1550	6.85	0.96	0.0	0.14	10.50
1555	6.85	0.97	0.0	0.14	10.50

SAMPLED @ 1556 ID: GW-32504-121217-SR-2140

SET UP @ CRA-RA-22 BUT BATTERIES IN SAMPLE EQUIPMENT WENT DEAD BECAUSE OF COLD.

12/13/17 32504-25

TASK: CONTINUE 1/4LY SAMPLE EVENT

GHD: STEVE RAPAI

WEATHER: SNOW 20°F, 6"-9" EXPECTED

H&S: LEVEL D

TAILGATE: WORKING IN HEAVY SNOW, SAMPLE BOTTLES

BEGAN TO PREP EQUIPMENT & MP50 CONTROL BOX WILL NOT WORK. CONTROL SCREEN IS BLANK. CHANGED BATTERIES & STILL NOTHING. I CALLED TONY MANNS & HE SAID THIS IS A VERY COMMON PROBLEM. POWER WIRES WILL BREAK BECAUSE OF THE VIBRATIONS. HE HAS MULTIPLE MP50'S IN FOR THIS VERY REPAIR RIGHT NOW. HE WILL ORDER ONE FROM I.E. & HAVE IT SHIPPED OVERNIGHT.

NO SAMPLES CAN BE COLLECTED TODAY.

32504-25 12/14/17

TASK: CONTINUE 1/4LY SAMPLE EVENT

GHD: STEVE RAPAI

WEATHER: SUN 18°F, 10" OF SNOW FELL YESTERDAY

H&S: LEVEL D

TAILGATE: WORKING IN COLD TEMPS., WORKING IN DEEP SNOW, SAMPLE BOTTLES

CALIBRATION OF FLOW METER. NOW USING RENTAL MP50 FROM I.E.

SAMPLE OF CLA-RA-22

TIME	pH	COND.	TURB.	D.O.	TEMP.
1230	7.80	1.06	0.9	0.25	10.97
1250	7.40	1.05	1.4	0.27	10.83
1255	7.31	1.05	0.9	0.35	10.73
1300	7.26	1.05	0.5	0.36	10.83
1305	7.20	1.05	0.7	0.37	10.78
1310	7.15	1.04	0.5	0.37	10.78
1315	7.12	1.04	0.5	0.40	10.83
1320	7.08	1.04	0.3	0.41	10.78
1325	7.06	1.04	0.4	0.42	10.78
1330	7.05	1.04	0.4	0.42	10.78
1335	7.05	1.04	0.3	0.42	10.78

SAMPLED @ 1336 ID: GW-32504-121417-SR-2141

12/14/17 32504-25

SAMPLE OF TEMP-PZ-2

TIME	pH	COND.	TURB.	D.O.	TEMP.
1345	6.62	1.86	0.0	0.63	10.73
1400	6.76	1.88	0.0	3.58	10.87
1410	6.79	1.91	0.0	3.83	10.97
1415	6.80	1.92	0.0	3.81	11.01
1420	6.81	1.92	0.0	3.81	11.01
1425	6.82	1.92	0.0	3.81	11.03
1430	6.82	1.91	0.0	4.65	11.01
1435	6.82	1.92	0.0	3.81	11.01

SAMPLED @ 1436 ID:GW-32504-121417-SR-2142

SAMPLE OF CRA-RA-29

1445	7.37	0.87	37.6	11.54	10.69
1500	7.13	0.89	7.1	12.64	10.68
1510	7.05	0.90	5.5	12.69	10.59
1515	7.02	0.90	5.1	12.67	10.61
1520	7.01	0.90	4.7	12.67	10.60
1525	7.01	0.90	4.5	12.67	10.60

SAMPLED @ 1525 ID:GW-32504-121417-SR-2143

SAMPLE OF 81-8

1540	6.85	0.75	3.3	3.39	9.80

WELL NO LONGER PRODUCING WATER

SAMPLES PACKED IN COOLER W/ THICE FOR DROP OFF @ TEST AMERICA.

32504-25 12/15/17

TASK: CONTINUE 1/4 SAMPLE EVENT

GHD: STEVE RAPAI

WEATHER: 22°F, SNOWING, WIND SW 16 MPH

H2S: LEVEL D

TAILGATE: SNOW & COLD, SAMPLE BOTTLES, MP 50

CALIBRATION OF FLOW CELL.

TRIED TO PURGE 81-8 AND IT WOULD NOT PRODUCE WATER. DROPPED WATER LEVEL TAPE ALL THE WAY TO THE PUMP TOP & IT DID NOT HIT WATER. PULLED PUMP OUT OF WELL. WATER @ 52.23'. BOTTOM @ 55'

SAMPLE OF CRA-RA-31 BEGAN PURGING @ 1350

TIME	pH	COND.	TURB.	D.O.	TEMP.
1415	7.60	0.61	0.0	0.43	10.53
1420	7.53	0.61	0.0	0.39	10.54
1425	7.48	0.61	0.0	0.38	10.52
1430	7.45	0.61	0.0	0.44	10.54
1435	7.41	0.61	0.0	0.45	10.52
1440	7.40	0.61	0.0	0.44	10.54
1445	7.40	0.61	0.0	0.44	10.52

SAMPLED @ 1446 ID:GW-32504-121517-SR-2144

@ 1450 ID:GW-32504-121517-SR-2145

12/15/17 32504-25

SAMPLE OF CRA-RA-7

TIME	pH	COND.	TURB.	D.O.	TEMP.
1500	7.20	0.47	13.9	0.20	10.73
1515	7.24	0.44	3.2	0.65	10.92
1520	7.23	0.44	2.6	0.74	10.95
1525	7.22	0.43	2.0	0.95	10.95
1530	7.21	0.42	0.7	1.08	10.95
1535	7.20	0.42	0.0	1.21	10.93
1540	7.19	0.42	0.0	1.27	10.94
1545	7.19	0.42	0.0	1.40	10.92
1550	7.19	0.41	0.0	1.41	10.94
1555	7.19	0.41	0.0	1.41	10.92

SAMPLED @ 1556 ID: GW-32504-121517-SR-2146

32504-25 12/19/17

TASK: CONTINUE 1/4LY SAMPLE EVENT

GHD: STEVE RAPA

WEATHER: SUN, 41°, WIND SSW 13 MPH

H&S: LEVEL D

TAILGATE: WET SLOPPY CONDITIONS WITH MUD & MELTING SNOW, SAMPLE BOTTLES, MP 50.

CALIBRATION OF FLOW CELL

SAMPLE OF CRA-RA-5

TIME	pH	COND	TURB.	D.O.	TEMP.
1010	8.30	1.28	4.1	0.79	11.17
1030	7.61	1.18	0.0	0.60	10.87
1035	7.51	1.18	0.0	0.58	10.83
1040	7.40	1.19	0.0	0.57	10.83
1045	7.29	1.19	0.0	0.61	10.83
1050	7.26	1.19	0.0	0.61	10.83
1055	7.25	1.19	0.0	0.60	10.83
1100	7.25	1.19	0.0	0.60	10.83

SAMPLED @ 1101 ID: GW-32504-121917-SR-2147

SAMPLE OF RA-MW-28

1135	7.62	0.83	0.0	1.50	10.21
1200	7.20	0.81	0.0	3.69	10.52
1205	7.15	0.81	0.0	3.74	10.54

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12/19/17 32504-25

SAMPLE OF RA-MW-28 (CONTINUED)

TIME	pH	COND.	TURB.	D.O.	TEMP.
1210	7.12	0.81	0.0	3.77	10.55
1215	7.09	0.82	0.0	3.79	10.55
1220	7.06	0.81	0.0	3.81	10.55
1225	7.05	0.81	0.0	3.83	10.55
1230	7.05	0.81	0.0	3.83	10.55

SAMPLED @ 1231 ID:GW-32504-121917-SR-2148

SAMPLE OF CRA-RA-18

1255	6.80	1.67	3.3	6.74	10.22
1315	6.75	1.68	1.6	6.71	10.36
1320	6.74	1.67	0.9	6.70	10.36
1325	6.73	1.67	0.0	6.69	10.31
1330	6.72	1.68	0.0	6.67	10.35
1335	6.72	1.68	0.0	6.67	10.35

SAMPLED @ 1336 ID:GW-32504-121917-SR-2149

SAMPLE OF CRA-RA-65

1350	6.68	1.09	0.0	1.92	11.52
1410	6.65	1.09	0.0	1.43	11.57
1415	6.65	1.09	0.0	1.26	11.66
1420	6.64	1.09	0.0	1.26	11.59
1425	6.64	1.09	0.0	1.24	11.60

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32504-25 12/19/2017

SAMPLE OF CRA-RA-65 (CONTINUED)

TIME	pH	COND.	TURB.	D.O.	TEMP.
1430	6.64	1.09	0.0	1.24	11.59

SAMPLED @ 1431 ID:GW-32504-121917-SR-2150

SAMPLE OF CRA-RA-27

1445	6.41	1.75	17.4	0.25	11.29
1505	6.51	1.77	2.1	0.15	11.29
1510	6.53	1.77	0.9	0.15	11.29
1515	6.55	1.78	0.3	0.14	11.30
1520	6.56	1.78	0.0	0.14	11.30
1525	6.56	1.77	0.0	0.14	11.29
1530	6.56	1.78	0.0	0.14	11.29

SAMPLED @ 1531 ID:GW-32504-121917-SR-2151

SAMPLED @ 1540 ID:GW-32504-121917-SR-2152

SAMPLES PACKED IN COOLER WITH ICE FOR GHD DROP OFF @ TEST AMERICA, BRIGHTON, MICHIGAN.

12/20/17 32504-25

TASK: COMPLETE 1/4LY SAMPLE EVENT

GHD: STEVE RAPAI

WEATHER: 28° CLEAR,

H&S: LEVEL D

TAILGATE: SLIPPERY CONDITIONS, WORKING ON HILLS, SAMPLE BOTTLES.

CALIBRATION OF FLOW CELL.

SAMPLE OF CRA-RA-26S

TIME	pH	COND.	TURB.	D.O.	TEMP.
0930	7.88	1.23	4.0	6.60	11.57
0955	7.30	1.27	1.1	6.46	10.40
1000	7.22	1.27	0.3	6.47	10.39
1005	7.15	1.27	0.6	6.45	10.36
1010	7.09	1.28	0.5	10.85	10.27
1015	7.05	1.26	0.9	6.45	10.32
1020	7.05	1.28	0.7	6.45	10.31
1025	7.04	1.28	0.4	6.46	10.31

SAMPLE OF 1026 ID: GW-32504-122017-SR-2153

SAMPLE OF CRA-RA-26D

1035	6.91	1.50	7.2	2.21	10.14
1050	6.87	1.48	3.7	0.35	10.27
1055	6.85	1.48	2.1	0.32	10.59

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SAMPLE OF CRA-RA-26D (CONTINUED)

TIME	pH	COND.	TURB.	D.O.	TEMP.
1100	6.84	1.48	1.1	0.29	10.66
1105	6.83	1.48	1.2	0.29	10.67
1110	6.83	1.48	1.2	0.29	10.66

SAMPLED @ 1111 ID: GW-32504-122017-SR-2154

SAMPLE OF CRA-RA-23D

1200	7.68	1.18	0.0	3.21	11.33
1230	7.08	0.69	0.0	7.07	10.08
1235	7.09	0.69	0.0	7.07	10.08
1240	7.09	0.68	0.0	7.08	10.09
1245	7.09	0.68	0.0	7.07	10.09
1250	7.08	0.68	0.0	7.07	10.09

SAMPLED @ 1251 ID: GW-32504-122017-SR-2155

SAMPLE OF B1-4

1305	6.75	1.49	31.8	2.44	10.98
1335	6.69	1.33	0.0	0.82	10.75
1340	6.70	1.29	0.0	0.55	10.76
1345	6.70	1.29	0.0	0.45	10.83
1350	6.70	1.29	0.0	0.34	10.82
1355	6.70	1.28	0.0	0.36	10.82
1400	6.70	1.29	0.0	0.35	10.83

SAMPLED @ 1401 ID: GW-32504-122017-SR-2156 MS/MSD

SAMPLES IN COOLER FOR DROPOFF @ TA BRIGHTON.

12/26/2017 32504.25

TASK: QUARTERLY WATER LEVELS

GHD: STEVE RAPAI

WEATHER: MOSTLY CLOUDY, 10°F WIND WEST 11 MPH

H&S: LEVEL D

TAILGATE: COLD STRESS, WORKING IN SNOW, TRIP HAZARDS, PINCH POINTS.

WELL ID	LEVEL
81-4	29.20
81-5	33.61
81-7	47.17
81-8	46.31
81-9	15.47
81-10	31.71
RA-1	68.36
RA-2D	55.22
RA-2S	54.93
RA-3	52.00
RA-5	54.06
RA-6S	58.84
RA-7	31.70
RA-8	15.79
RA-16	57.44
RA-18	40.74
RA-18D	55.52

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WELL ID	LEVEL
RA-19D	49.36
RA-19S	46.75
RA-20	57.81
RA-22	53.15
RA-23D	31.98
RA-23S	32.27
RA-24	55.94
RA-25	53.40
RA-26D	49.25
RA-26S	49.13
RA-27	60.91
RA-28	53.59 ~~41.85~~
RA-29	45.24
RA-30	57.57
RA-31	31.51
RA-32	34.14
RA-33	31.50
RA-34	BURIED UNDER PLOWED SNOW
RA-35	31.17
RA-36	35.54
RA-37	35.34
MW-22	41.45
MW-28	41.83
MW-32	56.47

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MW-34C	40.93
MW-35	23.27
MW-41	46.38
MW-42	62.72
MW-47	52.95
MW-54	55.13
MW-55	26.05
MW-56	33.08
MW-58	20.60
EB-PZ-2	39.47
EB-PZ-4	52.58
EB-PZ-5	54.30
EB-PZ-6	54.06
PZ-103	56.28
PZ-104	54.26
PZ-105	50.99
PZ-106	38.47
TEMP-PZ-2	53.06